



Original Research Article

Assessment of knowledge and attitude related to Hepatitis C among the dental interns in Davangere city – A cross sectional survey

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ABSTRACT

Context: Viral hepatitis has become a silent epidemic and a major public health problem worldwide. Among the viral hepatitis, Hepatitis C is one of most common dreaded infectious disease. Hepatitis C infections can be a potential occupational hazard for dental personnel.

Objective: To assess the knowledge and attitude related to Hepatitis C among the dental interns.

Materials and Methods: Descriptive cross-sectional survey was conducted using structured, self-administered, 32 items questionnaire among 147 dental interns in Davangere city. Descriptive analysis of the data was done. The attitude and knowledge of dental interns was assessed by using Chi-Square Test.

Results: Of the total studied individuals, 2 students (1.4%) showed poor knowledge, 18 students (12.2%) moderate knowledge and 125 students (86.4%) had good knowledge of hepatitis C. Furthermore, 124 participants (84.4%) demonstrated positive attitude, and 22 participants (15.0%) had negative attitude.

Conclusion: Majority of the participants in the present study had good knowledge and positive attitude towards treating such patients. As the study was only conducted in two dental colleges in Davangere city. Therefore, the results are obviously generalizable only among this sample.

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1. Introduction

1.1. “Treat each patient as potentially risky”

- Universal precaution by Center for Disease Control and prevention

Dental clinic is an environment where disease transmission can occur easily.¹ Infection may be transmitted because of repeated direct exposure to blood and other body fluids like saliva and nasopharyngeal secretions or by indirect contact with contaminated instrument and equipments.^{1,2} All the dental personnel including patients are at a higher risk of development of infectious diseases caused by various microorganisms like mycobacterium tuberculosis, herpes simplex, HIV, mumps, influenza, rubella including viral hepatitis.²

Viral hepatitis has become a silent epidemic and a major public health problem worldwide.³ Among the viral hepatitis, Hepatitis C is one of most common dreaded infectious disease affecting primarily the liver which may be a mild to potentially fatal in nature.⁴

Hepatitis C is caused by hepatitis C virus (HCV), a blood-borne pathogen.⁵ Most common modes of infection includes unsafe injection practices, inadequate sterilization of medical equipments, and the transfusion of unscreened blood and blood products.⁶ HCV is approximately seven times more infectious than human immunodeficiency virus (HIV) and occurs as a result of the percutaneous transmission of the virus through infectious blood. Hence Hepatitis C infections can be a potential occupational hazard for dental personnel because of high frequency of sharp injuries occurring in the dental setting through accidental needle stick and it has been well documented.⁶

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The risk of infection after a needle stick injury with HCV-contaminated blood is 1.8% and frequency of sero-conversion to anti-HCV following a needle stick injury was 9%.^{2,7} So the dental interns are considered to be the vulnerable population as they are exposed to such infectious disease as they are undertaking activities related to patient care where there is a chance for cross contamination. Hence knowledge regarding the Hepatitis C and safety precautions during the dental procedure is very much essential to minimize the acquired infections among the dental students.

The world health organization visions to eliminate viral hepatitis (B and C) by 2030.⁸ Knowledge and awareness are vital for the eradication of HCV, and ignorance will prevent its eradication in future.⁹ Epidemiologic researches on Hepatitis C concerning it as infectious disease are limited and only few studies have focused on the knowledge and attitude of dental students about this infection.¹⁰

Giving importance of the subject this study was aimed to assess the knowledge and attitude of dental interns of Davangere city. And the results from this study may help to plan a program to increase the awareness among the dental students on the risk of contracting Hepatitis C infection during clinical procedures and transmitting the same to the patients. It may also help in designing strategies to increase awareness, change in attitudes and improve practices to prevent Hepatitis C. It provides opportunities for the curriculum developers to plan a secure foundation for teaching programs related to such infectious diseases.

2. Materials and Methods

An observational, descriptive, cross-sectional survey was conducted among Interns of Bapuji Dental College and Hospital and College of Dental Sciences in Davangere city. The time period set for the data collection was two months, from october - november 2017.

Ethical approval (Ref No. BDC/exam/383/2017-18) was obtained from the Institutional Review Board of Bapuji Dental College and Hospital, Davangere. Permission was sought from the principals' of respective institutions. Dental interns who were willing to participate were included in the study. Voluntary written informed consent was obtained from the dental interns.

Research questionnaire consisting of three sections, was designed based upon the available references from previous studies.^{2,4,10-12} First section consist of demographic details. To rate the students' response to knowledge and attitude related questions in the second and third section, one point was assigned to each correct answer. Participants were divided into: weak knowledge (0- 6 points), moderate knowledge (7-12 points), and good knowledge (13-18 points) based on the obtained points. For attitude: poor attitude (0-4 points), moderate attitude (5-8 points), and good attitude (9-12 points).

Interns were asked to assemble in the lecture hall and were given 30 minutes to answer the questionnaire distributed to them by an investigator. Interns were instructed to approach investigator if they have any doubts pertaining to questionnaire to avoid contamination.

The data obtained was compiled systematically in Microsoft Excel sheet and subjected to statistical analysis using Statistical Package for Social Sciences Software. Descriptive statistics was generated in terms of frequencies or percentages. Chi-square test was used to assess categorical data by setting statistical significance at $p < 0.05$.

3. Results

A total of 147 dental interns from two dental colleges in davangere city were included in the study. Out of 147, majority of participants about 104(70.7%) were females and 43(29.3%) were males. The frequency distribution of study participants responses to the knowledge and attitude questions are shown in Tables 1 and 2 and Figure 1.

Study revealed that majority 97.3% of participants knew that Hepatitis C is a viral infection. About 74.1%, 73.5%, 61.9% and 69.4% participants identified that Hepatitis C causes chronic hepatitis, cirrhosis of liver, increases the risk of liver cancer and causes jaundice respectively. Only 28.6 % were aware that Hepatitis C is asymptomatic. About 68.7% of the participants identified blood and blood contact related as the major route of transmission for Hepatitis C. Overall 83% participants were aware that sharing injecting equipment can spread Hepatitis C. About 68% participants felt that pregnant mother can transfer the viral infection to the foetus. 76.2% participants were aware that Hepatitis C infection spreads through blood contact and through improper barrier techniques the dentist can transmit or acquire the infection. 76.9% participants felt that screening or diagnostic tests are available for Hepatitis C infection. About 41.5% were of the opinion that vaccine is available against Hepatitis C infection. For the question regarding ways of preventing Hepatitis C infection. About 74.1% participants answered proper barrier technique and proper disposal as ways to prevent. Overall 61.9% participants felt that Hepatitis C is treatable. And 25.2% participants felt that, once infected by Hepatitis C virus, later they are immune for the infection. Overall 63.9% participants felt that Hepatitis C infection is life threatening. About 46.9% participants were of the opinion that Hepatitis C infection can spread through saliva. And 88.4% participants were of the opinion that one cannot be infected by casual contact and hugs with Hepatitis C infected person. A statistically significant association was seen with respect to gender and mean knowledge scores. (Figure 2)

Participants responses to questions related to attitude showed that among 147 participants 81% were ready to treat infected and high risk Hepatitis C patients. 63.3% reported that they will be stressed while treating Hepatitis C infected

patients. 41.5% participants felt that such patients can be treated in a normal dental setting. Only 34.7% participants felt that, current curriculum will make them fit to manage patients with Hepatitis C. About 67.3% were confident that Hepatitis C can be prevented by standard precaution. 86.4% felt that patients should correctly inform about their Hepatitis C infection status. And 81.6% were of the opinion that the dentist should also inform the Hepatitis C infection status to their patients. About 92.5% participants felt that regular screening for Hepatitis C among dentists and dental health care workers is necessary to protect their patients. Also 85% felt that Hepatitis C testing should be mandatory before any surgical procedures for all the patients. About 34.0% participants felt that dentists has the right to reject treatment for Hepatitis C infected patients. In case of emergency only 39.5% were ready to perform mouth to mouth resuscitation of Hepatitis C positive patients. 82.3% participants were of the opinion that they should uphold the confidentiality of Hepatitis C positive patients status. The association between gender and mean attitude scores was not significant. (Figure 3)

4. Discussion

Viral hepatitis C is considered one of the serious health problems in developing countries, since it causes chronic liver cirrhosis and hepatocellular carcinoma. Because of the paucity of specific symptoms and signs caused by HCV, Extra Hepatic Manifestation (EHM) could represent the first signal of this infection.¹³ Some of the most frequently reported EHM of HCV infection, involve the oral region, predominantly or exclusively.¹³ The hepatitis C virus is a blood borne virus and the most common modes of infection are through exposure to small quantities of blood. This may happen through, unsafe injection practices, unsafe health care or most common needle stick injuries in dental clinics. Scientific knowledge regarding the transmission, nature of the infection is essential for the high-risk groups like dentists.

In the present survey, there were 147 dental interns from both the dental colleges. Majority of the study participants were females, because of the increasing trend of more females admissions in dentistry. The present study evaluated the level of knowledge and attitude of dental interns in Davangere about Hepatitis C infection. The results showed, 91 dental interns (61.9%) had good knowledge, 52 (35.4%) had moderate knowledge and 4 dental interns (2.7%) had poor knowledge about Hepatitis C infection. In addition, the samples were divided according to their attitude and 69 dental interns (46.9%) had good attitude, 74 (50.3%) moderate attitude and 4 (2.7%) had poor attitude.

Almost all participants (97.3%) were aware that Hepatitis C is a viral infection. The results are in line with study by Irungu et al¹⁴ (94%) among students. In the present study the dental interns were knowledgeable regarding the

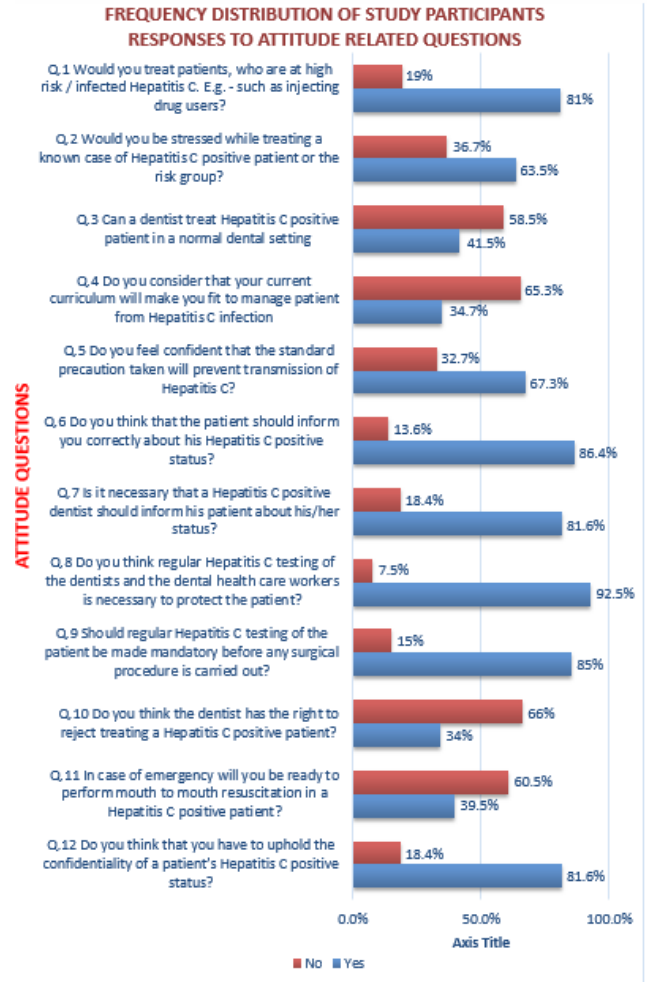


Fig. 1: Frequency distribution (%) of study participants based on their responses to attitude related questions

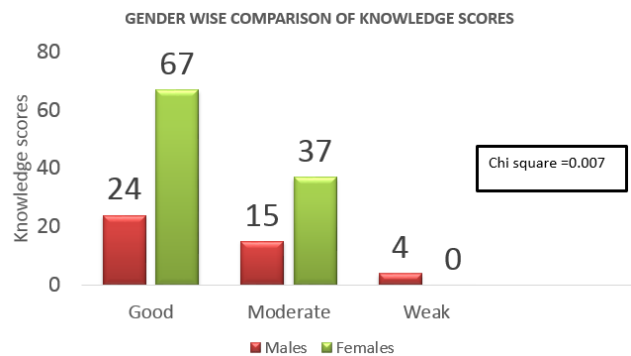


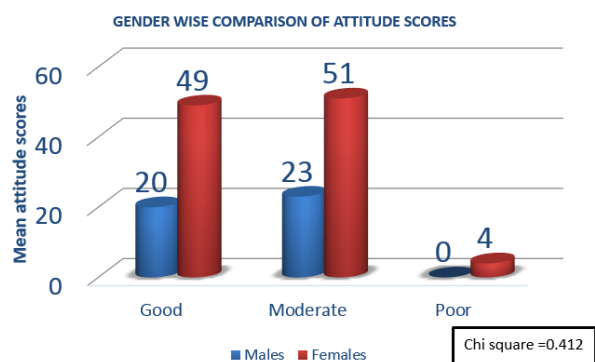
Fig. 2: Gender wise comparison of mean knowledge scores

Table 1: Distribution of study participants responses to questions related to Knowledge towards Hepatitis C with options.

Knowledge Questions		Options n(%)			
		Virus	Bacteria	Fungus	Don't know
I.	Hepatitis C is caused by	143(97.3)	2(1.4)	1(0.7)	1(0.7)
II.	Which of the following is the major route of transmission of Hepatitis C?	Blood and blood contact related	Feco-oral	Unsafe Sexual practice	Don't know
III.	What are the ways of preventing Hepatitis C infection?	101(68.7)	27(18.7)	11(7.5)	8(5.4)
		Vaccination	Proper disposal of sharps, needles and blood stains	Proper barrier techniques	Both 2 and 3
		20(13.6)	10(6.8)	8(5.4)	109(74.1)

Table 2: Distribution of study participants responses to questions related to knowledge of Hepatitis C.

Responses to knowledge questions	Responses		
	YES n (%)	NO n (%)	Don't know n(%)
Does Hepatitis C cause chronic hepatitis?	109(74.1)	22(15.0)	16(10.9)
Can Hepatitis C lead to cirrhosis of liver?	108(73.5)	18(12.2)	21(14.3)
Is Hepatitis C is associated with an increased risk of liver cancer?	91(61.9)	28(19.0)	28(19.0)
Can Hepatitis C lead to jaundice?	102(69.4)	24(16.3)	21(14.3)
Is Hepatitis C infection symptomatic?	88(59.9)	42(28.6)	17(11.6)
Can Hepatitis C be spread through sharing injecting equipment, such as needles and operation tools?	122(83.0)	15(10.2)	10(6.8)
Can Hepatitis C be transferred from mother to fetus?	100(68.0)	23(15.6)	24(16.3)
Can Hepatitis C spread through blood-to-blood contact?	112(76.2)	22(15.0)	13(8.8)
Can a dentist contract Hepatitis C from his patients if he/she does not use proper barrier techniques?	116(78.9)	18(12.2)	13(8.8)
Can dentists transmit hepatitis C to their patients if he/she does not use proper barrier techniques?	112(76.2)	14(9.5)	21(14.3)
Are there any diagnostic or screening tests for Hepatitis C?	113(76.9)	11(7.5)	23(15.6)
Is there a vaccine against Hepatitis C?	61(41.5)	62(42.2)	24(16.3)
Is Hepatitis C infection treatable?	91(61.9)	25(17.0)	31(21.1)
Once you had Hepatitis C, you cannot catch it again because you are immune	37(25.2)	57(38.8)	53(36.1)
Is Hepatitis C life threatening?	94(63.9)	36(24.5)	17(11.6)

**Fig. 3:** Gender wise comparison of mean attitude scores

complications of Hepatitis C. The results were in contrast to the study by Peeran et al² & Joukar et al¹⁵ among dental

interns and health care workers. The dental interns in present study had doubt regarding the nature of disease. Only 28.6% felt that Hepatitis C infection is asymptomatic and 11.6% were not aware about the nature of the disease. In contrast the study among dental undergraduates and postgraduates, by Sharma et al⁴ showed 57.12% students were aware of asymptomatic nature of infection.

Regarding the major route of transmission, only 68.7% answered correctly. The results are in line with the study by Peeran et al² (66.7%). Whereas in study by Todorova et al¹⁶ majority 90.6% dental students were aware of it. The dental interns in present study also opted for other incorrect options like sexual contact and feco oral route as mode of transmission. A study among practicing dentists by Batool et al.¹⁷ however had a different report wherein, 98.5% participants agreed that blood contact is the major route of hepatitis C transmission.

In the present study only 83% participants were aware that sharing of needles and operation tools can spread Hepatitis C. In contrast, the study done by Sharma et al⁴ where 99.6% participants were aware regarding the spread of Hepatitis C. Knowledge regarding the spread of Hepatitis C from mother to foetus was poor. About 15.6% students felt it cannot spread in contrast to study by Sharma et al (35.9%).⁴ Only 76.2% were aware that Hepatitis C can spread through blood to blood contact, as compared to the study by Sharma et al (99.4%).⁴ Knowledge of dental students on cross infection from patients to dentist or dentist to patients was found to be little less as compared to the study done by Peeran et al.² Overall 76.9% dental interns were aware about the availability of diagnostic or screening tests but 15.6% were in doubt. About 41.5% participants answered that HCV vaccine is available, whereas in reality no viable vaccine against HCV exists at present. Almost similar result has been reported by Peeran et al² and Setia et al¹⁸ but the study done by Sharma et al, Gambhir RS et al,¹⁹ 74.4% and 53% participants respectively agreed for the presence of vaccine. And in studies by Rostamzadeh et al,²⁰ Kadeh²¹ and Batool et al¹⁷ about 66%, 8% and 25% dentists respectively had agreed for the presence of vaccine. This clearly indicates the lack of knowledge and blind assumption among the dental interns regarding the vaccine in the present study.

Majority of the dental interns identified proper disposal and barrier techniques as the ways for preventing HCV infection. About 17% felt that the infection is non-treatable in contrast to the study by Sharma et al⁴ (31.15%). About 25.2% participants felt that once they are infected by HCV, they become immune for the infection in their later life. Overall 63.9% participants were of the opinion that HCV infection is life threatening and results are in line with study done by Sharma et al(79.3%).⁴ About 53.1% participants were aware that HCV doesn't spread through saliva and the results are in line with the study done by Sharma et al⁴ (46.4%) among dental students. Majority (88.4%) of the participants were knowledgeable regarding non transmission of infection by casual contacts and hugs and the results are in line with the study by Sharma et al⁴ (96.5%) among dental students.

In the present study about 81% participants were ready to treat high risk or HCV infected patients. The results are in line with the study by Richmond et al²² done among health professionals and in contrast to the study by Peeran et al² (44.4%) among dental interns. Almost 63.5% participants answered that they would be stressed while treating a known case of HCV. On the contrary, lower percentage of dental students (48.3%) were worried of being infected from a known case of hepatitis C in study by Tibdewal et al²³ and higher percentage (85.2%) in the study by Peeran et al.² Only, 41.5% study participants believed that hepatitis C positive patient can be safely treated in a normal dental

setting and the results are in line with the studies by Peeran et al² (41.4%), Gambhir et al¹⁹ (46%). Whereas studies by Rostamzadeh et,²⁰ Kadeh H²¹ et al among dentists, 64.2% and 39% respectively had agreed that patients with HCV infections should be treated in special clinics.

The dental students (65.3%) were not satisfied with the current dental curriculum which does not provide them with sufficient knowledge and clinical training needed to manage the HCV-infected patient. Lack of knowledge can lead to ignorance and misperception toward HCV infections and further while providing treatment to the affected patients.² The results were in contrast to study by Peeran et al² wherein only 37.5% dental interns felt their curriculum was insufficient for managing HCV patients. About 67.3% students were confident with the standard precautions used for prevention of hepatitis C transmission. While in a study done by Temple-Smith et al²⁴ in Australia around 100% dental professionals were aware of and claimed to practice standard precautions. The results suggests that, there is an alarming need that dental students should strictly follow standard precautions in routine clinical practice with respect to the current study. Majority (81.6%) of the participants felt that the dentists should inform the patients regarding their HCV status, as every patient has the right to be treated safe. The study by Peeran et al² showed lesser percentage of dental interns were of the same view (63%). Majority (86.4%) felt that the patients should correctly inform regarding their HCV positive status to dentists and the results are in line with study by Peeran et al²(92.6%).

Majority (92.5%) of the participants were of the opinion that regular screening of the dentist and healthcare professionals can protect the patients. Also majority (85%) felt, HCV testing should be made mandatory for all patients undergoing any surgical procedures. The results are in line with the study by Peeran et al.² Overall only 66% dental interns were of the opinion that they have no right to reject the treatment of HCV infected patients as compared to the higher percentage (70.4%) of dental interns in study by Peeran et al.² In case of an emergency, only 39.5% were willing to perform mouth to mouth resuscitation in a hepatitis C positive patient. Practically any disease transmissible by secretions or blood may be acquired during basic cardiopulmonary resuscitation (CPR). This fact and hesitation of mouth-to-mouth contact with other people discourages rescuer to perform the CPR in emergency situations. In spite of the number of potentially contagious diseases, only reports of isolated incidents have been published and no case of hepatitis or HIV transmission has been reported over the years.²⁵ Considering this fact that benefits are more than the risks, one should perform lifesaving mouth to mouth resuscitation during an emergency.² The dental interns attitude during emergency was little better as compared to study by Peeran et al,² among dental interns, were

only 18.5% were ready for mouth to mouth resuscitation. About 81.6% dental interns felt they should uphold the confidentiality of their patients as compared to the lower percentage (66.7%) of dental interns in study by Peeran et al.²

Only 61.9% of participants in the present study had good knowledge scores regarding HCV. This finding is better than other studies conducted by Todorova¹⁶ et al, Gambir¹⁹ et al, Peeran² et al where only 6%, 21% and 45% had good knowledge respectively. There was relationship between Gender and mean knowledge scores in present study, with higher knowledge among females. The results are in contrast to study by Gambir¹⁹ et al.

In the present study convenient sample enabled the ease of research, is time sensitive, data was readily available and more importantly its cost effective. Dental interns were selected, as they are the future practioners. During internship the dental students have more exposure to clinical care. The knowledge and attitude regarding Hepatitis C helps them to treat such infected patients confidently, also by preventing cross infection and enable them to serve better. Cross sectional nature of the study enabled the collection of data from the dental interns in Davangere city with limited resources. This study design allowed to assess the association between different variables at particular time and it enables formulation of hypothesis. A direct personal approach was used for this survey because of the inherent advantage of extremely good response rate. Research questionnaire was designed based upon the available references from previous studies.^{2,4,10–12} Questionnaire consist of three sections with closed ended questions, which helped us in getting the quick responses, least fatigue to the participants and easy to analyse and interpret using computer based statistical software. The questionnaire was self-administered to the participants in their respective clinical posting and collected immediately after completion in order to get more efficient and effective responses from the participants.

5. Strengths and limitations of the study

Study was having a 100% response rate and contamination was taken care to avoid any response bias. Limitations of the study are, as the study design was a Cross sectional survey, where knowledge was assessed at single point of time. Study included the dental interns from two Dental colleges of Davangere city, hence the results cannot be generalized to entire dental interns population. Information collected might have created some amount of social desirability bias in the form of over reporting or under reporting during the response process.

6. Conclusions

Dental interns participated in the present study had good knowledge regarding the nature, mode of transmission,

prevention and treatment related to Hepatitis C. Whereas they showed moderate level of attitude in the management and handling of Hepatitis C patients in their practice.

7. Recommendations

Although participants showed good knowledge and moderate level of attitude,

1. It is vital to reinforce the dental students regarding the epidemiology of Hepatitis C and related management including post exposure prophylactic measures.
2. Enough training should be provided during their course of academic to screen and identify asymptomatic patient.
3. There is a need to expose them for continuous educational programs to enhance their knowledge related to nature, mode of transmission and proper precautionary measure in handling such patients to reduce any discrimination attitude towards treating the patients with Hepatitis C.

8. Source of Funding

None.

9. Conflict of Interest

None.

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