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Knowledge, attitude, and practices towards hepatitis infection and its associated factors among adults in Gondar town, northwest Ethiopia; a community-based study, 2021



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Abstract

Background Hepatitis virus infection remains a serious public health concern worldwide. Percutaneous, mucosal, or non-intact skin exposure to infectious blood, semen, and other body fluids are the major routes of infection in endemic areas, including Ethiopia, where little is known about the community's knowledge, attitudes, and practice toward hepatitis infection. Thus, this study aimed to determine the knowledge, attitude, and practices towards hepatitis infection among adults in Gondar town.

Methods A community-based cross-sectional study was conducted from July to August 2021 on a total of 390 participants. Proportional sample allocation was used in 3 randomly selected sub-cities. Then, study participants from randomly selected households were recruited by using a systematic random sampling technique. Socio-demographic data and questions regarding KAP were collected via a self-administered and interviewer-administered questionnaire. Statistical analysis was performed using SPSS version 20. Logistic regression analyses were used to identify the associated factors and a p-value < 0.05 was considered statistically significant.

Results The mean age of the study participants was 30±8.43 years and more than half ½ (53.3%) ranged from 26 to 40 years old. In this study, 335 (85.9%) of study participants had poor knowledge about hepatitis infection. About 344 (88.2%) had a negative attitude toward hepatitis infections, and 344 (88.2%) of the participants had a poor practice to prevent hepatitis infections. Multivariate analysis affirmed that having vaccination for hepatitis infection was significantly associated with a positive attitude (AOR, with 95% CI: 2.135 (1.006–4.532) and good practice levels (AOR, with 95% CI: 22.623 (0.032–0.156).

Conclusions and recommendations In this study majority of the participants have poor knowledge, attitudes, and practices toward hepatitis infection. Therefore, targeted community-based interventions are necessary. However, this study revealed that having vaccination for hepatitis infection was significantly associated with a positive attitude and good practice levels among the study participants.

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Keywords Knowledge, Attitude, Practice, Hepatitis infection, Adults, Gondar town

Introduction

Hepatitis is an inflammation of the liver, commonly caused by viral infections, but it can also result from toxins (such as alcohol and certain drugs), autoimmune diseases, and other infections. The inflammation can lead to serious liver damage if left untreated. There are several types of hepatitis, each caused by different viruses and varying in modes of transmission, symptoms, and severity [1, 2].

Hepatitis A infection is a highly contagious liver infection caused by the hepatitis A virus (HAV) [3]. The infection causes inflammation of the liver and can impair its ability to function. The primary route of transmission is fecal-oral when an uninfected person ingests food or water that has been contaminated with the feces of an infected person. Symptoms can range from mild to severe and usually appear 2 to 7 weeks after exposure to the virus [4]. It is generally a self-limiting disease, i.e., it does not usually lead to chronic liver disease, and most people recover completely without permanent liver damage [5]. Hepatitis B infection is a liver infection caused by the hepatitis B virus (HBV) [6]. The virus infects liver cells (hepatocytes) and causes inflammation and liver cell damage. HBV is transmitted through contact with infectious blood or other body fluids [7, 8]. It can range from a mild illness lasting a few weeks (acute infection) to a severe, lifelong illness (chronic infection), which can lead to liver disease, liver failure, liver cancer, or even death B [9, 10].

Hepatitis C infection is a liver infection caused by the hepatitis C virus (HCV) [11]. HCV is primarily transmitted through contact with blood containing the virus. It can lead to both acute and chronic infections, which can result in severe liver diseases such as cirrhosis and liver cancer [1, 12, 13]. Hepatitis D virus (HDV) is an unusual virus with many similarities to certain plant viral satellites and viroids. This virus requires hepadnavirus viral helper functions to replicate in hepatocytes and is an important cause of acute and severe chronic liver injury in many regions of the world [1]. Hepatitis E virus (HEV), is the causative agent of enterically transmitted non-A, non-B hepatitis and shares many biophysical and biochemical characteristics with caliciviruses [1].

Hepatitis virus infection remains a serious public health concern worldwide [14]. Every year 1.4 million people die from hepatitis-related infection [15]. The burden of HBV infection is highest in developing countries, particularly in Asia and sub-Saharan Africa [16]. The World Health Organization (WHO) estimates that the prevalence of HBV infection in Africa averages more than 10% [17]. In Ethiopia and neighbouring Kenya, more than 60% of chronic liver diseases and up to 80% of hepatocellular carcinomas (HCC) are due to chronic HBV and HCV infections [18]. Although relatively few data are available, HAV, HDV, and HEV are also circulating in Ethiopia [19].

A global epidemiological study showed that the majority of the infected population with hepatitis infection are unaware of their condition [15]. There is limited community-based evidence on knowledge, attitude, and practice (KAP) related to hepatitis infection [20]. Communitybased studies assessing KAP towards hepatitis infection in Ethiopia are limited and have never been conducted in our study area [21]. The KAP survey method is essential for public health intervention as it systematically evaluates community knowledge, attitudes, and behaviors related to hepatitis infection. These surveys help identify knowledge gaps and provide insights into areas where educational efforts are most needed to inform specific interventions aimed at increasing awareness of transmission routes, preventive measures, and treatment options. Attitudes towards hepatitis have an impact on healthseeking behaviors and social support for affected individuals, influencing strategies to reduce stigma and promote acceptance.

Understanding current practices related to hygiene, safe sexual practices, and healthcare-seeking behavior allows for the development of targeted behavioral interventions to minimize transmission risks. The KAP surveys guarantee that public health interventions are based on evidence, take cultural sensitivities into account, and successfully tackle the diverse obstacles posed by hepatitis infections in the community. There is a significant lack of KAP research focused on hepatitis infection in Gondar Town. Therefore, this study aimed to identify the current status of knowledge and attitudes as factors associated with hepatitis infection prevention practices among adults in Gondar town, northwest Ethiopia.

Materials and methods

Study design, setting, and period

This study was a cross-sectional study conducted among adults of Gondar town residents during the period from July to August 2021. Gondar town is located 737 km, northwest of the capital city of Ethiopia, Addis Ababa. The town is the capital city of the central Gondar zone and it is located 186 km away from Bahir-Dar. According to the recent administration, the town has 12 sub-cities which consist of 21 kebele. Gondar is one of the ancient and densely populated towns in Ethiopia [22].

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Study populations

All adults who were living in Gondar town were recruited as the source population while adults who lived in the selected sub-cities in Gondar town and who were avail during the study period and willing to participate in the study were considered as the study population. All adults who were ≥ 18 years of age and adults who lived in Gondar town for at least 2 years were included in the study.

Study variables

Socio-demographic characteristics such as age, gender, residence, religion, educational status, occupation, and monthly income were the independent variables whereas the knowledge, attitude, and practice level of the students were the dependent variables.

Sample size and sampling techniques

The sample size was determined by using the single population proportion formula by assuming p=50%. Then, the sample size becomes 384. By considering a 10% nonresponse rate, the final sample size was 422. Initially, three sub-cities (Jantekel sub-city, Maraki sub-city, and Zobel sub-city) were randomly selected. The numbers of study participants sampled from the selected sub-cities were determined using proportionate-to-population size. Jantekel, Maraki, and Zobel sub-cities have population numbers of 30, 388; 106, 062, and 64, 494 respectively [22]. Maraki sub-city had 52% of the sample size based on its population number, Zobel (33%) and Jantekel (15%). In the final stage, households were selected by simple random sampling using the registers held at the kebele offices. Then, a systematic sampling technique was employed to select the study participants from each of the selected households. The interval (K) value was calculated for each selected sub-city by dividing the total number of populations in each sub-city by the corresponding proportional sample size calculated for each sub-city. The initial participant was randomly selected by the lottery method. Then other participants were selected at every Kth interval.

Operational definitions

Good knowledge

Participants who responded \geq 50% score on the knowledge assessment items about hepatitis infection were labeled as having good knowledge otherwise poor knowledge.

Favorable attitude

Participants who responded \geq 50% score on the attitude questions about hepatitis infection were considered to have a favorable attitude towards hepatitis infection otherwise an unfavorable attitude.

Preventive practice

Participants who responded with \geq 50% score on the practice questions about hepatitis infection were considered to have preventive practice towards hepatitis infection otherwise causative practice.

Data collection tool and technique

Socio-demographic information and KAP related questions were collected using a pre-tested structured self-administered and interviewer-administered questionnaire that is adopted from published literature [10, 23, 24] for hepatitis infection and meticulously developed based on a comprehensive review of the existing literature. The questionnaire employed had established validity through expert review and demonstrated reliability. The questionnaire includes socio-demographic characteristics and KAP towards hepatitis infection. Socio-demographic characteristics include age, sex, religion, marital status, educational status, and occupational status. Forty (40) participants who could not read were interviewed and the remaining 382 questionnaires were distributed among participants who can read. Among 382 questionnaires distributed, 350 were returned making a 92.4% response rate.

Knowledge, attitude, and practice

Forty-nine questions were generated to assess the knowledge, attitude, and practice towards hepatitis infection. The questionnaire was divided into four portions: the first portion deals with socio-demographic characteristics; the remaining three portions contain questions on the assessment of participants' knowledge, attitudes, and practices. Knowledge about hepatitis infection was assessed using 19 general questions, which are deemed to assess the causative agents, ways of transmission, and prevention mechanisms. The questionnaire was answered on a yes/no basis. A correct answer was assigned as "1" and an incorrect/unknown answer was assigned as "0". The scoring ranges from 19 to 0. The scores for individuals were calculated and summed up to get the knowledge of the participants about hepatitis. Besides, the participant's attitude was assessed using 16 questions. Each question contains three responses; "Disagree", "Neutral", and "Agree, and labeled as 0, 1, and 2, respectively. For analysis, "Disagree and Neutral" was recoded to "0" and "Agree" was recorded to "1". Then, the scores were summarized to get the overall attitude of the adults about hepatitis infection. Similarly, 14 preventive practices related to hepatitis questions were asked, and the responses to each question were scored as "1" for correct and "0" for incorrect responses. The practice scoring ranges from 14 (largest) to 0 (smallest). Preventive practice scores for individuals were calculated and summed up to give the total practice score.

Data quality control

The questionnaire was prepared in English language and back-translated into the local language Amharic to ensure its consistency. The accuracy of the tool was checked by back-translating to English by experts who were blind to the original instrument. Before starting the data collection, the pre-test was done on 10% of the total sample size in "Lideta sub-city", and an amendment was made accordingly. To maintain the quality of the data, training was provided for data collectors on the aim of the study and methods of data collection. Field-level supervision was done to control the data collection and data quality.

Reliability and validity of the research

Cronbach's alpha reliability coefficients were computed to determine the internal consistency of all research constructs: Cronbach's alpha of 0.7 or above indicates high reliability, between 0.5 and 0.7 indicates moderate reliability and less than 0.5 indicates low reliability. The Cronbach's alpha values for the knowledge, attitude, and practice constructs were 0.56, 0.71, and 0.76, respectively.

Data analysis and interpretation

The data was cleaned, checked for completeness, entered, and analyzed using SPSS version 20 software. The items were first coded as "1" favoring a good outcome and "0" not favoring a poor outcome. A good score is defined as if the participant correctly responds 50% or more for KAP assessing questions. Reversing it, the poor score is defined as if the participant correctly responds to less than 50% of KAP assessing questions [25].

Then, the data were analyzed using appropriate descriptive statistics, and summarized by frequency and percentage. Both Bivariate and multivariate logistic regression analyses were performed to identify associated factors of good KAP towards hepatitis infection. The variables in bivariate analysis with p<0.2 were entered into multivariate logistic regression. The model fitness was also checked using the Hosmer-Lemeshow model fitness test. The strength of the association was demonstrated by computing the crude odds ratio (COR) and adjusted odds ratio (AOR) with a 95% confidence interval (CI). P-value<0.05 was considered statistically significant.

Ethical consideration

The study protocol was evaluated and approved by the ethical review committee of the School of Biomedical and Laboratory Sciences, University of Gondar. Support letters were submitted to the selected sub-cities, and letters of permission were secured from the administrative bodies. Then, recruited participants were given a verbal explanation about the objectives of the research and provided a written information sheet. All potential participants who agreed to participate provided written consent to continue with the interviews and self-administered questionnaires. Participants were assured of their right to withdraw at any time without consequence. The confidentiality of information obtained was maintained via anonymizing responses, securely storing data, and emphasizing the voluntary nature of participation via trained interviewers.

Results

Socio-demographic characteristics of the study participants

The total sample consists of 422 adults who were invited to participate in the study and 390 adults completed the questionnaire (92.4% response rate). 234 (60%) of the participants were male and 156 (40%) were female. The mean age of the study participants was 30 ± 8.43 years. The majority 207 (53.3%) of the participants were found within 26–40 years of age category. The educational status tally showed that 5 (1.3%) were unable to read and write, while 96 (24.6%) attended secondary school. Moreover, 185 (47.4%) were not married. Additionally, 129 (33.1%) of the participants were employed, whereas 105 (26.9%) were merchants (Table 1).

Knowledge of adults about hepatitis infection

Knowledge scores for individuals were summed to divide the participants into having adequate knowledge (who answered≥10 knowledge-related questions correctly) and having poor knowledge (who answered<10 knowledge-related questions). According to the present findings, 242 (62.1%) of the participants did not know how tests are carried out for hepatitis infection, while 60 (15.4%), 114 (29.2%), and 164 (42.1%) did not know about the treatment of hepatitis infection, what to do when becoming infected by hepatitis viruses and about vaccine given to certain hepatitis infection types respectively. Of the total participants who responded that they know the types of hepatitis infection, 160 (40%), the majority of them responded there are only two types of hepatitis infection, 47 (12.1%). Moreover, 150 (38.5%) of the participants responded hepatitis infection has treatment, 293 (75.1%). Out of the 390 participants, 335 (85.9%) were within the poor knowledge range whereas 55 (14.1%) showed good knowledge (Table 2).

Adult's attitude towards hepatitis infection

Each question was labeled with a positive or negative attitude. A score of 1 was given to a positive attitude while 0 was given to a negative attitude. The majority of the respondents, 292 (74.9%) think that hepatitis disease is curable. And 178 (45.6%) of the participants were neutral about the transmission of hepatitis infection types

Characteristics	Category	Frequency (n)	Percent (%)
Sex	Male	234	60
	Female	156	40
Age category	18–25 years	142	36.4
	26–40 years	207	53.3
		208	
	> 40 years	40	10.3
Level of education	Unable to read and write	5	1.3
	Reading and writing	23	5.9
	Elementary school	59	15.1
	Secondary school	96	24.6
	College/university	190	48.7
Marital status	Married	168	43.1
	Divorced	29	7.4
	Single/ never married	185	47.4
	Other	8	2.1
Occupation	Employed	129	33.1
	Unemployed	80	20.5
	Merchant	105	26.9
	House servant	7	1.8
	Daily laborers	12	3.1
Previous history of hepatitis infection	Have the previous history	97	24.9
	Do not have previous history	293	75.1
Vaccination for hepatitis infection	Vaccinated	59	15.1
	Not vaccinated	331	84.9
Religion	Orthodox	289	74.1
	Muslim	83	21.3
	Protestant	13	3.3
	Other	5	1.3

 Table 1
 Socio-demographic characteristics of adults in Gondar tow, northwest Ethiopia, 2021

by sexual intercourse. More than half of the participants 211 (54.1%) think that traditional treatments are better than drugs prescribed in health facilities for treatment of hepatitis infection. Additionally, 93 (23.8%) of them think that hepatitis diagnosis and treatment is expensive. Of the total participants, 46 (11.8%) had a positive attitude (who answered ≥ 8 questions correctly) and 344 (88.2%) had having negative attitude (who answered <8 for attitude-related questions) (Table 3).

Adults preventive practice towards hepatitis infection

Practice towards hepatitis infection was assessed by asking 14 questions. Each question was labeled with good or poor practice. The scale classified practice as good with a score of \geq 7 and poor<7. The majority of the respondents, 331 (84.9%) were not immunized for vaccines given to certain hepatitis disease types. Of the participants, 125 (32.1%) do not use a new blade for shaving/ hair cutting. Of the total respondents who had a previous history of hepatitis infection, the majority of them went to traditional healers. Additionally, less than half 178 (45.6%) of the participants stated that they go to a health facility when they encounter symptoms of hepatitis infection and the majority 315 (80.6%) responded they go to a health facility when they encounter injury with sharp objects. Out of the 390 participants, 344 (88.2%) were within the poor practice range while 46 (11.8%) showed good practice (Table 4).

Factors associated with knowledge regarding hepatitis infection

In this study, multivariate logistic regression analysis showed that no variable was associated with the level of knowledge about hepatitis infection among adults in Gondar town (Table 5).

Factors associated with attitude regarding hepatitis infection

In this study, bivariate logistic regression analysis showed that variables like vaccination status were significantly associated with the participant's attitude toward hepatitis infection among adults in Gondar town. Then, a variable with a p-value less than 0.2 was fitted to multivariate logistic regression analysis. Accordingly, after adjusting potential confounding variables, multivariate analysis affirmed that having vaccination for hepatitis infection (AOR, with 95% CI: 2.135 (1.006–4.532) was significantly

Table 2	Frequency of respondents towards knowledge indicators about hepatitis infection among adults in Gondar town, r	northwest
Ethiopia,	, 2021	

Indicators	Response	Frequency (n)	Percent (%)
Do you know what hepatitis infection is?	Yes	312	80
	No	78	20
Do you know what the risk factors of hepatitis infection are?	Yes	190	48.7
	No	200	51.3
Do you know that hepatitis infection is caused by a virus?	Yes	175	44.9
	No	215	55.1
Do you know the organ affected by hepatitis infection?	Yes	283	72.6
	No	107	27.4
Can casual contact (shaking hands) transmit hepatitis?	Yes	75	19.2
	No	141	36.2
	l don't know	174	44.6
Can coughing/sneezing transmit hepatitis?	Yes	60	15.4
	No	167	42.8
	l don't know	163	41.8
Can it be transmitted from mother to child?	Yes	97	25
	No	183	46.9
	l don't know	110	28.1
Can it be transmitted through unsterilized equipment or contaminated blood products?	Yes	129	33.1
	No	94	24.1
	l don't know	167	42.8
Is jaundice a symptom of hepatitis infection?	Yes	264	67.7
	No	40	10.3
	l don't know	86	22.1
Are nausea and loss of appetite being symptoms of hepatitis infection?	Yes	297	76.2
	No	23	5.9
	l don't know	70	17.9
Do you know the types of hepatitis infection?	Yes	160	41
	No	230	59
If your answer is yes to the above question, how many types are there?	One	22	5.6
	Two	47	12.1
	Three	44	11.3
	Four	16	4.1
	Five	24	6.2
	Many	33	8.5
Does hepatitis infection have a vaccine?	Yes	156	40
	No	70	17.9
	l don't know	164	42.1
Does hepatitis infection have treatment?	Yes	293	75.1
	No	37	9.5
	l don't know	60	15.4

associated with the good attitude toward hepatitis infection among the study participants (Table 6).

Factors associated with practice regarding hepatitis infection

In this study, bivariate logistic regression analysis showed that variables like vaccination status were significantly associated with the participant's practice toward hepatitis infection among adults in Gondar town. Then, a variable with a p-value less than 0.2 was fitted to multivariate logistic regression analysis. Accordingly, after adjusting potential confounding variables, multivariate analysis affirmed that having vaccination for hepatitis infection (AOR, with 95% CI: 7.845 (0.061–0.324) was significantly associated with good practice level towards hepatitis infection among the study participants (Table 7).

Discussion

The present study aimed to investigate knowledge, attitude, and practice regarding hepatitis infection in adult participants. The results of this study showed that the mean knowledge score was 9.35 ± 3.96 , indicating a low

Questions/statements	Response	Frequency (n)	Per-	
			cent	
			(%)	
feel uncomfortable sitting with a hepatitis-infected	Agree	133	34.1	
person	Disagree	199	51	
	Neutral	58	14.9	
don't mind shaking hands/hugging a hepatitis-infecte	ed Agree	200	51.3	
person	Disagree	151	38.7	
	Neutral	39	10	
Hepatitis vaccine is safe and effective	Agree	129	33.1	
	Disagree	88	22.6	
	Neutral	173	44.4	
You need hepatitis vaccine	Agree	191	49	
	Disagree	93	23.8	
	Neutral	106	27.2	
Families of hepatitis patients need to be vaccinated	Agree	246	63.1	
	Disagree	66	16.9	
	Neutral	78	20	
Vaccination prevents the spread of infection	Agree	184	47.2	
	Disagree	58	14.9	
	Neutral	148	37.9	
You are at risk of acquiring hepatitis	Agree	69	17.7	
	Disagree	179	45.9	
	Neutral	142	36.4	
Self-hygiene is important to prevent hepatitis	Agree	291	74.6	
	Disagree	35	9	
	Neutral	64	16.4	
Drinking complicates hepatitis	Agree	193	49.5	
	Disagree	80	20.5	
	Neutral	117	30	
The use of traditional treatments is better for hepatitis	Agree	211	54.1	
infection as medication than the tablets prescribed by	Disagree	92	23.6	
physicians or nurses	Neutral	87	22.3	
Sexual intercourse transmits hepatitis infection	Agree	113	29	
·	Disagree	99	25.4	
	Neutral	178	45.6	
Contaminated food transmits hepatitis	Agree	125	32.1	
	Disagree	99	25.4	
	Neutral	166	42.6	
Relations such as eating together can transmit hepatiti	s Agree	88	22.6	
infection	Disagree	182	46.7	
	Neutral	120	30.8	

Table 3 Frequency of respondent's attitude towards hepatitis infection, among adults in Gondar town, northwest Ethiopia, 2021

level of knowledge about hepatitis infection. This lack of knowledge may influence the respondents' attitudes toward hepatitis infection and thus their practices to prevent and control the disease.

The current study found that only 14.1% of study participants had a good knowledge regarding hepatitis infection, a result that was lower than that of the community-based study conducted in Pakistan (24.6% [26]. This discrepancy could be due to differences in socio-demographic factors such as education level. In this study, only 24.6% of the study participants had an intermediate (secondary) level of education, which is lower than the previous one (26.7%). In this study, the majority of respondents (80%) had heard of the hepatitis infection via different media's, which is consistent with a study conducted in Haramaya, Ethiopia (81.1%) [24]. However, the figure is lower than the previous study conducted in Sudan [8].

In this study, in comparison to the knowledge level; attitude, and practice score towards hepatitis infection was poor. Less than one-third (11.8%) of the participants had a positive attitude and good practice towards

Table 4 Preventive practices of adults towards hepatitis infection in Gondar town, northwest Ethiopia, 2021

Questions/statements	Response	Frequency (n)	Percent (%)
Do you ask for/use a new blade for shaving/haircutting?	Yes	265	67.9
	No	125	32.1
Do you go to the health center after an injury with a sharp object?	Yes	202	51.8
	No	188	48.2
Do you ask for sterilized equipment for ear/nose piercing?	Yes	230	59
	No	86	22.1
	l don't know	74	19
Do you avoid body contact with hepatitis-infected patients?	Yes	145	37.2
	No	182	46.7
	l don't know	63	16.2
Do you keep your hygiene?	Yes	364	93.3
	No	26	6.7
Have you ever got hepatitis?	Yes	99	25.4
	No	291	74.6
If "yes" to the question above, what did you do after?	I went to a health center	46	11.8
	l treated myself	12	3.1
	I went to a traditional healer	86	22.1
	l did nothing	6	1.5
	Other	9	2.3
Have you been tested your blood for hepatitis?	Yes	85	21.8
	No	305	78.2
By which practices hepatitis infection is controlled?	By proper treatment	157	40.3
	By keeping personal hygiene	102	26.2
	Avoiding contact with affected persons	55	14.1
	Others	21	5.4
	l don't know	55	14.1
How often do you visit a health facility to test your blood?	Weekly	12	3.1
	Monthly	16	4.1
	Annually	35	9
	Occasionally	167	42.8
	Never	160	41
If you find that you have symptoms, what will you do?	I will go to a healthcare institution	178	45.6
	I will treat myself	24	62
	I will go to a traditional healer	172	44.1
	l don't know	15	3.8
Have you got yourself vaccinated for any of the hepatitis infection types?	Yes	59	15.1
	No	331	84.9

Table 5	Factors associated	with knowledge abc	out hepatitis infectio	n among adults in G	ondar town, northwes	t Ethiopia, 2021
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Characteristics	Category	Knowledge		COR (95% CI)	P-value	AOR (95% CI)	P-value
		Good; N (%)	Poor; N (%)	_			
Sex	Female	17 (10.9)	139 (89.1)	1	-	1	-
	Male	38 (16.2)	196 (83.8)	0.630 (0.013–1.873)	0.059	0.421 (0.032-1.021)	0.680
Marital status	Married	29 (17.4)	138 (82.6)	1	-	1	-
	Divorced	2 (6.9)	27 (93.1)	2.836 (0.559–3.241)	0.290	1.955 (0.475–2.987)	0.366
	Single	23 (12.4)	163 (87.6)	1.489 (0.371–2.156)	0.097	1.096 (0.089–1.769)	0.076
	Other	1 (12.5)	7 (87.5)	1.4710 (0.051–1.219)	0.071	1.592 (0.480–2.679)	0.068
Vaccination status	Not vaccinated	43 (13)	288 (87)	1	-	1	-
	Vaccinated	12 (20.3)	47 (79.7)	0.585 (0.287–1.190)	0.139	0.520 (0.243–1.113)	0.092

Table 6	Factors associated with participants attitude about hepatitis infection among adults in Gondar town, no	rthwest Ethiopia,
2021		

Variables	Category	Attitude		COR (95%CI)	P-value	AOR (95%CI)	P-
		Positive; N (%)	Negative; N (%)	-			value
Age category	18–25	21 (14.8)	121 (85.2)	1	-	1	-
	26–40	19 (9.2)	188 (90.8)	1.717 (0.764–3.568)	0.471	0.993 (0.690–1.797)	0.203
	>40	6 (15)	34 (85)	0.983 (0.590–2.238)	0.670	1.008 (0.297–2.984)	0.920
Previous his-	No	30 (10.2)	262 (89.8)	1	-	1	-
tory of hepatitis infection	Yes	16 (16.5)	81 (83.5)	0.577 (0.300-1.113)	0.101	0.620 (0.316–1.220)	0.166
Vaccination status	Not Vaccinated	34 (10.3)	297 (89.7)	1	-	1	
	Vaccinated	12 (20.3)	47 (79.7)	0.448 (0.217-0.927)	0.030	2.135 (1.006–4.532)	0.048*

Table 7 Factors associated with practices of adults towards hepatitis infection in Gondar town, northwest Ethiopia, 2021

Characteristics	Category	Practice		COR (95% CI)	P-value	AOR (95% CI)	P-value
		Good; N (%)	Poor; N (%)				
Age category	18–25	13 (9.2)	129 (90.7)	1	-	1	-
	26-41	32 (15.5)	175 (84.5)	0.551 (0.210–1.856)	0.315	0.601 (0.196–1.290)	0.133
	>41	1 (2.5)	39 (97.5)	3.930 (1.071–7.952)	0.643	3.219 (1.231-8.095)	0.665
Previous history of hepatitis infection	No	12 (4.1)	281 (95.9)	1	-	1	-
	Yes	34 (35.1)	63 (64.9)	0.079 (0.064–2.879)	0.045	0.069 (0.058–1.975)	0.053
Vaccination status	Not Vaccinated	25 (7.6)	306 (92.4)	1	-	1	-
	Vaccinated	21 (35.6)	38 (64.4)	0.148 (0.076–0.289)	< 0.001	7.845 (0.061–0.324)	< 0.001*
Marital status	Single	16 (8.6)	170 (91.4)	1	-	1	-
	Divorced	4 (13.8)	25 (86.2)	0.588 (0.310-3.125)	0.786	0.473 (0.089–2.438)	0.591
	Married	25 (15)	142 (85)	0.534 (0.896–5.864)	0.437	1.479 (0.541–2.990)	0.069
	Other	1 (12.5)	7 (87.5	0.658 (0.471-3.687)	0.793	1.096 (0.265–2.961)	0.395

hepatitis infection. The finding was much lower than studies conducted in Ethiopia [27, 28], Egypt [29], and Malaysia [30]. This may be due to sociodemographic factors such as educational status because, in the previous studies, the study populations were students and healthcare professionals which enabled them to be more aware of the disease.

In the current study, the majority (74.9%) of the study participants had a positive attitude toward the curability of hepatitis infection. This might be explained by more than half of the participants responded that hepatitis infection can be treated with traditional (herbal) medicine. This is consistent with a study conducted in Ghana where the majority of participants had a positive attitude towards the curability of hepatitis infection [31].

In the current study, more than half (54.1%) of the respondents agreed that herbs (traditional medicine) are better than drugs prescribed in health facilities, which is higher than a finding in a study conducted in El-Minia governorate, Egypt (16.2%) [32]. This discrepancy might be due to factors such as educational status because, in this study, only 24.6% of the participants had completed secondary school which is lower than the previous one (27.9%). This might be due to lower knowledge and negative attitudes of the study participants of the recent study towards drugs administered in health facilities. This may

also arise from prior practices of the participants that in the previous study, the majority of the study participants (75.2%) had been tested their blood (only 21.8% in the recent study) which exposed them to health facilities more frequently and enables them to build a positive attitude towards treatments given there.

In the current study, 21.8% of the participants have been tested their blood for hepatitis infection types. However, this finding was lower as compared to another study conducted in Woldia, Ethiopia [33]. This may be due to factors such as educational status. In this study, only 24.6% of participants completed secondary school whereas, in the previous studies, all of the participants had completed secondary school.

In this study, only 15.1% of study participants were vaccinated for hepatitis infection types for which vaccine is given. This finding was lower than the study conducted in Cameroon (26.05%) [34]. This might be due to factors such as the poor knowledge status of respondents in the recent study (14.1%) compared to the previous one (83%), so, their poor knowledge affects their practice towards the disease. The finding in the recent study is also lower than the study conducted in Nepal (60.8%) [10]. This may be attributable to the educational level of the participants where only 48.7% of participants in the recent study completed college/university while all of the participants in the previous study had completed college/university. However, the recent finding was higher than a study conducted in Zimbabwe where only 6% of the participants were vaccinated for hepatitis infection [35].

In this study, vaccination status was significantly associated with the good attitude of participants (AOR, with 95% CI: 2.135 (1.006-4.532) towards hepatitis infection. This is consistent with studies conducted in Bangladesh [36], and Gamo Zone, Ethiopia [37]. Moreover, there was a statistically significant association between vaccination status and safer practices for the prevention and treatment of hepatitis infection (AOR, with a 95% CI: 7.845 (0.061-0.324). This is supported by a study conducted in Malaysia [30], where respondents vaccinated against hepatitis infection for which vaccination is given had safer practices as compared to those that have not been vaccinated. This can be explained by the fact that those who have received vaccination may be more conscious and health-wise and be committed to taking actions to safeguard their health. This finding is also supported by other studies conducted in Nepal [10], and India [38] where respondents who were vaccinated showed high practice levels.

The current study could provide a comprehensive understanding of the community's knowledge of hepatitis infection, their attitudes toward prevention and treatment, and their actual practices to lower the risk of transmission. This comprehensive approach allows researchers to identify gaps and erroneous understandings in the population. The limitation of our study was the omission of perception domains. However, our decision not to include a perception assessment was based on the understanding that perceptions are inherently subjective and can vary significantly among individuals within the community. Given the diverse beliefs and traditional practices related to the hepatitis virus in the study population, we felt that attempting to measure perceptions would not accurately capture the complexity of these beliefs and could bias the results of the study. In addition, we recognize the importance of perception assessments in public health research and will consider including this aspect in future studies to gain a more comprehensive understanding of community perceptions of the hepatitis virus.

Conclusions and recommendations In this study, the majority of the participants have poor knowledge, attitudes, and practices toward hepatitis infection. Implementing community-based educational programs in collaboration with local healthcare providers, public health campaigns tailored to the local context, community outreach, and increased availability of preventive resources are necessary to address these gaps. In addition, further research is crucial to assess if the interven-

tions put in place are achieving the intended results and to make any needed modifications. Our study also found that having vaccination for hepatitis infection was significantly associated with a positive attitude and good practice levels among the study participants.

Abbreviations

- AOR Adjusted Odds Ratio COR Crud Odds Ratio
- HAV Hepatitis A Virus
- HBV Hepatitis B Virus
- HCC Hepatocellular Carcinoma's
- HCV Hepatitis C Virus
- HDV Hepatitis D Virus
- HEV Hepatitis E Virus
- KAP Knowledge Attitude and Practice
- SPSS Statistical Package for Social Science
- WHO World Health Organization

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Author contributions

A.A.A. played a key role in conceptualizing ideas, developing the proposal, overseeing the data collection, data analysis, and interpretation, manuscript writing, and communicating its contents. M.B. actively participated in idea conception, data analysis, and manuscript writing. B.B.T, D.M.B, E.C, N.C, M.N, G.G, M.T. contributed to idea conception, data cleaning, and manuscript writing. All the authors have approved the submitted version and agreed to be accountable to ensure that questions related to the accuracy or integrity of any part of the work.

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Data availability

No datasets were generated or analysed during the current study.

Declarations

Ethical approval and consent to participate

The study protocol was evaluated and approved by the ethical review committee of the School of Biomedical and Laboratory Sciences, University of Gondar. All potential participants who agreed to participate provided written consent to continue with the interviews and self-administered questionnaires. The confidentiality of information obtained was kept, and respondents' names were not recorded.

Consent for publication

Not applicable.

Competing interests

The authors declare no competing interests.

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