WWW.IJRPR.COM

International Journal of Research Publication and Reviews

Journal homepage: www.ijrpr.com ISSN 2582-7421

Knowledge Gaps and Misconceptions Related to Hepatitis C Viral (HCV) Infection among Nigerians.

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DOI : https://doi.org/10.55248/gengpi.6.0125.0520

ABSTRACT

The study investigates the knowledge gaps and misconceptions about the Hepatitis C virus (HCV) among Nigerians, revealing significant deficiencies in awareness and understanding. Conducted between June and September 2023 through an electronic survey, the research gathered data from 3,589 participants. Descriptive statistical analysis was used to analyze sociodemographic data, normality was assessed using the Shapiro-Wilk test, questionnaire reliability was evaluated with Cronbach's α, and the association between knowledge score and the dichotomous variable was assessed using point-biserial correction. Findings indicate that although 78.4% of respondents were aware of HCV, only 54.6% correctly identified it as a viral infection. Further, recognition of key symptoms was low, with jaundice known by 47.4% and nausea/vomiting by 43.3%. Alarmingly, only 15.5% knew that no HCV vaccine existed, underscoring substantial misinformation about prevention and risk management. Most participants were educated young adults (ages 21–30), primarily residing in urban areas, with Benue State represented significantly. Sociodemographic factors, including travel and health-related educational backgrounds, correlated positively with knowledge scores, whereas habits like smoking and alcohol intake correlated negatively. The study emphasizes the necessity for targeted health campaigns focusing on HCV transmission, symptoms, and preventive measures. Additionally, reducing HCV-related stigma and dispelling myths—such as the need for patient isolation and the misconception that traditional medicine can cure HCV—is crucial. Recommendations include increasing public education, enhancing screening access, and involving cultural leaders in health initiatives. Addressing these issues through comprehensive educational efforts is essential to reduce HCV's prevalence and impact in Nigeria.

KEYWORDS: Hepatitis C Virus, Infection, Knowledge, Misconceptions, Nigeria, Belief, Public health

INTRODUCTION

Hepatitis C virus (HCV) is a virus that causes inflammation of the liver cells (hepatocytes) which can cause both acute and chronic hepatitis, there are an estimated 210 million people globally living with HCV infection with 50 million persons living with chronic hepatitis C viral infection, and about 1 million new cases of HCV infection annually (EU/EEA, 2024; WHO, 2024). The World Health Organization (W.H.O) in 2022 estimated about 242,000 hepatitis C-related deaths, mostly caused by cirrhosis and primary liver cancer (hepatocellular carcinoma) (WHO, 2024) . Direct-acting antivirals (DAAs) have massively improved the treatment landscape of hepatitis C infection with a reported treatment efficiency of about 95% (Ghany & Morgan, 2020; WHO, 2024). There is currently no vaccine that can effectively protect against HCV and known limited access to the diagnosis and treatment worldwide, particularly in low-income countries (WHO, 2024)

The reported rates are high (>3.5% population infected) in Central and East Asia, North Africa, and the Middle East, they are intermediate (1.5–3.5%) in South and Southeast Asia, sub-Saharan Africa, Andean, Central and Southern Latin America, Caribbean, Oceania, Australasia and Central, Eastern and Western Europe; and they are low (<1.5%) in Asia-Pacific, Tropical Latin America and North America (Mohd Hanafiah et al., 2013; WHO, 2024), In Nigeria, there is an increase in the prevalence of hepatitis C virus infection, ranging from 2% in Makurdi to 4.7-5% in Ilorin, to 5.3-6.6% reported in Enugu, to 11% in Ibadan and 20% in Benin (Chikwendu et al., 2023; Ejiofor et al., n.d.; Malu et al., 2020).

There is a Contrasting report on assessed knowledge, belief, attitude, and practice on prevention, screening status, transmission, treatment, and vaccination status among different populations and regions on HCV, with most studies reporting a low knowledge level, especially in Africa and Asia (Choi et al., 2020; Egbe et al., 2023; Liu et al., 2023; Lo Moro et al., 2023; Mathatha et al., 2018; Warssamo & Belay, 2023). Preventive knowledge,

early diagnosis, and availability of efficient treatment are essential to the effective prevention and control of this infection, WHO recommendation in areas with high prevalence in the general population (>2%) is availing adequate access to screening, prevention, and treatment facilities, especially among high-risk groups (HIV patients, men who have sex with men, sex workers, injecting drug users, etc.) (WHO, 2021, 2024; WHO African Region, 2022). There is a knowledge gap on HCV because most studies are done within the scope of healthcare workers with little or none focusing on the general population in Nigeria. This Study is targeted at accessing the knowledge gaps, and misconceptions about the Hepatitis C virus among Nigerians.

MATERIALS AND METHODS

Study design and settings

An electronic-based cross-sectional survey was used to recruit eligible participants in Nigeria. The questionnaire for this study was designed using Google Forms a Web-based survey software. Social media was used to reach out to participants from June 2023 to September 2023, and data for the study was collected. Consent was provided by all eligible participants before participation in the study which involved answering the question in the questionnaire anonymously to ensure adherence to confidentiality.

Survey development

The questionnaire was modified based on similar surveys to suit the peculiarities of the current survey and the general principles of good survey design (Agoh et al., 2024; Othman et al., 2022). To make sure the questionnaire was comprehensive and clear, it was validated by experienced researchers (n = 3) Biomedical Scientist, Pharmacist, and Lawyer. The survey could be completed on an average of 20 minutes and it had close-ended questions.

The questionnaire consisted of 6 sections. The first section explained in detail the aim of the study, informed consent to the study was in section two, the third, fourth, and fifth sections were designed to collect socio-demographic characteristics, evaluate participants' knowledge of HCV infection, and practice related to HCV infection and vaccination respectively, furthermore assessment of participants' beliefs about HCV and individuals infected with the virus.

The closed-ended questions in the questionnaire were also consisting of a Likert scale (Strongly agree, Agree, Undecided, Disagree, Strongly Disagree) and (Yes/No) assessments.

Study sample

The Survey was attended to by 3,589 participants from all over Nigeria. The Inclusion criteria included Nigerians aged 18 years and above, and residents in Nigeria, who consented to take part in the study. The Exclusion criteria included participants who are not Nigerians, Nigerian residents outside Nigeria, participants who didn't give consent, and visitors from other countries.

Statistical analysis

Data were exported from Google Forms to Microsoft Excel and analyzed using the Statistical Package for the Social Sciences (SPSS), Version 25.0, IBM Chicago, US. For assessment of normality, the Shapiro-Wilk test was used. Descriptive statistical analysis was used to analyze the sociodemographic data: medians and interquartile ranges (IQR) for continuous variables. Frequencies and percentages were used to demonstrate Categorical variables. Cronbach's α was used to evaluate the reliability of the questionnaire, i.e., that the scales constructed fit their purpose, with values ≥ 0.7 indicating acceptable internal consistency. Knowledge score is a number given to each individual and calculated by giving 1 for each correct answer and 0 for each incorrect answer. The scale measured knowledge from a maximum of 20 to a minimum of Zero. Scores < 9 were considered poor, >9 as adequate knowledge of Hepatitis C (Othman et al., 2022; ul Haq et al., 2012). A point-biserial correlation was used to determine the association between the Score of knowledge and the variables dichotomy present in the Pearson correlation and P-values.

Ethics statement

Ethical clearance wasn't required for this study.

RESULTS

Socio-Demographic Characteristics of Participants

A total of 3,589 participants were included in this study. The demographic characteristics of the participants are shown in Table 1. The participants comprised 2,945 (67.0%) males and 1,184 (33.0%) females. The majority of the participants identified as Christian (3,293, 91.8%), followed by Muslim (259, 7.2%) and Traditionalist (37, 1.0%). The age distribution was 148 (4.1%) between 18 and 20 years, 2,997 (83.5%) between 21 and 30 years, and 444 (12.4%) between 31 and 40 years, with no participants above these age ranges. Of the 36 states in Nigeria and the Federal Capital Territory (FCT), 12 states and the FCT were represented. Benue state had the highest number of participants (2,109, 58.8%), followed by FCT (444, 12.4%), Lagos (185, 5.2%), and others as listed in Table 1. In terms of education, most participants held a bachelor's degree (n = 2,516, 70.1%), and 3,330 (92.8%) were non-smokers. Among participants, 2,109 (58.8%) reported abstaining from alcohol, while students comprised 1,369 (38.1%) of the total sample.

Table 1: Sociodemographic Characteristics of Participants (n = 3,589)

Variable	n (%)
Age (years)	
18-20	148 (4.1)
21-30	2997 (83.5)
31-40	444 (12.4)
Gender	
Female	1184 (33.0)
Male	2945 (67.0)
Religion	
Christianity	3293 (91.8)
Islam	259 (7.2)
Traditionalist	37 (1.0)
State of Residence	
Bauchi	148 (4.1)
Benue	2109 (58.8)
Borno	37 (1.0)
Delta	111 (3.1)
Enugu	37 (1.0)
FCT	444 (12.4)
Gombe	148 (4.1)
Kano	37 (1.0)
Kogi	74 (2.1)
Lagos	185 (5.2)
Nassarawa	148 (4.1)
Ondo	37 (1.0)
Plateau	74 (2.1)
Settlement	
Rural	259 (7.2)
Semi-rural	37 (1.0)
Semi-urban	962 (26.8)
Urban	2331 (64.9)
Travel History	

Variable	n (%)
Asia	74 (2.1)
Europe	37 (1.0)
Not travelled out of Nigeria	2886 (80.4)
Other African countries	592 (16.5)
Educational level	
Bachelor's Degree	2516 (70.1)
Diploma (ND/HND)	296 (8.2)
Post graduate	481 (13.4)
Secondary education	296 (8.2)
Educational practice	
Health related major	1665 (46.4)
Others	1924 (53.6)
Occupation	
Employed	629 (17.5)
Self-employed	999 (27.8)
Student	1369 (38.1)
Unemployed	592 (16.5)
Marital status	
Married	296 (8.2)
Single	3293 (91.8)
Smoking status	
Ex-smoker	111 (3.1)
Non-smoker	3330 (92.8)
Smoker	148 (4.1)
Alcoholic status	
I don't drink	2109 (58.8)
I drink little	1369 (38.1)
I drink much	111 (3.1)

Table 1 presents the sociodemographic characteristics of the participants. The majority were between 21-30 years old (83.5%) and male (67%). Christianity was the predominant religion, with 91.8% of participants identifying as Christian. Most participants resided in Benue State (58.8%) and lived in urban areas (64.9%). In terms of education, 70.1% held a bachelor's degree, and 38.1% were students. Only 19.6% had traveled outside Nigeria, with the majority having no travel history abroad.

Table 2a: Participants' Knowledge of HCV (n = 3,589)

Question	Yes n (%)	No n (%)
Have you ever heard of hepatitis C?	2812 (78.4)	777 (21.6)

Table 2b: Participants' Knowledge of HCV (n = 3,589)

Question	Yes (%)	No (%)	I don't know (%)
Do you know anyone with hepatitis C?	481 (13.4)	2849 (79.4)	259 (7.2)

Tables 2a and 2b summarize participants' knowledge of hepatitis C. Most participants (78.4%) had heard of hepatitis C, but only 13.4% knew someone infected with the virus. This indicates a general awareness of hepatitis C, but personal exposure to the infection remains limited. A small proportion of participants (7.2%) were unsure whether they knew anyone with hepatitis C, further reflecting a gap in specific awareness or knowledge of the infection.

Table 3: Source of Information about HCV (n = 3,589)

Source	n (%)
School/University	1924 (53.6)
Books	962 (26.8)
Healthcare workers	1480 (41.2)
Family/friends/neighborhood	1221 (34.0)
Newspaper/Magazines	740 (20.6)
TV/internet/social media	1184 (33.0)
Industrial training	37 (1.0)

Table 3 highlights the sources from which participants obtained information about hepatitis C. School and university education were the most common sources (53.6%), followed by healthcare workers (41.2%) and family/friends (34.0%). Media, such as TV and internet/social media, also played a significant role, providing information to 33% of participants. However, traditional print media (newspapers and magazines) had less influence, accounting for only 20.6% of the sources.

Table 4: Knowledge of HCV Symptoms and Transmission

Statement	Correct Answer	
	N	%
Hepatitis C is caused by?	1961	54.6
Does Hepatitis C affect the liver?	2331	64.9
Can hepatitis C affect any age group?	2257	62.9
Are all the following among the common symptoms of hepatitis C?		
• **Cold and flu (fever, running nose, cough)**	1184	33.0
• **Jaundice (the skin, whites of the eyes and mucous membranes turn yellow)**	1702	47.4
• **Nausea, vomiting and loss of appetite**	1554	43.3
Hepatitis C can be transmitted by		
• **un-sterilized syringes, needles and surgical instruments**	1813	50.5
• **Contaminated blood and blood products**	1739	48.3

• **Contaminated blades of the barber/ear and nose piercing**	1295	36.1
• **Unsafe sexual intercourse**	1406	39. 3
• **Transmitted from mother to foetus**	1184	33.0
• **Contaminated water/food prepared by person suffering with these infections**	2886	80.3
Is Hepatitis C curable?	1702	47.4
Can hepatitis C be self-cured by body without medical treatment?	555	15.5
Is there a specific diet required for the treatment of hepatitis C?	1406	39.2
People who are infected with hepatitis C put others at risk of getting infected.	518	14.4
Does intake of alcohol increase the development of hepatitis C?	1739	48.5
Patients with Hepatitis C infection should be restrained from sexual contact	888	24.7
Which of the following is considered a complication of hepatitis C?		
• **Affect liver function**	2035	56.7
• **Liver cancer**	1295	36.1
• **Liver cirrhosis**	1591	44.3
• **Death**	1480	41. 3
Does hepatitis C have a vaccine? (Is vaccination available against hepatitis C?)	555	15.5

Table 4 details participants' knowledge of hepatitis C symptoms and transmission routes. The most recognized transmission mode was through contaminated water or food (80.3%), while 47.4% identified jaundice as a symptom. However, less than half of the participants were aware of the other common symptoms and transmission routes, such as unsterilized syringes (50.5%) and unsafe sexual practices (39.3%). Only 15.5% knew that hepatitis C does not yet have a vaccine, indicating a significant gap in knowledge regarding prevention.

Table 5: Participant's belief Regarding HCV (n = 3,589)

Statement	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
Health care professionals can treat people with hepatitis C virus without taking more precautions than other patients	111(3.1)	518(14.4)	629(17.5)	1480(41.2)	851(23.7)
All patients should be tested for Hepatitis C virus before receiving healthcare	1221(34.0)	1517(42.3)	518(14.4)	259(7.2)	74(2.1)
Hepatitis C patients should be isolated	370(10.3)	851(23.7)	962(26.8)	1073(29.9)	333(9.3)
Hepatitis C patients should be hospitalized for full duration of treatment	370(10.3)	1147(32.0)	1110(30.9)	666(18.6)	296(8.2)
You should avoid meeting with hepatitis B patients	185(5.2)	555(15.5)	1073(29.9)	1258(35.1)	518(14.4)
I believe hepatitis C can be cured using local medicine	148(4.1)	370(10.3)	1443(40.2)	925(25.8)	703(19.6)
I believe hepatitis C is a spiritual attack	37(1.0)	148(4.1)	629(17.5)	1036(28.9)	1739(48.5)

Table 5 summarizes participants' beliefs regarding hepatitis C. The majority disagreed that healthcare professionals could treat HCV patients without extra precautions, while most supported the idea of testing all patients for HCV before healthcare. Opinions on isolating and hospitalizing HCV patients were divided, with significant disagreement on the need for isolation. There was skepticism regarding local medicine as a cure, and most participants rejected the belief that HCV is a spiritual attack. Overall, the table highlights a mixture of informed and misinformed beliefs about HCV among the participants.

Table 6: Pearson Correlation of Sociodemographic Factors with Hepatitis C Knowledge

Parameter	Pearson Correlation	P-value
Age: <21 vs >21	0.079	0.440
Gender: Female vs Male	0.141	0.167
Religion: Christianity vs Non-Christians	0.032	0.756
Settlement: Urban vs Rural	-0.125	0.223
Travel History: Traveled outside Nigeria vs not	**0.221***	**0.030**
Educational Level: University Degree vs Non-degree	0.052	0.612
Educational Practice: Health-related vs Other	**-0.393****	**0.000**
Occupation: Employed vs Unemployed	-0.046	0.657
Marital Status: Single vs Married	-0.051	0.622
Smoking Status: Ever smoked vs Never smoked	**-0.250***	**0.013**
Alcohol Status: No alcohol vs Alcohol intake	0.187	0.066

Table 6 shows the Pearson correlation coefficients and p-values for the relationship between participants' sociodemographic factors and their knowledge of Hepatitis C. Travel history and smoking status were significantly correlated with knowledge of Hepatitis C. Having a health-related major also showed a strong inverse correlation with knowledge scores. Other factors such as age, gender, and religion did not demonstrate significant correlations. Asterisks (*) denote statistically significant correlations at the 0.05 level.

Discussion, Recommendations, and Conclusion

Socio-demographic Characteristics of Participants

This study involved 3,589 participants, predominantly male (67%) with a minority of female participants (33%). Most participants identified as Christians (91.8%), followed by Muslims (7.2%) and traditionalists (1.0%). The age distribution showed that the majority (83.5%) were between 21 and 30 years old, with smaller groups aged 18–20 (4.1%) and 31–40 (12.4%)

The large proportion of participants in the 21-30 age range suggests that young adults are more accessible for public health research, which is consistent with other studies indicating that this age group is often more engaged in health surveys, particularly in higher education contexts (Fenner et al., 2012). This group is also a critical demographic for health interventions, as young adults can serve as change agents for increasing awareness and prevention efforts, particularly for diseases like the Hepatitis C Virus (HCV) that require long-term management. Additionally, the majority of participants lived in urban (64.9%) and semi-urban areas (26.8%) . This urban skew is typical in many Nigerian studies where cities provide better access to healthcare facilities, public health campaigns, and research initiatives (Abdullahi & Gunawardena, 2021) . However, this leaves a knowledge gap in rural areas where such resources are less accessible, highlighting the need for more rural-focused interventions in future HCV campaigns.

Knowledge About Hepatitis C

The study found that 78.4% of participants had heard of HCV, which indicates a moderate level of general awareness. However, there were significant gaps in specific knowledge, as only 54.6% correctly identified that HCV is caused by a virus, and less than half recognized key symptoms such as jaundice (47.4%) and nausea/vomiting (43.3%). This aligns with previous findings where awareness of HCV is relatively high, but specific knowledge about symptoms and transmission is lacking (Crutzen & Göritz, 2012; Lambers et al., 2014) . Knowledge of HCV transmission routes was also incomplete. While 50.5% of participants were aware of the risk of transmission via unsterilized syringes, and 48.3% knew about transmission through contaminated blood, fewer participants (39.3%) recognized the risk of unsafe sexual intercourse. These findings suggest that while the population may be aware of general health threats, more effort is needed to educate people on the detailed mechanisms of HCV transmission. Public health initiatives should focus on improving this knowledge to reduce risky behaviors and promote safe practices, particularly in regions with high HCV prevalence (Knick et al., 2019).

Moreover, the fact that only 15.5% of participants knew that there was no vaccine for HCV indicates a critical gap in prevention knowledge. This is an important area for education, as misconceptions about the existence of a vaccine may result in individuals neglecting other preventive measures such as avoiding shared needles or ensuring safe blood transfusions.

Practices and Attitudes Regarding Hepatitis C

Despite some level of awareness, practices related to HCV prevention and treatment were inadequate. Only 34% of participants strongly agreed that all patients should be tested for HCV before receiving healthcare, while 14.4% were neutral on the issue. This hesitancy reflects a lack of clarity around the importance of early diagnosis in managing and preventing the spread of HCV. Early detection through widespread testing has been shown to improve treatment outcomes and reduce transmission, particularly in regions where the disease is endemic (Spearman et al., 2017).

Another concerning finding was the belief in isolating HCV patients. While isolation may not be required for most HCV cases, 34% of participants supported the idea of isolating infected individuals during treatment. This misconception could contribute to stigma, which has been documented as a barrier to seeking care for infectious diseases in many African countries (Aspinall et al., 2015) . Health education efforts need to clarify that HCV, unlike airborne diseases, does not require isolation but rather careful management and regular medical follow-up.

Additionally, 14.4% of participants expressed belief in local or traditional medicine as a cure for HCV. This underscores the persistence of cultural beliefs in alternative treatments for chronic diseases like HCV and emphasizes the need for culturally sensitive health campaigns that address these beliefs and promote scientifically backed treatments.

Correlation Between Demographic Variables and Knowledge Scores

The study found a significant positive correlation between travel history and HCV knowledge scores ($P = 0.030$). This suggests that individuals who have traveled outside Nigeria may have been exposed to better healthcare systems or public health campaigns, increasing their understanding of global health issues, including HCV. Similarly, participants with health-related educational backgrounds demonstrated a higher level of knowledge ($P < 0.001$), which aligns with the idea that formal health education significantly improves disease literacy (Abdullahi & Gunawardena, 2021).

Conversely, smoking and alcohol consumption were negatively correlated with knowledge scores ($P = 0.013$). This relationship could be due to lower health-seeking behaviors among individuals with these habits, as other studies have shown that smokers and heavy drinkers are less likely to engage in preventive health measures (Li & Sun, 2022).

Recommendations

Based on the findings, several recommendations can be made to improve HCV awareness and prevention:

1. **Increase Public Health Education**: There is a clear need for education campaigns focusing on specific symptoms, transmission routes, and the lack of an HCV vaccine. These campaigns should target urban and rural populations and utilize healthcare professionals as key sources of information.
2. **Improve Access to Screening and Treatment**: Since a significant proportion of participants had not been tested for HCV, expanding access to free or affordable screening programs, particularly in underserved areas, would be crucial in managing the disease.
3. **Address Stigmatization**: Public health efforts should also aim to reduce stigma around HCV by dispelling myths about the need for isolation and by promoting accurate knowledge about the transmission and management of the virus.
4. **Engage Cultural Leaders**: Considering the belief in traditional medicine as a cure for HCV, health campaigns should collaborate with local and religious leaders to challenge misconceptions while respecting cultural practices.

Conclusion

This study highlights both the awareness and knowledge gaps surrounding HCV among the participants. While there is a moderate level of general awareness, significant misconceptions remain about HCV transmission, symptoms, and prevention methods. Addressing these gaps through targeted public health campaigns, improved healthcare access, and educational interventions will be essential in reducing the prevalence and burden of HCV in Nigeria.

Acknowledgment: The authors wish to acknowledge all participants who agreed to participate in this survey.

Competing interests: The authors are declaring that no competing interests exist

Funding: The authors received no funding for this study.

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