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Abstract

Background: Hepatitis C affects nearly 58 million people worldwide, the majority of whom live in the Eastern Mediterranean Region. There is limited data about hepatitis C disease or its knowledge in the United Arab Emirates (UAE).

Aim: This study assessed knowledge about hepatitis C and barriers to screening for it in the UAE.

Methods: This exploratory, descriptive, cross-sectional study evaluated 1083 participants using a convenience sampling method. Participants aged 18 and above, literate in English or Arabic, were included in the study. The validated questionnaire was administered online and distributed across social media platforms from November 2020 to February 2021 and responses were analysed using Python.

Results: Mean knowledge score was 11.83 (SD = 7.28). Knowledge was average with 57.52% (n = 489 of 850) of respondents achieving a moderate knowledge score, but poor awareness about treatment options were noted. Only 54.12% (n = 460 of 850) were aware that treatment was possible and 24.10% (n = 205 of 850) knew that there was no vaccine for hepatitis C. Field of work (P

Conclusion: The UAE community has moderate knowledge about hepatitis C but a poor understanding of available preventive and treatment options. Targeted outreach programmes, particularly for high-risk groups, are needed to improve community awareness of hepatitis C.

Keywords: hepatitis C, knowledge, screening, treatment, UAE, United Arab Emirates, Dubai, community

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Background

Hepatitis C virus (HCV) is an enveloped, positive-strand RNA virus from the Flaviviridae family (1). Although the initial phase of the disease is asymptomatic, hepatitis C is largely feared because it causes chronic infection in 80% of cases, possibly leading to cirrhosis, primary hepatocellular carcinoma or end-stage liver disease (2).

However, recent advances in drug development and highly effective direct-acting antivirals are providing promising new opportunities to control HCV's disease burden. Direct-acting antivirals have a cure rate of over 95%, a treatment duration of only 8–12 weeks and milder adverse effects than their predecessors (3).

According to the World Health Organization (WHO), in 2019, 58 million (46–76 million) people

worldwide were infected with HCV, while 290 000 (230 000–580 000) die each year. The Eastern Mediterranean region had the highest HCV prevalence of 1.6% (1.4–1.8%) relative to the global average of 0.8% (0.6–1.0%) (4). It is projected that, by 2040, deaths from all forms of chronic hepatitis will exceed the combined mortality linked to HIV infections, tuberculosis and malaria (5).

Transmission of hepatitis C is disproportionate, with certain populations at a higher risk than others. High-risk populations include injecting drug users and those with a medical condition that requires frequent injections or blood transfusions. Populations at intermediate risk include prisoners, healthcare workers, household contacts of HCV-infected people and hospitalized populations (6).

Only 12 reports measuring HCV prevalence in the United Arab Emirates (UAE) were identified, of which 3 reported HCV prevalence among high-risk population groups. A 24.4% prevalence was identified among patients undergoing haemodialysis, and an 18.8% prevalence was found among children with thalassemia. Overall, data showed a high variability of HCV prevalence in the general population, ranging from 0% to 13.5%. This prevalence could be attributed to the substantial presence of foreign workers from endemic countries. A study by Mohamoud et al. found that, by only including UAE nationals in the study, the prevalence could be as low as 0.2% (6). As is evident, there is a significant paucity of conclusive statistics (7).

In the UAE, hepatitis C screening was part of the mandatory medical fitness test for expatriates applying for work permits and residence visas in the country. However, in 2010, the country’s ministry of health announced an overhaul of the residency medical law, removing the mandatory hepatitis C screening requirement (8).

In 2018, the Dubai Initiative for Hepatitis C Virus and Hepatitis C Patient Support Program were launched with the objective of eradicating hepatitis C from Dubai (one of the emirates of the UAE) by 2021. Under this programme, screening, investigations and treatments related to viral hepatitis and its associated complications are to be provided with no additional cost to enrolled members (9).

Given that eliminating HCV has been shown to be cost-effective (10), the 2030 target of elimination set by WHO serves as a useful deadline to garner momentum and work towards a common goal (11). To achieve this goal, UAE initiatives and policies should be guided by an understanding of the disease status and community awareness. With the lack of pre-exposure

protection and of a systematic screening programme, population engagement and awareness are a must. Thus, this study aimed to assess knowledge about hepatitis C and the barriers to its screening in the UAE.

Methodology

Study population and design

A cross-sectional, descriptive study was designed to collect data from UAE residents and citizens. Consenting participants who were 18 years or older and literate in either English or Arabic were included in the sample.

Questionnaire development

In the absence of a validated tool, a questionnaire was developed after an extensive review of the literature pertaining to hepatitis C virus clinical presentation, transmission, risk groups, treatment and complications (1,12–15). The main data sources were the PubMed and Google Scholar databases (accessed on 29 March 2020), which were searched using both MeSH and text terms, with no time restrictions and limited to studies conducted in English language.

A 40-item self-administered questionnaire measuring 70 data points was developed, with sections on sociodemographics, knowledge of hepatitis C as a disease, barriers to screening/testing, and sources of knowledge. These sections used a combination of question designs, such as 5-item Likert scale, multiple choice and short answers.

The primary outcome of this study was a knowledge score calculated from 39 data points set within 14 questions. The questionnaire was written in English and then translated into Arabic.

The questionnaire was pre-tested for clarity and sent to a group of experts to ensure content, appropriateness, reliability and face validity. Both versions were reviewed and compared against each other several times for consistency. Once feedback was received, the content was modified, followed by a second pre-test.

The research protocol was reviewed and approved by the Research Ethics Committee of the University of Sharjah (REC-20-04-04-01-S).

Data collection

Sample size calculation with a confidence level of 95% and margin of error of 5% was determined to be 384 participants minimum using Cochran's formula and based on UAE's population of 9.28 million in 2020 (16). Convenience sampling was used to distribute the electronic questionnaire link (on Google Forms) to the targeted population through social media (Facebook, Instagram, Reddit and WhatsApp). The questionnaire was distributed from November 2020 through February 2021.

The questionnaire was accompanied with an information sheet that explained the purpose of the study to participants. The first question in the questionnaire offered recipients the option of consenting or not to the interview electronically. Agreement to answer the questionnaire indicated the consent of the participants to join the study. The second question asked participants to confirm whether they were UAE residents or citizens. If they were neither, the survey would direct them to the end, and they would not be able to access the rest of the questionnaire.

Data analysis

The data was exported from the Google Forms to CSV format, then analysed and visualized using Python's matplotlib-v3.3.4, pandas-v1.2.4 and statsmodels-v0.12.2 packages. Knowledge scores were generated for each participant. The 5-item Likert scales were collapsed into 3-item scales where applicable. Similar categories with very few participants were combined for the sake of analysis. Any missing values were labelled as such and handled using pair-wise deletion.

Frequency distributions were calculated for categorical variables. The knowledge score was assessed by calculating the mean and standard deviation. Normality of the continuous outcome was evaluated using both Q-Q plots and the Shapiro–Wilk test. Reported percentages in the univariate analysis were calculated by excluding the missing values (valid percentages).

All demographic variables, perceived knowledge, knowing someone with hepatitis C and awareness of the health authority's Dubai Initiative for Hepatitis C Virus were evaluated as predictors of the knowledge score. Bivariate analyses were conducted to identify significant predictors using Mann–Whitney U and Kruskal–Wallis H tests. The cut-off for significance was a P value less than 0.05.

The ordinary least squares regression model was adopted for further analysis of the knowledge score. Categorical variables with more than 2 categories were transformed into dummy variables. No outliers were detected. The minimum number of cases was met. For regression, each model had more than 20 cases per predictor. Heteroskedasticity was not present (studentized Breusch–Pagan tests gave a P value >0.05). F score and R-squared values were calculated for the model.

Sociodemographic characteristics of the population

The sample size required for the study was achieved. A total of 1083 participants completed the questionnaire, of whom 54.3% (n=588 of 1083) identified as female, and 48.4% (n=523 of 1081) were younger than 30 years of age. Nearly 12.5% (n=135 of 1076) of the population was Emirati, with the rest being Arab or non-Arab expatriates, in line with the country's demographics (17).

Most participants (70.8%, n=767 of 1083) had a university degree or higher, with 48.2% (n=521 of 1082) employed in non-healthcare sectors. Among all participants, 30.3% (n=328 of 1082) were either students or employees in healthcare fields. Table 1 presents the study's sociodemographic variables.

Results

Perceived knowledge and risk of hepatitis C

A little more than half of the participants (56.79%, n=615 of 1083) stated that they were only slightly or not at all knowledgeable about hepatitis C. Only 11.54% (n=125 of 1083) believed themselves to be very or extremely knowledgeable about the disease with the rest falling between the 2 extremes. Most participants (88.82%, n=962 of 1083) did not personally know anyone who had the disease.

Most participants (59.83%, n=648 of 1083) considered themselves less likely to be at risk of hepatitis C infection, whereas 3.69% (n=40 of 1083) believed that they were at high risk of infection.

Actual knowledge of hepatitis C

Participants' mean knowledge of hepatitis C was 11.83 (SD=7.28) with the lowest and highest

scores being -7.00 and 31.00, respectively. The score had a non-normal distribution as indicated by the Shapiro–Wilk test (Statistic=0.99, P

A large proportion of participants (81.29%, n=691 of 850) correctly estimated the prevalence of the disease, and 75.30% (n=640 of 850) had an accurate impression of its severity. The chronicity of hepatitis C infections was appreciated by 69.18% (n=588 of 850) of the group. Further information about the participants' knowledge can be seen in Table 2 .

Knowledge about the modes of transmission and risk groups is highlighted in Figure 1 . The majority of respondents were able to identify the 2 main high-risk groups: injecting drug users (87.9%, n=629 of 716) and patients undergoing frequent dialysis (59.2%, n=424 of 716).

The population knew that most infections occur through exposure to contaminated via blood transfusions (85.4%, n=665 of 779), piercings (60.2%, n=469 of 779) and sharing needles (87.0%, n=681 of 779). A good proportion of participants (66.2%, n=516 of 779) believed that hepatitis C virus is sexually transmitted.

Several misconceptions were identified about treatment of the disease. While 54.12% (n=460 of 850) were aware that there was treatment for hepatitis C, 41.06% (n=349 of 850) of the respondents believed that the treatment often causes extremely serious side effects.

Some 42.71% (n=363 of 850) incorrectly assumed the treatment for hepatitis C to be lifelong. Respondents lacked awareness about prevention of the disease. Only 24.10% (n=205 of 850) knew that there was no vaccine for hepatitis C (see Table 2).

Hepatitis C testing used to be part of the mandatory medical fitness test for all expatriates seeking employment in the UAE, but the rules were relaxed in 2010 to limit screening to certain high-risk professions (8). However, 61.76% (n=525 of 850) of the respondents believed that hepatitis C as still been screened as part of the UAE general medical fitness test.

Attitudes to learning about the disease

The Dubai Initiative for Hepatitis C Virus is a scheme under which residents of Dubai (one of the

emirates of the UAE) can access free screening and treatment for hepatitis C infections (9). Regrettably, 94.55% (n=1024 of 1083) of the study population were unaware of this initiative. However, 87.16% (n=944 of 1083) of them were interested in learning more about hepatitis C through a variety of sources, including from internet/social media (73.78%, n=799 of 1083), doctors (53.55%, n=580 of 1083), brochures/printed materials (27.98%, n=303 of 1083), family/friends/colleagues (20.96%, n=227 of 1083) and pharmacists (14.87%, n=161 of 1083).

As for HCV testing barriers, lack of knowledge about the test (68.61%, n=743 of 1083) and insurance coverage for screening/testing (70.73%, n=766 of 1083) were the most significant barriers reported by the participants. Several other factors were also explored in this study (see Figure 2).

Multivariable regression analysis of the knowledge score

Bivariate analysis was conducted for the knowledge score. Age (P

Results of the ordinary least squares regression model show that marital status, field of work, awareness of the Dubai Initiative for Hepatitis C Virus and perceived knowledge were the only predictors that remain significant, as shown in Table 3 . Of the four factors, only being single and having moderate or more perceived knowledge about HCV were associated with higher knowledge scores.

Discussion

Hepatitis C infection is responsible for increased morbidity and mortality rates globally, in addition to significant indirect costs to patients and healthcare systems. Simple detection methods and efficient preventative measures are now available to combat the infection. Yet, limited awareness of and knowledge about HCV have been identified as the key barriers to hepatitis C testing in the UAE (15). To meet WHO's viral hepatitis elimination goals within the country, knowledge campaigns are essential to improve public awareness (19).

This study, the first of its kind in the UAE, was undertaken to assess knowledge about hepatitis C and personal barriers to its screening in the UAE The results show that most participants have an average knowledge of the disease. Given the overrepresentation of the young and educated in the study, the overall knowledge level of the population at large can be expected to be lower; further studies would be needed to confirm this assumption.

An overwhelming majority of the population was willing to learn more about the infection. The results of the study show that the internet and doctors are participants' preferred sources of information. A similar interest was observed in a recent study assessing awareness of hepatitis A among a population in the UAE (18). The population identified insurance coverage of the test, knowledge of eatment costs as the most common barriers to getting tested for the infection.

The overall prevalence of hepatitis C disease in the UAE could be lower than in neighbouring countries in the Eastern Mediterranean Region. However, the level of action is not yet sufficient; it has been labelled as "not on track" to achieve WHO targets (7,10,20). In an analysis conducted by Hill et al. based on 2016 epidemiological data from the Polaris Observatory, the UAE was found to have the second-lowest cure rate (-4.6%) with a treatment rate of less than 1%. A negative net cure rate indicates that the epidemic size in the region is increasing (20).

To tackle HCV infections, the Dubai Health Authority has included screening and treatment under the basic benefit plan of the Dubai Mandatory Health Insurance Scheme since 2018 (9). Hence, low costs for diagnosis and treatment, which are essential for HCV elimination, are already available in the UAE. However, 94.55% of the population is unaware of this initiative. The level of awareness is not affected by the place of residence: 92.83% of Dubai residents are unaware of the initiative.

The study also revealed that 61.76% of the population thought they were being screened for hepatitis C as part of the medical fitness test undertaken during the residence visa application process. This result highlights a deficit in the general level of awareness, which the authorities can address through targeted campaigns. As shown in the multivariate regression analysis, such campaigns would need to focus on residents employed or studying in non-healthcare fields, those who report having poor knowledge, and those who are married.

Several studies assessing knowledge and attitudes towards hepatitis C have been conducted around the world. A knowledge, attitudes and practices (KAP) study by Crutzen et al. discovered that practical knowledge about transmission, consequences and prevention was very low in Germany and the Netherlands (21).

A similar Australian study of injecting drug users found that there is reasonable knowledge about viral transmission but a poor understanding of treatment (22), similar to the findings in the

general population assessed in this study. Globally, most KAP studies have focused on high-risk groups, such as healthcare professionals and injecting drug users.

This is the first study in the UAE that assesses the awareness of HCV in the general population. Further studies are needed that target specific high-risk groups in the population. This study revealed that there was no clear understanding of the populations at higher risk of hepatitis C infection. Although awareness about transmission through blood transfusion and shared needles was good, there was limited knowledge about the lesser-known means of community transmission, such as sharing razors and unsafe tattoo practices.

A significant proportion of the population believed that HCV is commonly transmitted sexually. Sexual transmission is rare except for high-risk sexual practices among men who have sex with men who are either HIV-positive or are on pre-exposure-prophylaxis for HIV (23). This limited understanding likely contributes to the cultural taboo and stigma surrounding the disease in the region.

In a systematic review of the Eastern Mediterranean Region, transmission in healthcare settings appears to be the primary driver of prevalent infections, followed by injecting drug use. Hepatitis C transmission has also been linked to risky community practices, particularly those involving the use/reuse of non-sterile needles and sharps. The frequently reported community-related exposures are tattooing and engaging in informal healthcare practices, such as cupping, male circumcision and female genital mutilation (24). It is important to note that this review did not include data from the UAE.

Researchers in Egypt, a country known to have one of the highest burdens of hepatitis C worldwide, undertook a community outreach programme to evaluate the effectiveness of community education and systematic household testing. The awareness and education campaigns led to high levels of acceptance of and participation in testing for hepatitis C and increased the proportion of those adopting safe practices to reduce the risk of viral transmission (25).

Educating the public is a move towards HCV elimination as it could, in turn, encourage policymakers and stakeholders to initiate further action. This study is one of the initial steps to assess awareness and interest in hepatitis C infections in the community, which is expected to drive further studies on the subject.

The results of this study reveal that awareness is lacking about informal community-related exposure, available screening and treatment options, and access to government initiatives. The outcomes may be applied to other countries in the region with similar socioeconomic status and in urban settings.

Limitations

The findings of this paper are based on a comprehensive questionnaire and significant results, but they are not without limitations. The study used convenience sampling, which may affect the generalizability of the results. Since the questionnaire was distributed through the internet, it is susceptible to selection bias. The questionnaire's reliability was not established statistically.

People may have volunteered to participate because of increased knowledge and may lead to over-representation of certain segments of the population. Since the distribution was conducted through social networking platforms, which have higher numbers of younger users, the sample population may have been skewed towards the younger age groups. This may have inflated the knowledge levels to appear higher than reality in the general population.

Conclusion

Breaking community transmission chains is a critical and primary step towards eliminating hepatitis C. To achieve national and international health goals, studies such as this serve as stepping stones to understanding the current awareness status and developing targeted interventions.

This study showed that the UAE community has moderate knowledge of hepatitis C with poor understanding of the high-risk groups, available treatment options and existing government initiatives. The results highlight a need to improve the population's knowledge through community outreach programmes delivered through social media or by medical professionals. However, the cost of testing and awareness about the infection are primary barriers that increase hesitancy to screen and test for hepatitis C, both of which need to be appropriately addressed by national healthcare programmes.

Despite the well-intentioned efforts to make diagnosis and treatment accessible in the UAE, data are significantly lacking on the prevalence of the disease, its risk groups and treatment rates, which hinders progress on developing targeted prevention programmes for the

population.

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Connaissances sur l'hépatite C et obstacles au dépistage chez les utilisateurs des médias sociaux aux Émirats arabes unis

Résumé

Contexte : L'hépatite C touche près de 58 millions de personnes dans le monde, dont la majorité vivent dans la Région de la Méditerranée orientale. Les données concernant cette maladie et les connaissances à ce sujet aux Émirats arabes unis sont limitées.

Objectif : La présente étude a évalué les connaissances sur l'hépatite C et les obstacles au dépistage de cette maladie aux Émirats arabes unis.

Méthodes : Cette étude transversale exploratoire et descriptive a évalué 1083 participants à l'aide d'un échantillonnage de commodité. Des participants âgés de 18 ans et plus, maîtrisant l'anglais ou l'arabe, ont été inclus dans l'étude. Le questionnaire validé a été administré en ligne et diffusé sur les plateformes de médias sociaux entre novembre 2020 et février 2021, et les réponses ont été analysées à l'aide du logiciel Python.

Résultats : Le score de connaissances moyen était de 11,83 (ET = 7,28). Le niveau de connaissances était moyen, 57,52 % (n = 489 sur 850) des répondants ayant obtenu un score modéré, mais une faible sensibilisation aux options de traitement a été constatée. Seuls 54,12 % de ces derniers (n = 460 sur 850) étaient conscients qu'un traitement était possible et 24,10 % (n = 205 sur 850) savaient qu'il n'existait pas de vaccin contre cette infection. Le domaine d'activité (p