Original Article

Factors Affecting Level of Knowledge on Hepatitis C among Young Couples before Marriage: A Cross-Sectional Study

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ABSTRACT

Background: Despite the great importance of public knowledge of sexually transmitted diseases such as hepatitis c virus (HCV), very few studies have been conducted in this field in Iran. Therefore, the present study determined the factors affecting the knowledge of young couples before marriage in relation to HCV.

Methods: During this cross-sectional study, 1501 couples were assessed, out of which 1110 (73.9%) couples entered the study. A standard questionnaire was used to collect the data. In this questionnaire, first, the demographic characteristics of the participants such as age, gender, level of education, daily extracurricular study, and hours of mass media use were collected, followed by the main items of the study. After data gathering, they were analyzed by IBM SPSS Statistical Software Version 22. Univariate analysis was used to examine the relationship between factors related to the knowledge, and multivariate analysis was used to estimate the related factors.

Results: The total score of knowledge about hepatitis C was 0.49 ± 0.29. The total knowledge score for hepatitis C symptoms was 0.27± 0.19. The total score of knowledge about hepatitis C transmission routes was 0.34±0.28. The univariate analysis showed that age, level of education, history of hepatitis in a first degree relative of the family,

and social networks were significantly associated with the rate of knowledge about hepatitis C (p <0.05). The multivariate analysis showed that females [(B: 2.11), CI 95% (1.07_3.25), p: 0.014)], higher education level [(B: 4.01), CI 95% (1.98_6 .33), p: 0.014)], history of hepatitis in a first degree relative of the family [(B: 3.56), 95% CI (1.46_5.69), p: 0.011)] and use of social networks [(B: 2.77), CI 95% (1.11_4.48), p: 0.014)] were significantly associated with the rate of knowledge about HCV.

Conclusion: Compared with other studies in this field, the level of knowledge about hepatitis C among young couples in Iran is alarmingly low. In health policies related to hepatitis C, more attention should be paid to the population of men, people with less than a bachelor's degree.

Keywords: Hepatitis C, Sexually transmitted diseases, Iranian couples.

1. Introduction

Hepatitis C is one of the leading causes of liver disease in the world. About 71 million people worldwide have chronic hepatitis C, many unaware of their infection [1]. In Iran, the average prevalence of hepatitis C in normal people is less than 0.5%. The average prevalence of this disease in people with thalassemia is 16.6%, hemophilia 54%, people on dialysis 8.3%, and injecting drug users 51.4% [2]. About 186,500 cases of hepatitis C with an average age of 30 live in Iran, and this amount will increase to 213,700 by 2030. Subsequently, assuming that the diagnostic and treatment facilities remain stable until then, a 3 to 4-fold increase in irreversible cirrhosis, hepatocellular carcinoma, and death from the liver disease will be expected [3, 4].

Currently, the most common method of transmitting hepatitis C has shared needles for injecting drugs or narcotics [3, 5]. In Iran, too, the risk factors for infection are mainly injecting drug use. Other risk factors are tattooing, sharing a razor, having multiple sexual partners, homosexuality, blood transfusions, blood group type, and hemodialysis [6-9]. For many years, hepatitis C was considered a disease with severe treatment, side effects, and high costs, which is why patients refused treatment [10, 11].

Given that new therapies have been introduced since 2017 that will cure chronic hepatitis C within 12 weeks of taking oral medications, it is important to assess the public awareness of these treatments. Suppose the awareness is low, with appropriate information through mass media and field advertising, and the preparation of training programs. In that case, an important step can be taken to eradicate hepatitis C.

As it is now evident in the world, the type of human behavior and following the necessary health advice is decisive in the process of epidemic spread; on the other hand, it can be said that the behavior of human society in such conditions is influenced by the amount of advertising and attitude to the issue. Studies have shown that young couples' level of knowledge and attitude before marriage about sexually transmitted diseases can reduce the transmission of these diseases and thus reduce the burden of sexually transmitted diseases in society [12].

Since knowledge about hepatitis C and the factors affecting it prevents the disease more effectively and consequently reduces the financial and psychological burden on the family and the health care system, raising family awareness of this disease is important. Despite this importance, very limited studies have been conducted in this field

in Iran. Therefore, the present study determined the factors affecting the knowledge of young couples before marriage in relation to hepatitis C. The results of the present study can increase the health of the family and society.

2. Material and Methods

2.1. Study design and participants

The present descriptive cross-sectional study assessed the knowledge of couples referring to Tehran health centers before marriage about hepatitis C (ways of transmission, prevention, complications, and treatment) and affecting factors to it between April 2020 to April 2021. During this study, 1501 couples were assessed, out of whom 1110 (73.9%) couples entered the study.

All stages of designing and conducting the present study were performed after registration in the research system of the Vice Chancellor for Technology Research of Iran University of Medical Sciences and obtaining the approval of the Ethics Committee (Code: IR.IUMS.REC.1399.1083).

For this purpose, the couples referred to selected health centers in Tehran for premarital counseling and testing were studied. Considering that there is no alternative method for not referring to these centers, the referring people are a representative sample from the whole city of Tehran. The sampling method of health centers was simple clustered from different areas of Tehran (10 pairs per cluster). Inclusion criteria included all young couples who had referred to health centers for services, a negative test for viral infections (HCV, HBV, and HIV), and the satisfaction to participate in the study. Exclusion criteria included viral infections and dissatisfaction to participating in the study.

The reliability of the questionnaire was assessed as acceptable by evaluating the internal consistency for the questions and the Cronbach's alpha coefficient above 0.7 [13]. To evaluate the content validity quantitatively, two content ratio coefficients were used: Content Validity Ratio (CVR) and Content Validity Index (CVI) [14]. In each health center, an expert working in the same center, who had previously received the necessary training on how to fill out the questionnaire, provided the necessary recommendations to the clients to fill out the questionnaire. The couples then filled out the questionnaire individually so that they could not access to the answers provided by the others. The information obtained from the participants remained confidential.

2.2. Data gathering

A standard questionnaire was applied to collect the data. This questionnaire was prepared according to previous studies in this field and also included new cases according to the objectives of the study. Its validity and reliability (by conducting a pilot study in 10% of samples and with the opinion of experts) verified by a valid panel. In this questionnaire, first, the demographic characteristics of the participants such as age, gender, level of education, daily extracurricular study and hours of mass media use were collected, followed by the main items of the study. The questionnaire includes the following [15]:

1- Awareness of hepatitis C: Does the participant know that she/he has hepatitis C?

2- Awareness of hepatitis C status: Does the participant know how his or her disease is advanced?

3- Knowing there is a definitive treatment for hepatitis C: Does the participant know if there is treatment for his or her disease?

4- Knowledge about the natural course of hepatitis C: Does the participant know

what symptoms he / she develops as a result of this disease over time?

5- Knowledge about the ways of transmitting hepatitis C: Does the participant know how this disease is transmitted to others?

6- Knowledge of ways to prevent hepatitis C: Does the participant know how to prevent the disease? and

7- Knowledge about the side effects of hepatitis C: Does the participant know what the symptoms of hepatitis C are in her/his body?

The suggested answers to the questions were yes, no, or I do not know. "I do not know" option was included to avoid random response and adverse effect on the actual result of the study. Based on previous studies, knowledge level above 50% was defined as the appropriate level of knowledge for the target population. [18]

2.3. Statistical analysis

After completing the questionnaire, the collected data were fed into and analyzed by IBM SPSS Statistical Software Version 22 (SPSS Inc., Chicago, IL, USA).

Since this study was a descriptive study and the main aim of this study was to assess the level of knowledge about hepatitis C, the participants' responses became dual (correct answer: correct, incorrect answer, and I do not know: incorrect).

The rate of correct answers to the study questions was expressed as a percentage and average (standard deviation) for each part of the questionnaire and, finally, in the whole study.

Univariate analysis was used to examine the relationship between factors related to the knowledge and linear regression with the backward model was used to estimate the effective factors. P-Value <0.05 was considered as a significant level.

3. Results

3.1. General knowledge about hepatitis C

Data of 1110 participants were collected and analyzed. The sex ratio of participants was 1: 1 and the mean age of participants was 30.1 years (SD = 7.8) between 15 and 61 years. The total hepatitis C knowledge score (mean ± SD) was 0.49 ± 0.29. 74% of participants knew that the main organ involved in hepatitis C was the liver, but the rest did not know. Only 31.5% of participants had been tested for hepatitis C at least once (29.6% tested and healthy, 0.9% tested and infected), while the rest were unaware of their hepatitis status. The total knowledge score (mean ± SD) for hepatitis C symptoms was 0.27 ± 0.19. Jaundice was a symptom that participants were mostly aware of, with 75.5% of participants knowing the symptom well. There was less awareness of other symptoms of hepatitis C, such as diarrhea, abdominal pain, nausea, vomiting, and fever.

3.2. Knowledge about the long-term effects of hepatitis C

40.5% knew that hepatitis C would lead to permanent liver dysfunction in the long term. 44.7% knew that hepatitis C could lead to liver cancer in the long term. Others were unaware of the long-term effects of hepatitis C. Overall, 22.8 of the participants answered both questions about the long-term side effects of hepatitis C correctly.

3.3. Knowledge about hepatitis C transmission routes

The total knowledge score about hepatitis C transmission routes (mean ± SD) was 0.34 ± 0.28. The most well-known cases were needle removal and blood transfusion. Items of incorrect

knowledge included sharing dishes or glasses and sharing towels or toilet soap   (Table 1).

Table 1. Knowledge of transmission ways of hepatitis C.

Questions	YES	NO	Don't know
Can hepatitis C be transmitted through blood or blood products transfusion.?	48.3%	23.7%	32.5%
Can hepatitis C be transmitted through use or shared needle?	51.6%	10.2%	38.2%
Can hepatitis C be transmitted through kissing, shaking hands?	11.1%	60.8%	28.1%
Can hepatitis C be transmitted through unprotected sexual intercourse?	43.6%	18%	38.4%
Can hepatitis C be transmitted through a shared towel or toilet soap?	10.2%	51.6%	38.2%
Can hepatitis C be transmitted through shared dishes, spoons, and glasses?	12.6%	49.3%	38.1%
Can hepatitis C be transmitted through drinking non-sanitized water?	8.7%	52.6%	38.7%
Can hepatitis C be transmitted through tattooing and piercing of ear or nose?	40.6%	11.5%	47.9%
Can hepatitis C be transmitted through eating Unhealthy prepared food?	10.6%	42%	47.4%
Is hepatitis C transmitted from a pregnant mother to her fetus?	38.6%	15.3%	46.1%
Is hepatitis C transmitted through cuts and wounds on the skin?	35.1%	18.9%	46%
Is hepatitis C transmitted through saliva?	16.3%	39.9%	43.8%
Is hepatitis C transmitted through urine?	6.8%	45.8%	47.4%
Is hepatitis C transmitted through Mosquito bites?	10.1%	42.9%	47%

3.4. Knowledge of the need to check for hepatitis C

55.5% of the participants stated that most of the patients with hepatitis C are unaware of their disease. The total score of knowledge that he/she needed to be tested for hepatitis C was (mean ± SD) 0.37 ± 0.31. 46.1% of participants said that people at high risk for hepatitis C should be tested for hepatitis C, regardless of whether they have liver disease symptoms (Table 2).

Table 2. Knowledge of the necessity to assessment for hepatitis C.

Questions	True		False		Don't Know	
	Count	Percent	Count	Percent	Count	Percent
Only those who have symptoms of liver disease should be tested for hepatitis B.	186	16.8%	346	31.2%	578	52 %
All the population should be tested for hepatitis B.	616	55.5%	139	12.5%	355	32%
High-risk populations for hepatitis B should be tested for this disease.	512	46.1%	28	2.5%	570	51.4%
Because hepatitis Bis a low-risk disease, it is not necessary to test all the population for this disease.	79	7.1%	566	51%	465	41.9%

3.5. Factors affecting the level of knowledge about hepatitis C

The results of the univariate analysis showed that age was significantly associated with the rate of knowledge about hepatitis C (p = 0.04). Based on the results of univariate analysis, level of education, history of hepatitis in a first degree relative of the family, and social networks were significantly associated with the rate of knowledge about hepatitis C (p <0.05). There was no significant relationship between employment status and the rate of knowledge about hepatitis C (p = 0.58). The results of univariate analysis are shown in Table 3.

Table 3. Results of univariate analysis

Variable	B	Confidence interval 95%	P value
Age	-0.211	-1.12-0.89)(	0.041
Sex			
Male	Ref		
Female	2.98	-1.06-5.83	0.04
Level of Education			
Illiterate	Ref	-	0.42
Diploma	1.021	0.28-3.11	0.011
Bachelor	2.59	1.21-5.01	0.001
>Bachelor	4.11	1.85-6.38	
Family history			
No	Ref	-	0.001
YES	4.12	2.01-6.23	
Use of Social Media			
No	Ref	-	0.011
YES	2.54	1.13-3.98	
Employment status			
Unemployed	Ref	-	0.58
Employed	1.23	0.21-3.37	

B: Beta Adjusted.

3.6. Results of multivariate linear regression analysis

All variables that were significant in univariate analysis were included in the model. The results of multivariate analysis showed that female gender, higher education level, history of hepatitis in a first degree relative of the family and the use of social networks were significantly associated with the rate of knowledge about hepatitis C (p <0.05). The results of multivariate analysis are shown in Table 4.

Table 4. Results of multivariate analysis.

Variable	B	Confidence interval 95%	P-value
Sex (Female)	2.11	1.07-3.25	0.014
Level of Education (> Bachelor)	4.01	1.98-6.33	0.0001
Family history (positive)	3.56	1.46-5.69	0.011
Use of Social Media	2.77	1.11-4.48	0.006

B: Beta Adjusted.

4. Discussion

This study is the first study to evaluate different aspects of hepatitis C awareness and its relationship with demographic variables. The results of this study showed that the total score of knowledge about hepatitis C was 0.46. Compared with other studies in this field, the level of knowledge about hepatitis C among young couples in Iran is alarmingly low. Crutzen et al. (2012) found that hepatitis C awareness scores in Germany and the Netherlands were around 50% [16]. Rashrash *et al.* (2016) found that the total hepatitis C awareness score in African-Americans born between 1945-1965 was 48.74% [17].

83.1% of participants believed that there was a vaccine for hepatitis C, which is a great lack of awareness in this area. This rate is much higher than that of a global standard survey conducted in 2012. According to a 2012 HIV / AIDS and hepatitis C Attitudinal Tracking Survey, 50% of respondents mistakenly thought there was a hepatitis C vaccine [18]. Karen *et al.* (2018) focusing on women with the drug found that 55% of respondents believed there was a hepatitis C vaccine [19]. One possible explanation for this misunderstanding is that hepatitis C is confused with other types of hepatitis for which there is a vaccine (such as hepatitis A or B). Investigating HIV-HCV-infected patients referred to the Infectious Diseases Clinic, Proeschold-Bell *et al.* (2010) showed that 82% of patients knew about hepatitis C through needle sharing and 77% of patients knew hepatitis C could be transmitted through blood transfusions [20].

The difference in knowledge about the ways hepatitis C is transmitted between our study (with the general population) and the studies performed on patients with hepatitis C could be due to the fact that these patients have more experience with the disease and receive more advice about it. In this study, there is a significant lack of knowledge about the ways in which hepatitis C cannot be transmitted through the sharing of food and saliva containers. One possible reason is that hepatitis C is confused with other types of hepatitis that are transmitted this way. Another explanation could be the lack of formal or public education about hepatitis C. In the present study, the results of multivariate analysis showed that female gender, level

of education higher than a bachelor's degree, history of hepatitis in a first-degree relative of a family, and use of social networks were significantly associated with the rate of knowledge about hepatitis C. The results of our study on the significant relationship between hepatitis C awareness and gender are in line with the those of Ahmad *et al.*'s (2016) in the Malaysian population [21] and Khan *et al.* (2010) in the Pakistani population [22]. The results of these studies showed that women were more aware of hepatitis C than men. In our study, multivariate analysis showed that the female gender has a significant relationship with the level of awareness of hepatitis C disease. Given that these studies, like our study, have been conducted in developing countries, this adds to the greater consistency of our results with these studies.

According to other studies, for example, those by Rashrash *et al.* (2016) and Sarjadi et al. (2011), the status of higher education is a positive predictor of knowledge about hepatitis C [17, 23]. In other words, higher education level is directly related to the level of knowledge about hepatitis C disease. Lee *et al.* (2007) also showed that education level was significantly associated with hepatitis awareness [24]. These results can confirm the fact that people with higher education have a much higher level of study, more use of mass media, use of more diverse social networks, and have more participation in seminars and scientific conferences, so they get more information. The results of our study showed that a history of hepatitis in one of the first-degree relatives of the family is one of the predictors of hepatitis C awareness.

The results of our study, in this case, are consistent with those by Ahmad et al. [21] and also those of Brouard [25]. Their study found that having a family member or close friend with hepatitis was a positive predictor of hepatitis B and C awareness. Because social media is widely used by the country's authorities to inform the public about the latest news, it can disseminate information, improve public health knowledge, refute rumors, integrate medical resources with the general public and pharmaceutical resources [26], so the connection of social media with increasing awareness of diseases such as hepatitis C is not far from expectation.

The results of our study also confirm the significant relationship between the use of social networks and increasing awareness of hepatitis C.

5. Conclusion

From the findings of this study, it can be concluded that compared with other studies in this field, the level of knowledge about hepatitis C among young couples in Iran is alarmingly low. It should be noted that women, people with higher education, those who have a history of hepatitis in a first-degree relative of their family, and those who use social media more, are more aware of hepatitis C. Therefore, in health policies and development of educational programs related to hepatitis C, more attention should be paid to the population of men, people with less than a bachelor's degree, those who do not have a person with hepatitis C in their family and use less of social media.

Authors' contributions

Moarrefzadeh A, Bahardoust M, Delpisheh A and Sarveazad A designed this study, obtained and analyzed the data. Baharoust M supervised the collection of samples and the

identification of plant species studied. Shamseddin J was responsible for data collection. All authors read and approved the final manuscript.

Consent for publications

Given their contribution, all authors agree to have read the manuscript and authorize the publication of the final version of the manuscript.

Conflict declaration

The authors declare that there is no conflict.

Conflict of interest

None of the authors has any conflict of interest to declare.

Availability of data and material

Data are available on request from the authors.

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Ethics approval and consent to participate

All stages of designing and conducting the present study were performed after registration in the research system of the Vice Chancellor for Technology Research of Iran University of Medical Sciences and obtaining the approval of the Ethics Committee (Code: IR.IUMS.REC.1399.1083). For this purpose, couples who were referred to selected health centers in Tehran for premarital counseling and testing were studied.

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