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Knowledge and Attitude of Dental Students and Interns in Saudi Arabia (Riyadh Region) among Hepatitis C Virus Infection

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Authors' contributions

This work was carried out in collaboration among all authors. Authors FSA, NA, ARA and KSA designed the study, performed the statistical analysis, wrote the protocol and wrote the first draft of the manuscript. Authors AIA and AOA managed the analyses of the study. Author AMA managed the literature searches. All authors read and approved the final manuscript.

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ABSTRACT

Introduction: Hepatitis C virus (HCV) is considered one of the leading causes of chronic liver conditions in the world. The primary route of transmission of HCV can be by exposure of infected blood or sharing a contamination syringe during the injection of drugs. the purpose of this research to evaluate and assess the knowledge and attitude of HCV infection among dental students and interns in Saudi Arabia population specially Riyadh region.
Materials and Methods: This is a cross sectional-based survey, using a questionnaire which was divided into two parts, first covering sociodemographic information of the participant regards gender, demographic variable, academic level of the participant and the University. Second part of the questionnaire was established based on the knowledge and attitude of the participant in regard to HCV.

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Results: A total of 218 students participated in this study. The responses of participants differed in various academic levels with a statistically significant difference in only two questions; in question 10 when they were asked whether or not they knew that a vaccine for HCV exists (p = 0.02) and question 20, if they believed that dental staff would be afraid to treat a patient if they found out his/her positive HCV status (p = 0.02).
Conclusions: The present study showed that knowledge, among the dental students and interns in the Riyadh region was not adequate in regard to HCV, and their attitude toward HCV patients was inequitable.

Keywords: Hepatitis C virus; dental student; HCV vaccine; Riyadh region; Saudi Arabia.

1. INTRODUCTION

Hepatitis can be defined as an inflammation of the liver that can cause a variety of health problems and can eventually cause death. Hepatitis mainly have different five types that include type A, B.C.D and E that have a distinct mode of transmission; however, all can lead to liver diseases [1]. Hepatitis C virus (HCV) is considered one of the leading causes of chronic liver conditions in the world [2]. The prevalence of HCV based on antibodies HCV positive test globally is estimated at 1.6%, which ranges between 90 -145 million individuals [3]. People infected by HCV can later develop severe form of liver diseases such as cirrhosis and cancer [4].

The primary route of transmission of HCV is through exposure of infected blood or sharing a contaminated syringe during the administration of drugs [2]. Another way of HCV transmission is either through sexual transmission or maternal HCV transmission, but it is considered to be less common compared to other modes of transmission [5,6]. Dentists have one of the highest risks of HCV transmission among health care workers [7]. Several researches examined the knowledge and attitude toward the infection control protocols with the student, lab technician and dentist. The outcome of those investigations revealed that dentists have poor knowledge of infection control that increases the risk of infection depending on use of protective aids [7,8].

For instance, Okasha et al. (2015) published a study that aimed to document the prevalence and incidence of HCV between health care workers in Cairo, Egypt. This study revealed 7.3% per 1000 people per year incidence of HCV infection, which raised the risk of mortality and morbidity among dentists and health care workers in general [9]. A study was also conducted by Peeran et al. (2016) that aimed to understand and evaluate the knowledge and attitude toward HCV infection among undergraduate dental students and interns [10].

A recent study conducted by Rostamzadeh et al. (2018) to evaluate the basic infection control knowledge, attitudes and practices of dentists in the Iranian population revealed that there is an acccceptepal knowledge and attitude of dentists towards different infections such as HIV,HBV and HCV. However, some gap in infection control knowledge and applications are observed and increasing awareness of dental practitioners is recommended to have good infection control protocols to prevent any possible risk [11].

Accordingly, the purpose of this research is to evaluate and assess the knowledge and attitudes among dental students and interns regarding hepatitis c virus infection in Saudi Arabian population especially in Riyadh region. This study will provide an insight into the current knowledge and practices of dental students and interns with regards to HCV and help dental educators and policy rethink education and training policies and incorporate changes in HCV infection control training if needed, based on the results of this research.

2. MATERIALS AND METHODS

2.1 Study Design

The present study is a cross-sectional, survey based study. The survey was distributed through different social media platforms include, Twitter, Telegram, and WhatsApp among dental students and interns enrolled in the following eight dental colleges: Prince Sattam bin Abdulaziz University (PSAU), King Saud University (KSU), King Saud bin Abdulaziz University for Health Sciences (KSAU-HS), Riyadh Elm University (REU), Princess Nora bint Abdulrahman University (PNU), DAU University, Majmaah University, and Al-Farabi Colleges in Riyadh, Saudi Arabia.

2.2 Study Instrument

A self-designed, close ended questionnair was used for the survey. The questionnaire was written in the English language. It was converted to an electronic format using Google Forms. The integrity of the questionnaire was maintained by keeping the options and answering fields as they would appear in paper format. The validity of questionnare was measured first among dental students and interns in Prince Sattam Bin Abdulaziz University to ensure the feasibility of the study before distributing the questionnaire to the partcipants.

The questionnaire was divided into two parts; the first part assessed general information of the participant like demographic information, academic level of the participant and the University they belonged to. The second part of the questionnaire assessed the knowledge and attitude of the participants with regards to HCV and including items that asked about the route of transmission of HCV infection, HCV infection signs and symptom, the vaccination of HCV infection, patient thoughts toward HCV infection, and the treatment modalities of HCV patients.

2.3 Sampling and Sample Size

A stratified random sampling technique was used to obtain the study sample from among dental students and interns in the chosen dental schools. Sample size calculation was performed using the following formula:

Sample size calculation was performed using the following formula: $n = Z1\text{-}\alpha/2^2[p(1 – p)]/d^2$

Where,

n is the sample size,
$Z1\text{-}\alpha/2^2$ is the standard normal variate (at 5% Type 1 error and 95% CI [p<0.05] it is 1.96),
p is the expected proportion in population based on previous studies and,
d is the absolute error or precision.

According to this formula, with a present knowledge level of 75% based on previous studies and a precision of 5%, a minimum sample of 198 participants were needed to produce statistically accurate results.

2.4 Statistical Analysis

Data was collected, tabulated and analyzed using SPSS software (IBM Corp. Released 2012. IBM SPSS Statistics for Windows, Version 26.0. Armonk, NY: IBM Corp.). Frequency distribution of demographic variables like gender, university and academic level of participants was calculated using descriptive statistics. Comparisons were made between knowledge-based variables and academic level, University and gender using Pearson's Chi-Square tests. Variables with non-binary responses were reported individually for better visualization.

3. RESULTS

A total of 218 students participated in this study. Table 1 represents the distribution of respondents with respect to demographic variables. Majority of the respondents were males (56.8%), from Prince Sattam bin Abdulaziz University (PSAU; 29.3%) and studying in 2nd year (38.9%). The least number of respondents were from Dar Al Uloom University (DAU; 2.7%). Similarly, only 1.3% of respondents studied in 1st year and were the least with respect to academic level.

Table 2 depicts frequency distribution of responses of participants and chi-squared p values with respect to academic level of study. The responses of participants differed in various academic levels with a statistically significant difference in only two questions; in question 10 when they were asked whether or not they knew that a vaccine for HCV exists ($p = 0.02$) and question 20, if they believed that dental staff would be afraid to treat a patient if they found out his/her positive HCV status ($p = 0.02$). Participant responses to the rest of the questions did not differ significantly.

Fig. 1 depicts the distribution of "yes" responses among males and females. It was observed that in all questions, a greater number of females responded with a yes than males except in question 25 (males =47%, females = 41%). Similarly, Fig. 2 depicts the frequency distribution of responses of male and female participants. When responses of participants were compared on the basis of gender, it was found that there was no statistically significant difference between responses of males and females (Table 3).

Table 1. Distribution of the sample according to gender, university and academic level (N= Number of participants, % = Percentage)

Demographic variable		N	%
Gender	Males	124	56.8
	Females	94	43.1
University	PSAU	64	29.3
	PNU	36	16.5
	Majmaah University	8	3.6
	KSU	41	18.8
	KSU-HS	16	7.3
	DAU University	6	2.7
	REU	29	13.3
	Al Farabi Colleges	18	8.2
Academic level	1st year	3	1.3
	2nd year	85	38.9
	3rd year	44	20.1
	4th year	52	23.8
	5th year	34	15.5

Analyses were also done to compare knowledge of participants based on the university they studied in. Frequency distribution of responses are depicted in Table 4. There were differences that were statistically significant in eight of the total binary response questions in the questionnaire. These differences were found in Q.10 (p = 0), Q.13 (p=0.03), Q.14 (p=0.017), Q.15 (p=0.04), Q. 21 (p=0.007), Q.22 (p=0.01), Q.24 (p=0.001) and Q.25 (p=0.03). Distribution of participants who responded with “yes” to every question are presented in Fig. 3.

Responses to questions 2 and 3 were non-binary and are presented in Table 5, Fig. 4.and Fig. 5. When asked about the preferred method of seeking more knowledge about HCV (Q.2), majority of the males (47.5%) chose books while majority of the females (40.4%) chose visual media. This difference in responses was statistically significant (p=0.03). Similarly, majority of 2nd year students (38.8%) and 4th year students (44.2%) also chose books as their preferred source of additional HCV knowledge but the difference between academic level was not statistically significant (p=0.13). On the contrary, responses were significantly different among students of different universities (p=0.018). Additionally, when asked about the major route of transmission of Hepatitis C (Q.3), majority of the all the respondents with respect to gender, academic level and university responded chose blood (Table 5) but there were no significant differences in the responses between any variable (gender, academic level or university).

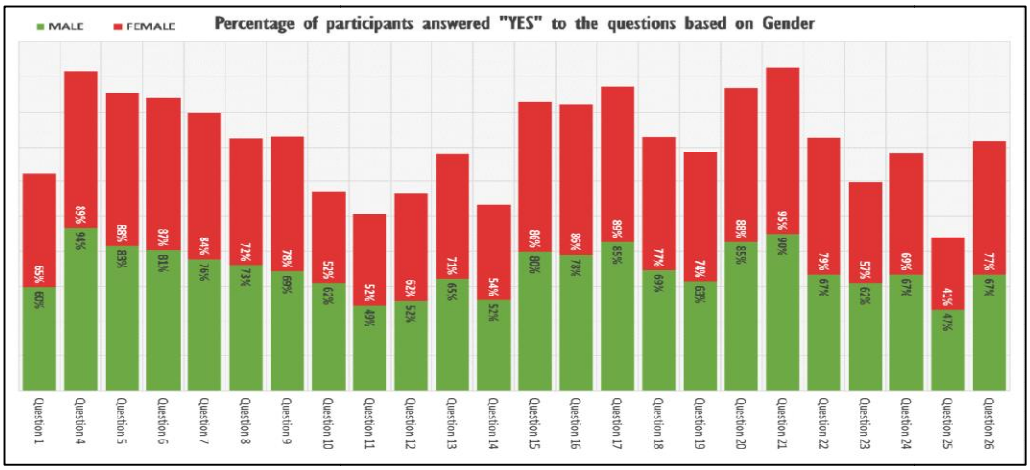

Fig. 1. Shows the % of males and females that responded “yes” to every question

Table 2. Display the distribution and comparison of the students' knowledge of HCV based on academic level composed of 26 questions. (X^2 and *P* = Statistical values)

Question	Response	2nd year students (n = 85)		3rd year students (n = 44)		4th year students (n = 52)		5th year students (n = 34)		Total students (n = 215)		X^2 *P*
		(N)	(%)	(N)	(%)	(N)	(%)	(N)	(%)	(N)	(%)	
1. Do you consider yourself having adequate knowledge about HCV infection?	Yes	47	55.29	28	63.64	35	67.31	24	70.59	134	62.33	χ2 = 3.36
	No	38	44.71	16	36.36	17	32.69	10	29.41	81	37.67	*P* = 0.3393
4. Can dentists get hepatitis C from their patient if he/she does not use a proper barrier technique?	Yes	77	90.59	41	93.18	47	90.38	33	97.06	198	92.09	χ2 = 1.70
	No	8	9.41	3	6.82	5	9.62	1	2.94	17	7.91	*P* = 0.6379
5. Can a dentist transmit hepatitis C to their patients if he/she doesn't use proper barrier techniques?	Yes	77	90.59	37	84.09	43	82.69	29	85.29	186	86.51	χ2 = 2.13
	No	8	9.41	7	15.91	9	17.31	5	14.71	29	13.49	*P* = 0.5469
6. Hepatitis C can cause chronic hepatitis?	Yes	70	82.35	37	84.09	42	80.77	30	88.24	179	83.26	χ2 = 0.91
	No	15	17.65	7	15.91	10	19.23	4	11.76	36	16.74	*P* = 0.8237
7. Hepatitis C can lead to cirrhosis?	Yes	64	75.29	33	75.00	44	84.62	30	88.24	171	79.53	χ2 = 3.90
	No	21	24.71	11	25.00	8	15.38	4	11.76	44	20.47	*P* = 0.2724
8. HCV is associated with an increased risk of liver cancer?	Yes	57	67.06	33	75.00	40	76.92	25	73.53	155	72.09	χ2 = 1.89
	No	28	32.94	11	25.00	12	23.08	9	26.47	60	27.91	*P* = 0.5948
9. Dose HCV lead to jaundice?	Yes	58	68.24	34	77.27	36	69.23	28	82.35	156	72.56	χ2 = 3.22
	No	27	31.76	10	22.73	16	30.77	6	17.65	59	27.44	*P* = 0.3595
10. Is there a vaccine against HCV exists?	Yes	52	61.18	32	72.73	23	44.23	17	50.00	124	57.67	χ2 = 9.18
	No	33	38.82	12	27.27	29	55.77	17	50.00	91	42.33	***P* = 0.0270**
11. Can a dentist treat hepatitis C positive patients in a normal dental setting?	Yes	45	52.94	18	40.91	27	51.92	18	52.94	108	50.23	χ2 = 1.939
	No	40	47.06	26	59.09	25	48.08	16	47.06	107	49.77	*P* = 0.5852
12. Do you consider that your current curriculum will make you fit to manage patient with HCV?	Yes	55	64.71	23	52.27	23	44.23	19	55.88	120	55.81	χ2 = 5.778
	No	30	35.29	21	47.73	29	55.77	15	44.12	95	44.19	*P* = 0.1229

Question	Response	2nd year students (n = 85)		3rd year students (n = 44)		4th year students (n = 52)		5th year students (n = 34)		Total students (n = 215)		X^2 *P*
13. Do you feel confident that with the standard precaution taken, there will be no transmission of HCV?	Yes	60	70.59	29	65.91	35	67.31	22	64.71	146	67.91	$\chi2 = 0.5294$
	No	25	29.41	15	34.09	17	32.69	12	35.29	69	32.09	*P* = 0.9124
14. Would you treat a patient who is at high risk of hepatitis C, such as injecting drug user?	Yes	46	54.12	28	63.64	22	42.31	17	50.00	113	52.56	$\chi2 = 4.529$
	No	39	45.88	16	36.36	30	57.69	17	50.00	102	47.44	*P* = 0.2097
15. Would you be stressed while treating a known HCV-positive patient or the risk groups?	Yes	67	78.82	37	84.09	47	90.38	26	76.47	177	82.33	$\chi2 = 3.933$
	No	18	21.18	7	15.91	5	9.62	8	23.53	38	17.67	*P* = 0.2688
16. Are you ethically/morally responsible to treat hepatitis C-positive patients?	Yes	72	84.71	35	79.55	43	82.69	26	76.47	176	81.86	$\chi2 = 1.312$
	No	13	15.29	9	20.45	9	17.31	8	23.53	39	18.14	*P* = 0.7264
17. Do you think that the patient should inform you correctly about his/her HCV positive status?	Yes	74	87.06	37	84.09	47	90.38	30	88.24	188	87.44	$\chi2 = 0.8909$
	No	11	12.94	7	15.91	5	9.62	4	11.76	27	12.56	*P* = 0.8276
18. Is it necessary that hepatitis C-positive dentists should inform their patients about his status?	Yes	64	75.29	33	75.00	38	73.08	22	64.71	157	73.02	$\chi2 = 1.504$
	No	21	24.71	11	25.00	14	26.92	12	35.29	58	26.98	*P* = 0.6814
19. Do you think that treating HCV-positive patients will increase personal risk for the disease?	Yes	59	69.41	27	61.36	41	78.85	20	58.82	147	68.37	$\chi2 = 5.113$
	No	26	30.59	17	38.64	11	21.15	14	41.18	68	31.63	*P* = 0.1637
20. Do you think that dental staff will be afraid if they know about the HCV positive status of the patient?	Yes	76	89.41	32	72.73	47	90.38	31	91.18	186	86.51	$\chi2 = 9.08$
	No	9	10.59	12	27.27	5	9.62	3	8.82	29	13.49	*P* = 0.0282
21. Do you think regular HCV testing for dentists and dental health care workers is necessary to protect the patient?	Yes	79	92.94	41	93.18	47	90.38	31	91.18	198	92.09	$\chi2 = 0.4033$
	No	6	7.06	3	6.82	5	9.62	3	8.82	17	7.91	*P* = 0.9396

Question	Response	2nd year students (n = 85)		3rd year students (n = 44)		4th year students (n = 52)		5th year students (n = 34)		Total students (n = 215)		X^2 *P*
22. Should regular hepatitis C testing of the patient be made mandatory before any surgical procedure is carried out?	Yes	67	78.82	25	56.82	38	73.08	26	76.47	156	72.56	$\chi2$ = 7.419
	No	18	21.18	19	43.18	14	26.92	8	23.53	59	27.44	*P* = 0.0597
23. Do you think that dentists have the right to reject treating hepatitis C-positive patients?	Yes	52	61.18	21	47.73	35	67.31	20	58.82	128	59.53	$\chi2$ = 3.953
	No	33	38.82	23	52.27	17	32.69	14	41.18	87	40.47	*P* = 0.2666
24. Do you think that government should construct/manage separate hospitals/clinics for HCV-positive individuals?	Yes	56	65.88	31	70.45	36	69.23	23	67.65	146	67.91	$\chi2$ = 0.3338
	No	29	34.12	13	29.55	16	30.77	11	32.35	69	32.09	*P* = 0.9536
25. In case of an emergency, would you be ready to perform mouth to mouth resuscitation (CPR) in HCV positive patient?	Yes	41	48.24	21	47.73	17	32.69	15	44.12	94	43.72	$\chi2$ = 3.564
	No	44	51.76	23	52.27	35	67.31	19	55.88	121	56.28	*P* = 0.3126
26. Do you think that you have to uphold the confidentiality of a patient with hepatitis C-positive status?	Yes	62	72.94	30	68.18	35	67.31	25	73.53	152	70.70	$\chi2$ = 0.761
	No	23	27.06	14	31.82	17	32.69	9	26.47	63	29.30	*P* = 0.8588

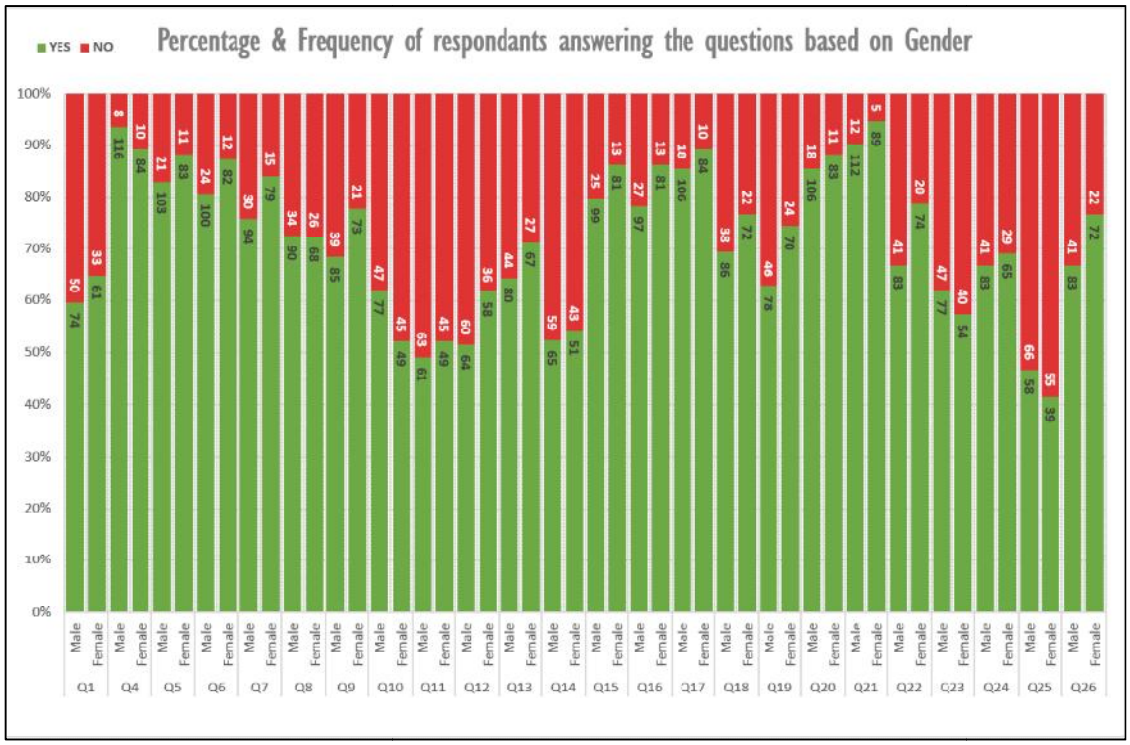

Fig. 2. Frequency distribution of participant responses on the basis of gender

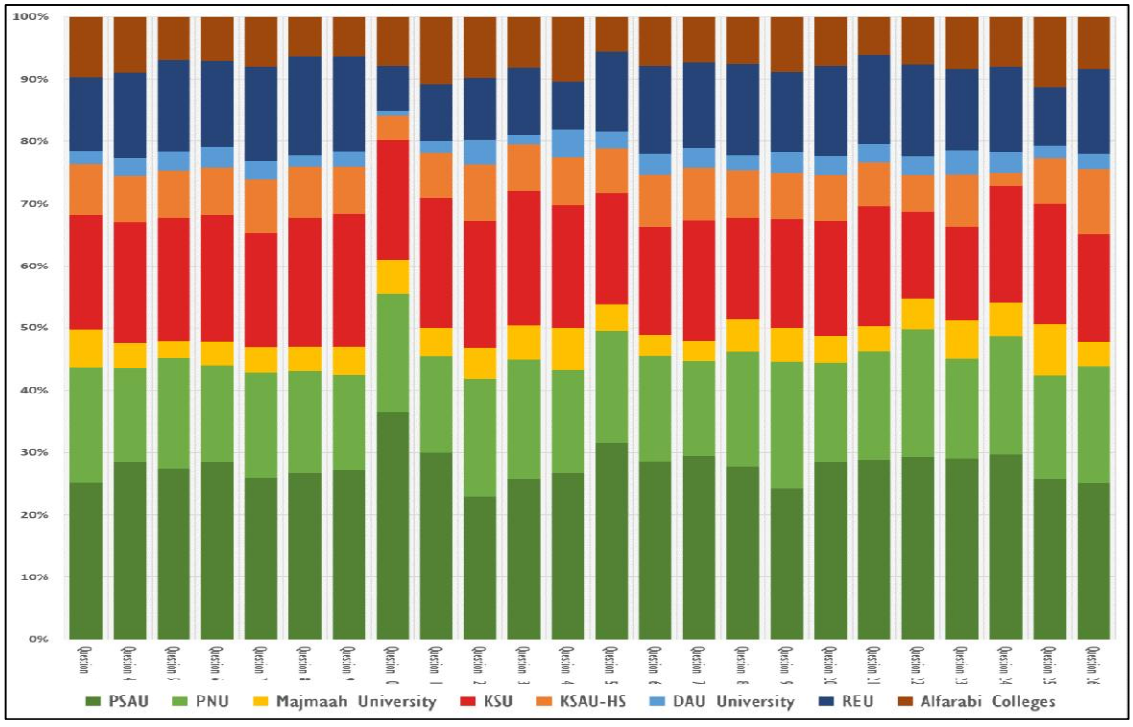

Fig. 3. Shows the % of participants that responded "yes" to every question based on university

Table 3. Distribution and comparison of the students' knowledge of HCV based on gender. (X^2 and *P* = Statistical values)

Questions	Gender	YES	NO	χ2	P value
Q1	Male	74	50	0.617	0.432
	Female	61	33		
Q4	Male	116	8	1.237	0.266
	Female	84	10		
Q5	Male	103	21	1.169	0.28
	Female	83	11		
Q6	Male	100	24	1.684	0.194
	Female	82	12		
Q7	Male	94	30	2.214	0.137
	Female	79	15		
Q8	Male	90	34	0.002	0.969
	Female	68	26		
Q9	Male	85	39	2.225	0.136
	Female	73	21		
Q10	Male	77	47	2.179	0.14
	Female	49	45		
Q11	Male	61	63	0.184	0.668
	Female	49	45		
Q12	Male	64	60	2.208	0.137
	Female	58	36		
Q13	Male	80	44	1.113	0.291
	Female	67	27		
Q14	Male	65	59	0.072	0.788
	Female	51	43		
Q15	Male	99	25	1.489	0.222
	Female	81	13		
Q16	Male	97	27	2.252	0.133
	Female	81	13		
Q17	Male	106	18	0.718	0.397
	Female	84	10		
Q18	Male	86	38	1.405	0.236
	Female	72	22		
Q19	Male	78	46	3.28	0.07
	Female	70	24		
Q20	Male	106	18	0.367	0.545
	Female	83	11		
Q21	Male	112	12	1.413	0.235
	Female	89	5		
Q22	Male	83	41	3.687	0.055
	Female	74	20		
Q23	Male	77	47	0.482	0.487
	Female	54	40		
Q24	Male	83	41	0.12	0.729
	Female	65	29		
Q25	Male	58	66	0.605	0.437
	Female	39	55		
Q26	Male	83	41	2.428	0.119
	Female	72	22		

Table 4. Distribution and comparison of the students' knowledge of HCV based on university. (X^2 and *P*= Statistical values)

University	Q1		Q4		Q5		Q6		Q7		Q8		Q9		Q10	
	YES	NO	YES	NO	YES	NO	YES	NO	YES	NO	YES	NO	YES	NO	YES	NO
PSAU	34	30	57	7	51	13	52	12	45	19	42	22	43	21	46	18
PNU	25	11	30	6	33	3	28	8	29	7	26	10	24	12	24	12
Majmaah	8	0	8	0	5	3	7	1	7	1	6	2	7	1	7	1
KSU	25	16	39	2	37	4	37	4	32	9	33	8	34	7	24	17
KSAU-HS	11	5	15	1	14	2	14	2	15	1	13	3	12	4	5	11
DAU	3	3	6	0	6	0	6	0	5	1	3	3	4	2	1	5
REU	16	13	27	2	27	2	25	4	26	3	25	4	24	5	9	20
Alfarabi Colleges	13	5	18	0	13	5	13	5	14	4	10	8	10	8	10	8
χ2	9.948		7.622		11.861		5.721		7.58		10.313		8.93		26.601	
P value	0.192		0.367		0.105		0.573		0.371		0.172		0.258		**0**	
University	**Q11**		**Q12**		**Q13**		**Q14**		**Q15**		**Q16**		**Q17**		**Q18**	
	YES	NO	YES	NO	YES	NO	YES	NO	YES	NO	YES	NO	YES	NO	YES	NO
PSAU	33	31	28	36	38	26	31	33	57	7	51	13	56	8	44	20
PNU	17	19	23	13	28	8	19	17	32	4	30	6	29	7	29	7
Majmaah	5	3	6	2	8	0	8	0	8	0	6	2	6	2	8	0
KSU	23	18	25	16	32	9	23	18	32	9	31	10	37	4	26	15
KSAU-HS	8	8	11	5	11	5	9	7	13	3	15	1	16	0	12	4
DAU	2	4	5	1	2	4	5	1	5	1	6	0	6	0	4	2
REU	10	19	12	17	16	13	9	20	23	6	25	4	26	3	23	6
Alfarabi Colleges	12	6	12	6	12	6	12	6	10	8	14	4	14	4	12	6
χ2	6.725		12.611		14.793		17.044		14.507		4.961		7.631		7.486	
P value	0.458		0.082		0.039		0.017		0.043		0.665		0.366		0.38	
University	**Q19**		**Q20**		**Q21**		**Q22**		**Q23**		**Q24**		**Q25**		**Q26**	
	YES	NO	YES	NO	YES	NO	YES	NO	YES	NO	YES	NO	YES	NO	YES	NO
PSAU	36	28	54	10	58	6	46	18	38	26	44	20	25	39	39	25
PNU	30	6	30	6	35	1	32	4	21	15	28	8	16	20	29	7
Majmaah	8	0	8	0	8	0	8	0	8	0	8	0	8	0	6	2
KSU	26	15	35	6	39	2	22	19	20	21	28	13	19	22	27	14
KSAU-HS	11	5	14	2	14	2	9	7	11	5	3	13	7	9	16	0
DAU	5	1	6	0	6	0	5	1	5	1	5	1	2	4	4	2
REU	19	10	27	2	29	0	23	6	17	12	20	9	9	20	21	8
Alfarabi Colleges	13	5	15	3	12	6	12	6	11	7	12	6	11	7	13	5
χ2	12.969		4.081		22.422		18.428		9.446		23.831		15.247		11.988	
P value	0.073		0.77		0.007		0.01		0.222		0.001		0.033		0.101	

Table 5. Shows distribution and comparison of the students' knowledge of HCV in non-binary response-based questions. (X^2 and *P* = Statistical values)

Q.2-Which of the following do you prefer to improve your knowledge about HCV?							
Demographic variables		**Meetings**	**Books**	**Journals**	**Visual media**	**χ2**	**P value**
Gender	Male	26	59	8	31	8.945	0.03
	Female	19	28	9	38		
University	PSAU	13	30	4	17	36.74	0.018
	PNU	8	11	3	14		
	Majmaah	6	1	1	0		
	KSU	7	13	3	18		
	KSAU-HS	2	3	3	8		
	DAU	1	3	0	2		
	REU	6	14	1	8		
	Alfarabi	2	12	2	2		

Q.2-Which of the following do you prefer to improve your knowledge about HCV?							
Demographic variables		**Meetings**	**Books**	**Journals**	**Visual media**	**χ2**	**P value**
Academic Level	1st Year	1	1	1	0	17.54	0.13
	2nd Year	18	33	4	30		
	3rd Year	12	13	1	18		
	4th Year	9	23	8	12		
	5th Year	5	17	3	9		
Q.3-Which of the following is the major route of transmission of Hepatitis C?							
Demographic variables		**Blood**	**Fecooral**	**Sexual**	**χ^2**	**P value**	
Gender	Male	96	19	9	0.365	0.833	
	Female	74	12	8			
University	PSAU	49	10	5	18.77	0.174	
	PNU	24	10	2			
	Majmaah	7	1	0			
	KSU	34	3	4			
	KSAU-HS	14	2	0			
	DAU	4	0	2			
	REU	22	5	2			
	Alfarabi	16	0	2			
Academic Level	1st Year	2	0	1	9.21	0.324	
	2nd Year	68	9	8			
	3rd Year	35	8	1			
	4th Year	37	11	4			
	5th Year	28	3	3			

4. DISCUSSION

Very few studies in literature discuss the knowledge and attitude of dental student and intern towards HCV infection especially in Saudi Arabia.

Therefore, the main aim of this research was to understand the level of understanding regards the HCV infection, which in turn improves the awareness regards the implication of the infection control guidelines among dental students and interns.

A total of 218 respondents from both genders participated in this study from different academic levels and institutions in Saudi Arabia. There was no significant difference in knowledge between males and females, and between different academic levels. However, a similar study found that female practitioners have more negative attitudes towards infection compared to their male counterparts [12].

To the best of the authors' knowledge, this is the first study that investigates the knowledge and attitude of dental students and interns in Saudi Arabia. Other studies from different countries have the same aims but differ in the aspect of their samples.

Regarding knowledge of HCV infection, our findings show that most of the students in our sample lack basic knowledge of HCV infection that could help them to manage the patients diagnosed with HCV. A study published by Mtengezo et al. (2016) in Malawi that aimed to understand the knowledge and attitude of HIV, HBV and HCV virus infection among health care workers, showed that the majority of participants had less knowledge with regards to HCV infection [13]. The authors of this study recommend an educational program to improve this shortage in their knowledge. In our study we aim to understand the early knowledge of the students to overcome the weakness in early stage. Another study by Peeran et al. (2016) similar to our study investigated the knowledge and attitude of dental students from Libya. The result of that study indicates a gap in knowledge of HCV infection among the students [10]. These results show to be similar to findings in this study. The knowledge of participants is found to be equal between different academic levels and this lack of knowledge can elevate the stress level of students and interns when they plan to treat HCV patients. Furthermore, the rejection of treatment of HCV patients is not a positive attitude for the patients and can reflect a negative action that harms the patients. The students and interns should always follow

universal infection control guidelines to treat any patients.

As for the attitude towards HCV infection, our results show that there is no clear answer from the participants with regards to the best approach to manage these kinds of patients. These results were also present in different studies that investigate the attitude toward HCV patients [10,14,15].

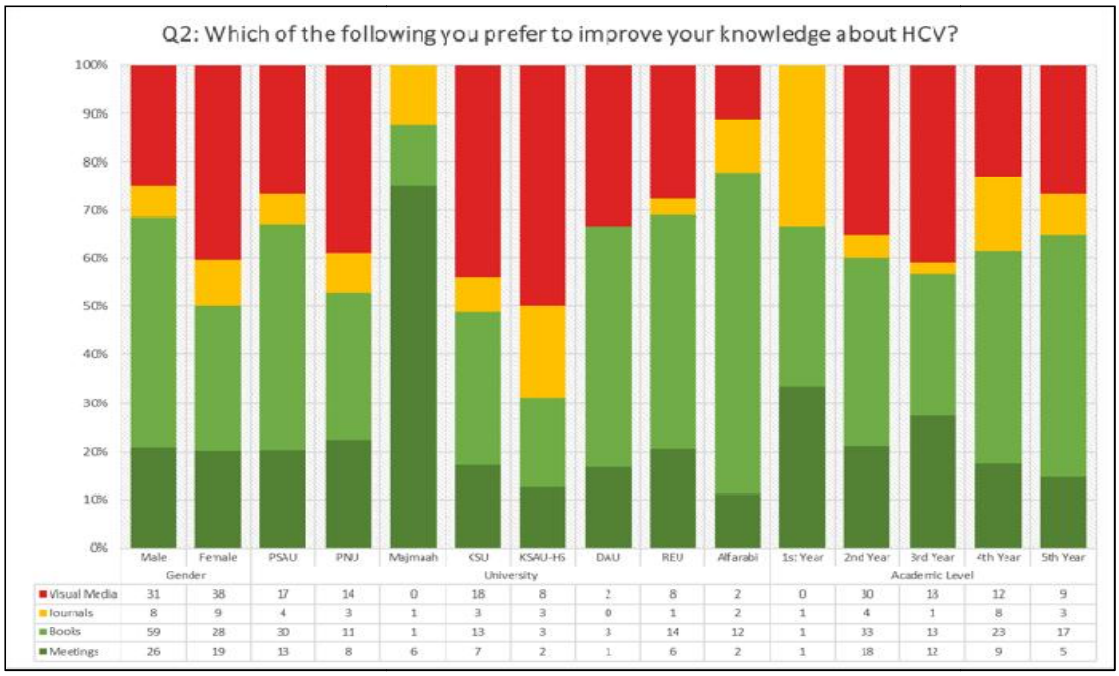

Fig. 4. Frequency distribution of responses to question 2

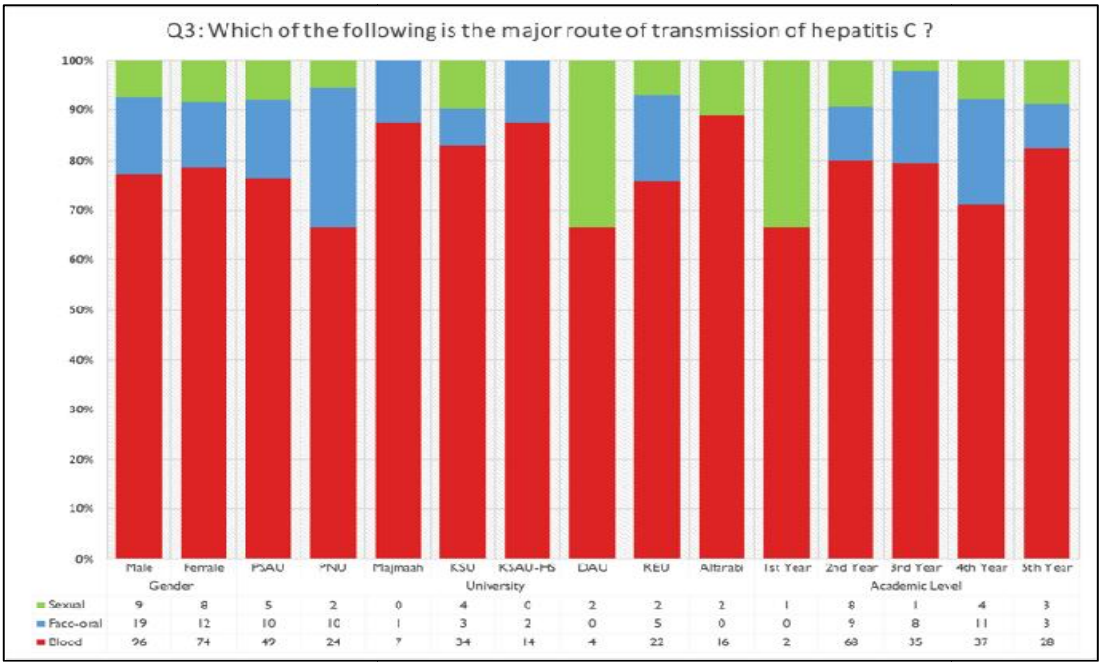

Fig. 5. Frequency distribution of responses to question 3

5. CONCLUSION

The present study demonstrated that the knowledge of HCV among dental students and interns in Riyadh region was not adequate, and their attitude toward HCV patients was not favorable. However, this research paper clearly shows that the student knowledge and attitude for HCV patient can be improved if further improvements are made in education and training to allow students and interns to handle HCV patients without discriminating against these types of patients.

6. LIMITATIONS

This study primary evaluates the knowledge and attitude of HCV infection among the students and interns in Riyadh region, Saudi Arabia. Response bias is intrinsic to all survey-based research and limits the application of results of such studies to the broader population and this is also a limitation in this study. Furthermore, a non-validated instrument was used in this study which hampers reproducibility of results on other similar samples. We recommend future researchers to develop standardized, validated instruments to assess self-reported measures of knowledge and attitudes.

CONSENT

As per international standard or university standard, Participants' written consent has been collected and preserved by the authors.

ETHICAL APPROVAL

Ethical approval for the study was obtained from the Ethical Committee of Prince Sattam bin Abdulaziz University.

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COMPETING INTERESTS

Authors have declared that no competing interests exist.

REFERENCES

1. Razavi H. Global Epidemiology of Viral Hepatitis. Gastroenterology Clinics. 2020;49:179-189.
2. Manns MP, Buti M, Gane E, Pawlotsky JM, Razavi H, Terrault N, Younossi Z. Hepatitis C virus infection. Nat Rev Dis Primers. 2017;3:17006.
3. Gower E, Estes C, Blach S, Razavi-Shearer K, Razavi H. Global epidemiology and genotype distribution of the hepatitis C virus infection. J Hepatol. 2014;61:S45-57.
4. Jacobson IM, Davis GL, El–Serag H, Negro F, Trépo C. Prevalence and challenges of liver diseases in patients with chronic hepatitis C virus infection. Clinical Gastroenterology and Hepatology. 2010;8:924-933.
5. Lopata SM, McNeer E, Dudley JA, Wester C, Cooper WO, Carlucci JG, Espinosa CM, Dupont W, Patrick SW. Hepatitis C testing among perinatally exposed infants. Pediatrics. 2020; 145.
6. Schmidt AJ, Falcato L, Zahno B, Burri A, Regenass S, Müllhaupt B, Bruggmann P. Prevalence of hepatitis C in a Swiss sample of men who have sex with men: whom to screen for HCV infection? BMC Public Health. 2014;14:3.
7. Al-Dwairi ZN. Infection control procedures in commercial dental laboratories in Jordan. Journal of Dental Education. 2007;71:1223-1227.
8. Khanghahi BM, Jamali Z, Azar FP, Behzad MN, Azami-Aghdash S. Knowledge, attitude, practice, and status of infection control among Iranian dentists and dental students: A systematic review. Journal of Dental Research, Dental Clinics, Dental Prospects. 2013;7:55.
9. Okasha O, Munier A, Delarocque-Astagneau E, Houssinie El, M., Rafik M, Bassim H, Hamid MA, Mohamed MK, Fontanet A. Hepatitis C virus infection and risk factors in health-care workers at Ain Shams University Hospitals, Cairo, Egypt. East Mediterr Health J. 2015;21199-212.
10. Peeran S, Peeran S, Alsaid F, Murugan M, ElHasan A, Ahmed M. Hepatitis C: Knowledge and attitude of graduating dentist from Faculty of Dentistry, Sebha, Libya. Dentistry and Medical Research. 2016;4:18-23.

11. Rostamzadeh M, Afkhamzadeh A, Afrooz S, Mohamadi K, Rasouli MA. Dentists' knowledge, attitudes and practices regarding Hepatitis B and C and HIV/AIDS in Sanandaj, Iran. BMC oral health. 2018;18:220.
12. Rabiee M, Kazennezhad E. Knowledge and attitude of general dentists regarding HIV and hepatitis infections in rasht. Research in Medical Education. 2012;4:58-67.
13. Mtengezo J, Lee H, Ngoma J, Kim S, Aronowitz T, DeMarco R, Shi, L. Knowledge and attitudes toward HIV, hepatitis B virus, and hepatitis C virus infection among health-care workers in Malawi. Asia-Pacific Journal of Oncology Nursing. 2016;3:344.
14. Souza N, Villar L, Moimaz S, Garbin AÍ, Garbin C. Knowledge, attitude and behaviour regarding hepatitis C virus infection amongst Brazilian dental students. European Journal of Dental Education. 2017;21:e76-e82.
15. Todorova TT, Tsankova G, Tsankova D, Kostadinova T, Lodozova N. Knowledge and attitude towards hepatitis B and hepatitis C among dental medicine students. Journal of IMAB–Annual Proceeding Scientific Papers. 2015;21: 810-813.

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