

Investigating Awareness and Knowledge of HCV Infection and Screening Tests by nurses

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Abstract

Background: Hepatitis C Virus (HCV) remains a significant public health issue, affecting millions worldwide with high prevalence rates and substantial mortality. Despite advancements in treatment, gaps in diagnosis, awareness, and prevention hinder progress toward global elimination goals. Assessing public knowledge, attitudes, and practices regarding HCV infection and screening is essential to guide targeted interventions.

Methods: This study was conducted using a web-based questionnaire distributed via social media platforms. The study targeted individuals aged 18 years and older, collecting data on demographics, risk factors, knowledge, attitudes, and behaviors related to HCV. Knowledge was assessed through validated scores, while multivariable regression models identified predictors of outcomes.

Results: A total of 813 participants, predominantly female (75.1%) with a median age of 33 years, were included. The median Disease Knowledge Score was 75%, while the Prevention and Transmission Knowledge Score was 46.2%. Lack of awareness about HCV screening tests was reported by 23.2% of participants. Factors positively associated with higher knowledge scores included higher education, healthcare employment, and seeking HCV-related information. Attitudes toward HCV exposure were generally favorable, with a median Attitude Score of 0. Testing behavior was influenced by urban living, healthcare occupation, and perceived infection risk. Risk-prone practices, such as sharing potentially contaminated items, were observed in 31.8% of participants.

Conclusion: Knowledge gaps and misconceptions about HCV screening persist, highlighting the need for public health strategies that prioritize education and awareness. Tailored interventions targeting at-risk groups and expanding access to HCV-related information could improve prevention, testing, and treatment outcomes, contributing to the WHO's elimination targets.

Introduction

Hepatitis C remains a significant global health challenge, contributing to approximately 71.1 million chronic infections, 1.75 million new cases annually, and more than 340,000 deaths each year (1–3). Across the European Union (EU), an estimated 3.9 million individuals are affected by chronic hepatitis C virus (HCV), a prevalence notably higher than that of human immunodeficiency virus (HIV) by a factor of seven (4, 5). Annually, 300,000 new infections and 64,000 fatalities related to HCV are recorded in the region (6). Additionally, the actual impact of

HCV on morbidity and mortality may be underestimated due to its often asymptomatic progression and association with extra-hepatic complications, which can obscure timely diagnosis (7–9).

Without increased efforts in diagnostics and treatment accessibility, HCV is projected to result in 13 million new infections and 1.1 million deaths globally by 2030 (2). This pressing situation, coupled with the advent of Direct-Acting Antivirals (DAAs) in 2011—which have achieved cure rates exceeding 95%—led the World Health Organization (WHO) to adopt the Global Health Sector Strategies (GHSS) for 2016–2021, targeting viral hepatitis elimination by 2030 (10). In response, numerous countries have implemented initiatives aligned with these goals.

One country with a notably high HCV prevalence in Europe has implemented a National Plan for the Prevention of Viral Hepatitis B and C, leveraging the availability of DAAs to treat over 232,000 individuals, the highest figure in Europe (11–13). Despite this progress, diagnostic and treatment engagement rates are anticipated to decline between 2023 and 2025, alongside a rise in undiagnosed HCV cases, which is already significant (14). In 2019, it was estimated that 280,000 individuals in this country were living with undetected or untreated HCV infection (15). Without robust screening initiatives to identify and treat all infected individuals, achieving the WHO’s elimination targets may be unattainable (16, 17).

To address this, in 2021, national health authorities introduced a program offering free HCV screening for high-risk groups, including people who inject drugs, incarcerated individuals, and those born between 1969 and 1989. The program utilized serological antibody tests and rapid diagnostic tools such as capillary tests and remained in an experimental phase until the end of 2021 (18, 19). However, alongside screening measures, it is equally important to focus on increasing public awareness about the disease, risk factors, prevention strategies, early diagnosis, and treatment options (20).

Given this backdrop, it is crucial to assess the population’s awareness and understanding of HCV, its prevention, and available screening programs. Identifying gaps in knowledge can support the refinement of strategies aimed at disease elimination. This study, conducted prior to the widespread implementation of screening and awareness campaigns, seeks to evaluate public knowledge of HCV infection, including its clinical characteristics, prevention, transmission, and treatment. Additionally, it examines awareness of the screening test, behaviors related to testing, and attitudes towards the disease. The research also aims to identify factors associated with these variables to inform targeted interventions.

Methods

This study was conducted over a one-month period utilizing a questionnaire to gather data from the general population. Eligibility criteria included participants aged 18 years or older with fluency in the local language. The research adhered to the principles outlined in the Declaration of Helsinki, and ethical approval was granted by an academic Bioethics Committee. Data collection was facilitated through the Computer-Assisted Web Interview (CAWI) technique, with the questionnaire link disseminated via social media platforms (e.g., Facebook and Twitter) through official and personal researcher profiles, resulting in a convenience sample. Participants accessed the questionnaire through the LimeSurvey platform (<https://www.limesurvey.org/>). Before proceeding, informed consent and privacy terms were explicitly required. Participation was entirely voluntary, and responses were kept anonymous.

The Questionnaire

The questionnaire, designed by the research team and informed by prior studies, was divided into four sections.

1. Demographics and Risk Factors:

This section captured demographic data such as age, gender, education, occupation, and living environment. Participants’ residency was classified based on urban or non-urban contexts, defining urban areas as those with populations of at least 50,000 residents (27). Specific queries included family health history, previous testing for HCV, and individual risk factors like blood transfusion history, incarceration, injection drug use, and sexual protection habits (15).

2. Knowledge Assessment:

Two key knowledge measures were developed as primary outcomes: the *Disease Knowledge Score*, evaluating understanding of clinical features, symptoms, and treatment (12 items), and the *Prevention and Transmission Knowledge Score*, assessing awareness of transmission routes and preventive behaviors (13 items) (6, 21, 22, 28–30). True/false statements were scored, with higher scores indicating greater knowledge. Participants were also asked about awareness of HCV screening tests and their definition, with lack of awareness as a primary outcome.

3. Attitudes Toward HCV:

The *Attitude Score* (a secondary outcome) comprised five items measuring participants’ reactions to potential exposure to an HCV-positive individual. Incorrect responses were scored to generate a range from

0 to 5, where higher scores reflected less favorable attitudes. Additional questions explored willingness to undergo HCV testing, perceived personal risk, and concerns about the disease.

4. Practices and Exposure Risk:

This section examined behaviors associated with HCV transmission, including sharing potentially contaminated personal items (e.g., razors, nail clippers), blood donation history, and engagement in procedures like tattoos and piercings, with timeframes anchored to key regulatory milestones for safety standards (24, 31). Participation in educational programs about HCV or other bloodborne infections was assessed, alongside preferred sources of information and interest in learning more. Participants were provided a list of resources and a link to the European Test Finder for further educational value at the questionnaire's conclusion.

Statistical Analysis

Descriptive statistics were applied to summarize the data. Scalar variables were presented as medians with interquartile ranges (IQR), given the non-normal distribution determined by the Shapiro-Wilk test. Associations between outcomes and participant variables were analyzed using Chi-square tests for categorical variables and Mann-Whitney or Kruskal-Wallis tests for continuous variables as appropriate.

Multivariable regression models, adjusted for age and gender, were constructed to identify predictors of outcomes. Linear regression models analyzed scalar outcomes (e.g., Disease Knowledge Score, Prevention and Transmission Knowledge Score, Attitude Score), while logistic regression was used for binary outcomes (e.g., lack of awareness about HCV screening, having undergone HCV testing, and sharing potentially contaminated items). A stepwise forward selection approach was employed, with a univariable p-value threshold of <0.250 (32). Adjusted Odds Ratios (adjOR), adjusted Coefficients (adjCoef), and 95% Confidence Intervals (CI) were reported.

Data analysis was performed using SPSS (version 27) and STATA (v16). Missing data were excluded from analyses, and significance was set at $p < 0.05$.

Results

The study included a total of 813 participants. Females comprised 75.1% of the respondents. The median participant age was 33 years (IQR: 28–45). Nearly half (47.1%) had achieved an educational level of high school or below.

An overwhelming majority (99.4%) were aware of the existence of hepatitis C, and 4.1% had tested positive for the infection. Among the participants, 10.5% reported having at least one family member who tested positive for HCV, and 3.2% disclosed having a partner with HCV. Participation in health education programs on HCV was reported by only 7.3%. Among participants, 16.1% identified as healthcare professionals, while 2.7% worked in higher-risk occupations such as tattoo artistry, piercing, barbering, or aesthetic services. A small percentage (1.5%) reported a history of incarceration. Concerning habits linked to increased HCV risk, 0.6% reported alcohol dependency, and 2.3% had a history of injectable drug use. Regarding risk-prone practices, 6.9% had undergone blood transfusions or organ donations, 52.6% had received aesthetic treatments, 38.2% had tattoos, and 74.8% had piercings. The most common source of information about HCV was scientific literature (69.4%). Brochures were the most preferred method for receiving additional HCV-related information, favored by 47.5% of participants.

The median Disease Knowledge Score was 75% (IQR: 66.7–83.3), while the Prevention and Transmission Knowledge Score had a median of 46.2% (IQR: 38.5–53.8). A significant proportion (23.2%) were unaware of the existence of a screening test for HCV. Of those aware of the test, 34.1% incorrectly believed it measured symptom severity.

The Disease Knowledge Score varied significantly across several factors, including education level, employment in healthcare, previous HCV testing, having a partner or family member with HCV, condom usage habits, accidental injuries, perceived risk of infection, participation in educational programs, and seeking or receiving HCV-related information.

For the Prevention and Transmission Knowledge Score, significant variations were observed among individuals with HCV and those willing to test following contact with HCV-positive individuals.

Awareness of the HCV screening test was notably associated with birthplace, education level, and having family members with HCV.

The median attitude score was 0 (IQR: 0–1). A total of 43.4% reported undergoing an HCV test, and 31.8% acknowledged sharing items that could potentially be contaminated with blood.

No significant associations were observed between the attitude score and sociodemographic variables. However, previous HCV testing was significantly related to factors such as having children, urban residency, education level, and employment in healthcare. Sharing potentially contaminated items was associated with living alone and

healthcare-related occupations. A range of HCV-related variables showed significant associations with the secondary outcomes.

Discussion

This study aimed to evaluate knowledge about hepatitis C virus (HCV), focusing on disease-related and prevention-related knowledge, awareness of HCV screening tests, and factors influencing these outcomes. Additionally, it explored attitudes and behaviors such as undergoing HCV testing and sharing items that could be contaminated, while investigating the potential determinants of these behaviors.

The findings revealed a notable disparity between knowledge of the disease (75% correct responses) and knowledge of prevention and transmission (46% correct responses). While participants showed moderate understanding of the disease itself, the limited awareness regarding transmission and prevention is concerning from a public health perspective. Addressing this gap in knowledge should be a priority for awareness initiatives. Similar disparities have been observed in research on other infections, such as HIV (33).

Analysis of factors influencing the knowledge scores provided several insights. Participants diagnosed with HCV demonstrated better understanding of the disease's characteristics but had limited awareness of transmission methods. This highlights that while healthcare providers effectively convey information about the disease's severity, they may inadequately address the transmission risks. This trend has been observed in studies on sexually transmitted infections (STIs), such as HIV (34). Furthermore, the findings indicated that other variables, such as education, occupation, and prior exposure to potentially risky situations, influenced disease knowledge but had little impact on understanding transmission and prevention. For example, individuals with higher education, healthcare workers, students, and those who actively sought information were more knowledgeable about the disease itself but not necessarily about how it spreads. This inconsistency underscores the need for targeted education even among well-informed populations (35, 36, 40, 41).

Notably, male LGBT+ individuals emerged as a vulnerable group with limited knowledge of the disease, emphasizing the necessity for targeted outreach efforts. Research shows that men who have sex with men experience a disproportionately high burden of viral hepatitis and STIs (43).

In terms of awareness of HCV screening, most participants demonstrated familiarity with the test, even though widespread campaigns promoting it were absent during the study. However, individuals with higher education and those who actively sought information were more likely to be aware of the test, suggesting that awareness is unevenly distributed across different demographics. Interestingly, those with HCV-positive family members were less informed about the test, highlighting a gap in information dissemination to close family circles.

Regarding attitudes and behaviors, participants generally exhibited positive attitudes towards HCV-positive individuals, though a subset displayed unwarranted fear or avoidance. Surprisingly, higher knowledge of transmission was linked to less favorable attitudes, potentially reflecting heightened fear or misconceptions about casual transmission risks. This stigma has been documented among healthcare professionals and other groups (44, 45).

Behavioral outcomes, such as undergoing HCV testing, were associated with heightened risk perception. Participants who perceived a greater personal risk of contracting HCV or who engaged in protective practices (e.g., condom use) were more likely to have been tested. This aligns with studies showing that individuals who perceive lower risks tend to deprioritize health monitoring (46–48). Urban residents and those in occupations with routine screening protocols (e.g., healthcare workers, blood donors) were more likely to have undergone testing, likely due to better access to healthcare services and fewer stigmatizing interactions (49–51).

Concerning behaviors such as sharing potentially contaminated items, a significant proportion of participants engaged in risky practices, potentially due to underestimating the associated dangers. Interestingly, individuals with HCV were less likely to share such items, suggesting that they had received specific advice on mitigating transmission risks.

This study had limitations, including the use of a cross-sectional design, which limits causal inferences, and reliance on opportunistic sampling via social media, which may have excluded certain demographics. Additionally, it was not possible to ascertain the extent of awareness campaigns already in place during data collection.

In summary, this research underscores a critical need for targeted educational initiatives to address gaps in knowledge about HCV prevention and transmission. Vulnerable populations, such as LGBT+ individuals, require special attention in awareness campaigns. Future studies could evaluate the impact of tailored campaigns on improving knowledge, attitudes, and behaviors, particularly regarding participation in HCV screening programs. These findings provide valuable guidance for designing effective public health interventions.

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