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Research Article

Knowledge, perception and practices of Suez Canal University students regarding Hepatitis C Virus infection risk and means of prevention

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Abstract

Background: Egypt has the highest prevalence of HCV in the world as more than 10% of population suffers from HCV infection. High prevalence of HCV in Egypt represents a great risk to the whole population that requires aggressive mass awareness regarding routes of infection and means of prevention.

Aim: To determine the knowledge and practices of university students in 5 different faculties in Suez Canal University regarding HCV infection and means of prevention.

Materials & Method: A cross sectional study was conducted in five university faculties in Suez Canal University.

Results: The study included 698 students from the faculties of Medicine, Pharmacy, Dentistry, Nursing and Education in Suez Canal University in Ismailia city in Egypt. There was a statistically significant difference regarding the knowledge about the diagnosis, complications and routes of transmission total knowledge score for HCV among the different faculties.

Conclusion and Recommendations: Knowledge and practices of university students in Suez Canal University is partial to weak especially in students of non-biological sciences who have less close contact with patients.

Introduction

The global prevalence of Hepatitis C virus (HCV) is a major health problem in Egypt as it`s prevalence is reaching 13% of the population. Also, it is considered a serious social and economic problem that needs a lot of effort to eradicate it [1]. Liver related

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death, liver cirrhosis and hepatocellular carcinoma (HCC) are the end results of untreated HCV patients [2].

In 2015, the burden of HCV on the Egyptian economy was estimated around $3.81 billion due to consumption of the health facilities and indirectly due to disability and loss of life [3].

Health care providers (HCP) such as physicians, nurses, laboratory staff and medical students are usually at great risk of exposure [4]. Among these, HCV is transmitted through contaminated surgical instruments, needles [5], skin prick, injection drug use [6] and blood transfusion [7]. Also, HCP infected with HCV are at great risk of discrimination and stigmatization at their work by their colleagues and even by their family members due to poor knowledge and lack of awareness of viral transmission [8,9]. In order to eliminate the infection with this major health public issue, it is important to be strict with the infection control guidelines [10].

In Egypt, a survey was conducted on 278 universities where 1,319,525 undergraduate students enrolled. But due to the asymptomatic characteristics of HCV infection, university students who are infected could easily infect others without knowing that [11].

Promoting insightful awareness of university students toward this major health problem will gradually help in eliminating this problem. If students do not have access to information about the disease, then they are not likely to have sufficient knowledge or be concerned of contracting it. The state should aim to raise a generation of students, aware of the burden of HCV infection in Egypt, and who will be willing to accept responsibility to expend their efforts in the future to limit HCV infection.

The aim of this study is to measure the level of knowledge of university students and their perception regarding HCV infection, and means of its prevention, in order to adequately plan an intervention program to reduce the risk of infection and thus lower the infection rates.

Statistical analysis

Data collected through the questionnaire was coded, entered and analyzed using Microsoft Excel software. Data was then imported into Statistical Package for the Social Sciences (SPSS version 18.0) software for analysis.

Chi square test for qualitative variables, paired t test, and one-way ANOVA with least significance difference. Multiple regression analysis was used to test relationship between different dependent and independent variables were used and specify what they were used for just as the multiple regression. *P* value will be set at <0.05 for significant results.

Ethical consideration

The Ethics Committee in Faculty of medicine Suez Canal University approved this work according to the declaration of Helsinki. Also, the Research Ethical Committee of Egyptian Ministry of Health and Population Central Directorate for Research and Health Development approved the study. Consent for an interview was taken from each participant, who was assured about the confidentiality of his/her information.

Materials and Methods

A cross sectional study conducted in Ismailia at Suez Canal University from April 2015 till February 2018 on 698 university students in 5 faculties: Education, Nursing, Medicine, Pharmacy and Dentistry. This sample size is a stratified cluster sample with clusters representing the 5 faculties and from each faculty sample random sample was drawn.

The data were collected through a self-administered questionnaire composed of 45 questions to determine the demographic, social and behavioral characteristics of the studied population. Also their knowledge and perception of the possible social and behavioral risk factors for HCV infection and its transmission were queried.

As well as the method of HCV prevention the infection control procedures which include questions about the sterilization and disinfection, hand washing, care of sharp, needle stick injury and ways to deal with it, dealing with blood spoilage, regular check-ups and HB virus vaccination. All the data were kept confidential throughout the steps of work and were only accessible to the team members.

Results

This cross sectional study was carried out on 698 students from the faculties of Medicine, Pharmacy, Dentistry, Nursing and Education in Suez Canal University to determine the knowledge, perception and practices of those students regarding HCV infection and means of prevention.

Table 1 shows that the mean age of the participants was 20.74± 1.31. 52% of the sample was in the age group 19- 21 years.

Table 2 shows that 98.4% of the students have heard about hepatitis C, and 95.6% of them know that it is prevalent in Egypt.

Table 3 shows the proportion of correct answers toward each Hepatitis C knowledge question. There was a statistically significant difference regarding the knowledge about the symptoms, diagnosis, complications and routes of transmission among the different faculties.

Table 1: Background characteristics of the studied sample (n=698).

Variables	Categories	Frequency (%)(n=698)
Age (years)	17 – 19	146(20.9)
	19- 21	362(52.1)
	22 -24	190(27.3)
	Mean ± SD= 20.74±1.31 Range (17 – 24)	
Gender	Male	155(22.2)
	Female	543(77.8)
Faculty	Medicine	204(29.2)
	Pharmacy	96(13.8)
	Nursing	193(27.7)
	Dentistry	76(10.9)
	Education	129(18.5)
School Year	1st	84(12)
	2nd	108(15.5)
	3rd	67(9.6)
	4th	314(45)
	5th	73(10.5)
	6th	52(7.4)

Table 2: Knowledge about Hepatitis C virus and its prevalence (n=698).

Variables	Categories	Frequency (%) n=698
Have you heard about Hepatitis C	Yes	688(98.5)
	No	10(1.4)
Do you think HCV is prevalent in Egypt	Yes	669(95.8)
	No	10(1.4)
	I do not know	19(2.7)
How did you hear about HCV	Studies	461(66.5)
	TV	450(64.9)
	Radio	61(8.8)
	Magazines	141(20.3)
	Brochures and posters	179(25.8)
	Seminars	130(18.8)
	Primary health care units	175(25.3)
	Relatives and neighbors	412(59)
	Other	23(3.3)

Table 3: Correct knowledge answers toward hepatitis C in association with students' field of study.

Domain		Correct Answers No (%)					*P* value
		Medicine n=204	Pharmacy n=96	Nursing n=193	Dentistry N=76	Education n=129	
Symptoms	Urine Color Change	161 (78.9)	44 (47.3)	79 (41.4)	25 (45.5)	41 (31.8)	<0.001**
	Vomiting	79 (38.7)	12 (12.9)	63 (33)	9 (16.4)	20 (15.5)	<0.001**
	Anorexia	130 (63.7)	28(30.1)	104(54.5)	17(30.9)	31(24)	<0.001**
	Jaundice	156(76.5)	55(59.1)	131(68.6)	28(50.9)	67(51.9)	<0.001**
	Abdominal Pain	123(60.3)	35(37.6)	81(42.4)	24(43.6)	41(31.8)	<0.001**
	Hematemesis	118(57.8)	36(38.7)	116(60.7)	26(47.3)	27(20.9)	<0.001**
	Diarrhea	174(85.3)	85(91.4	171(89.5	47(85.5	118(91.5)	0.32
	Muscle Cramps	195(95.6)	89(95.7)	185(96.9)	51(92.7)	122(94.6)	0.72
	Average score ± SD	5.56±1.33	4.12±1.14	4.86±1.29	4.12±1.22	3.62±1.14	<0.001**
Diagnosis	By Symptoms of the disease	93(45.8)	67(71.3)	100(52.4)	33(50.8)	84(65.1)	0.19
	By Patient Complaint	149(73.4)	78(83)	136(71.2)	50(76.9)	110(85.3)	<0.001**
	By a Physician	123(60.6)	67(71.3)	104(54.5)	41(63.1)	84(65.1)	0.09
	By Special Investigations	184(90.6)	83(88.3)	173(90.6)	50(76.9)	99(76.7)	<0.001**
	By the Pharmacist	202(99.5)	88(93.6)	189(99)	62(95.4)	128(99.2)	0.002*
	Average score ± SD	3.7±1.08	4.07±1.08	3.6±1.15	3.63±0.89	3.91±0.91	0.009**
Complications	Cirrhosis	196(97)	91(97.8)	178(93.2)	50(90.9)	95(73.6)	<0.001**
	Myocardial infarction	193(95.5)	92(98.9)	184(96.3)	53(96.4)	124(96.1)	0.70
	Hypertension	170(84.2)	85(91.4)	165(86.4)	48(87.3)	120(93)	0.12
	Immunodeficiency	130(64.4)	62(66.7)	119(62.3)	34(61.8)	91(70.5)	0.60
	Hepatocellular Carcinoma	156(77.2)	28(30.1)	89(46.6)	23(41.8)	37(28.7)	<0.001**
	Hepatic Encephalopathy	138(68.3)	7(7.5)	62(32.5)	5(9.1)	5(3.9)	<0.001**
	Kidney Disease	38(18.8)	5(5.4)	15(7.9)	5(9.1)	16(12.4)	0.002*
	Average score ± SD	5.05±1.02	3.97±0.71	4.25±1.05	3.96±0.86	3.78±1.04	<0.001**
Domain		Correct Answers No (%)					P value
		Medicine n=204	Pharmacy n=96	Nursing n=193	Dentistry N=76	Education n=129	
Routes of Transmission	Sharing Toothbrush	128(62.7)	68(72.3)	160(83.8)	29(48.3)	67(51.9)	<0.001**
	Sharing Towels	196(96.1)	89(94.7)	165(86.4)	52(86.7)	109(84.5)	0.001**
	Sharing Clothes	199(97.5)	89(94.7)	170(89)	55(91.7)	111(86)	0.001**
	Sharing Razors	183(89.7)	81(86.2)	167(87.4)	39(65)	70(54.3)	<0.001**
	Hand shaking	202(99)	89(94.7)	182(95.3)	57(95)	119(92.2)	0.04*
	Kissing	189(92.6)	87(92.6)	171(89.5)	55(91.7)	117(90.7)	0.83
	Blood transfusion	191(94.1)	83(88.3)	174(91.1)	47(78.3)	86.(66.7)	<0.001**
	Contaminated Toilets	179(87.7)	77(81.9)	126(66)	46(76.7)	83(64.3)	<0.001**
	Sharing Utensils	183(89.7)	73(77.7)	135(70.7)	52(86.7)	99(76.7)	<0.001**
	Sharing nail scissors	139(68.1)	71(75.5)	144(75.4)	30(50)	53(41.4)	<0.001**
	Sharing glucose checking devices	144(70.6)	68(72.3)	108(56.5)	28(46.7)	38(29.5)	<0.001**
	Via Dentists	182(89.2)	83(88.3)	149(78)	31(51.7)	56(434)	<0.001**
	Via Barbers	186(91.2)	86(91.5)	156(81.7)	37(61.7)	65(50.4)	<0.001**
	Via nail trimming	94(46.1)	55(58.5)	117(61.3)	14(23.3)	32(24.8)	<0.001**
	Via illicit drug use	146(71.6)	31(33)	71(37.7)	17(28.3)	15(11.6)	<0.001**
	Via sexual relations	118(57.8)	62(66)	117(61.3)	52(86.7)	103(79.8)	<0.001**
	Via Insects	117(86.8)	40(42.6)	112(58.6)	47(78.3)	104(80.6)	<0.001**
	From mother to fetus	137(67.2)	41(43.6)	113(59.2)	48(80)	107(82.9)	<0.001**
	Via smoking shisha	197(96.6)	84(89.4)	157(82.2)	56(93.3)	110(85.3)	<0.001**
	Average score ± SD	15.9±2.07	15.07±2.02	14.62±2.57	13.98±2.56	12.72±2.28	<0.001**
Total Score	Average score ± SD	30.23±3.22	27.24±2.85	27.41±3.51	26.04±3.76	24.05±3.26	<0.001**

*Significant p-value ≤0.05, **highly significant p-value ≤0.01. T-test or chi square test, as appropriate

Table 4 shows the proportion of students that were exposed to blood products, spilling and needle stick injuries.

Table 5 shows that there was a significant difference regarding receiving infection control training, using protective gloves during risky procedures and complying with hand washing practices, with the highest percentage among nursing students.

Table 6 shows that there was no statistically significant difference among the different faculty students regarding engaging in dangerous practices that may lead to hepatitis C transmission.

Table 4: Exposure to risk of Hepatitis C virus infection in relation to students' field of study.

Risk	Medicine n=204	Pharmacy n=96	Nursing n=193	Dentistry N=76	Education n=129	*P* value
Exposure to blood products	125(61.3)	19(19.8)	126(66.3)	21(31.3)	5(3.9)	<0.001**
Exposure to needle stick injuries	31(15.3)	44(45.8)	76(40)	28(41.8)	41(33.3)	<0.001**
Exposure to blood spilling	50(24.8)	12(12.5)	92(48.7)	20(29)	3(2.3)	<0.001**

*Significant p-value ≤0.05, **highly significant p-value ≤0.01. Chi square test, as appropriate.

Table 5: Perceptions and protective practices related to prevention in relation to students' field of study.

Perception/Protective Practice	Medicine n=204	Pharmacy n=96	Nursing n=193	Dentistry N=76	Education n=129	*P* value
Receiving Vaccination to Hepatitis Virus	93(45.6)	45(46.9)	93(48.2)	32(42.1)	64(49.6)	0.59
Receiving Infection Control Training	87(42.6)	21(21.9)	154(79.8)	26(34.2)	19(14.7)	<0.001**
Using Protective Gloves during risky Procedures	165(80.9)	75(78.1)	166(86)	42(55.3)	85(65.9)	<0.001**
Complying with hand-washing practices	167(81.9)	88(91.7)	186(96.4)	57(75)	117(90.7)	<0.001**

*Significant p-value ≤0.05, **highly significant p-value ≤0.01. Chi square test, as appropriate.

Table 6: Number and Percentage of students who engage in dangerous practices in relation to study specialty.

Dangerous Practices	Medicine n=204	Pharmacy n=96	Nursing n=193	Dentistry N=76	Education n=129	*P* value
Tattoos	10(4.9)	2(2.1)	6(3.2)	2(2.8)	3(2.3)	0.22
Piercing	85(42.3)	49(51)	70(37.2)	33(49.3)	79(61.7)	<0.001**
Nail trimming at barber's shop	21(10.3)	7(7.3)	24(12.6)	11(15.5)	28(21.9)	0.02*
Shaving (for males)	39(46.4)	7(46.7)	25(29.8)	7(18.9)	8(50)	0.02*
Acupuncture	4(2)	4(4.2)	5(2.6)	1(1.6)	1(0.8)	0.52
Cupping	3(1.5)	2(2.1)	3(1.6)	2(2.1)	2(1.6)	0.92
Using used syringes	0(0)	1(1)	2(1.1)	0(0)	0(0)	0.38
Sharing razors	11(9.6)	3(20)	4(3.7)	3(5.5)	3(16.7)	0.07
Sharing toothbrushes	0(0)	0(0)	0(0)	4(5.4)	0(0)	<0.001**
Sharing scissors	122(60.1)	73(76)	129(68.3)	48(67.6)	102(79.7)	0.002**
Average Score ± SD	1.4±0.9	1.6±0.9	1.5±1.2	1.6±0.9	1.9±1.2	0.75

*Significant p-value ≤0.05, **highly significant p-value ≤0.01. T-test or chi square test, as appropriate.

Table 7 shows that there was no significant difference between males and females regarding knowledge about hepatitis C. There was a statistically significant difference between different faculties as well as between different years (p<0.001).

Students receiving infection control trainings had a statistically higher mean knowledge score than those who did not attend trainings.

Table 8 shows that Stepwise backward regression analysis model of significance best-fitting predictors of knowledge about hepatitis C, were Faculty of Medicine (t=8.9, p<0.001), Faculty of education (t= -8.4, p<0.001), Age (t=3.6, p<0.001).

Discussion

The present study shows that the mean level of knowledge among university students was generally low. With the exception of faculty of medicine, students from all other faculties displayed lack of knowledge regarding the symptoms, diagnosis, routes of transmission and complications of the disease. There was positive correlation between the faculty of Medicine and good knowledge about hepatitis C. Also, there were significantly lower knowledge scores among students of the faculty of education, as well as a negative correlation between knowledge and the faculty of education.

In a report by [11], in Pakistan, the survey showed fair level of knowledge among university students regarding hepatitis B and C, but gaps in knowledge were identified which need to be strengthened in students especially in non-biological sciences group. These results agree with those found in a survey in Iran where the knowledge of students with respect to the type of hepatitis (A, B, C, D and E) was very weak [12].

Table 7: Knowledge, perception and practices of medical students in relation to the demographic characteristics.

		No (%)	Mean± SD knowledge score	P value	Mean± SD Dangerous practice score	*P* value
Gender	Male	155(22.7)	27.7±4.2	NS	1.6±1.1	0.77
	Female	543(77.8)	27.4±3.9		1.3±1.1	
Faculty	Medicine	204(29.2)	30.2±3.2	<0.001**	1.4±0.9	0.75
	Pharmacy	96(13.8)	27.2±2.8		1.6±0.9	
	Nursing	193(27.7)	27.4±3.5		1.5±1.2	
	Dentistry	76(10.9)	26.7±3.8		1.6±0.9	
	Education	129(18.5)	24.04±3.2		1.9±1.2	
Year of study	1st	84(12)	25.2±3.2	<0.001**	1.5±0.9	0.88
	2nd	108(15.5)	24.5±3.9		1.7±1.1	
	3rd	67(9.6)	27.7±3.4		1.5±1.2	
	4th	314(45)	28.2±3.7		1.5±1.3	
	5th	73(10.5)	27.8±3		1.5±1.3	
	6th	52(7.4)	27.4±3.9		1.4±0.9	
Receiving Infection control Training	Yes	298	28.2±3.6	<0.001**	1.4±1.1	0.30
	No	353	27±4.1		1.6±1.2	
Receiving HBV vaccine	Yes	320	27.7±3.9	NS	1.6±1.2	0.39
	No	323	27.3±3.9		1.4±0.9	

Table 8: Multiple Stepwise regression analysis of knowledge among the studied groups.

Model		Unstandardized Coefficients		Standardized Coefficients	*t*	*P* value
		B	Std. Error	Beta		
	(Constant)	17.311	2.483		6.971	**<0.001****
	Faculty of Medicine	2.820	0.317	0.327	8.897	**<0.001****
	Faculty of Education	-2.922	0.348	-0.294	-8.387	**<0.001****
	Age	0.411	0.115	0.130	3.573	**<0.001****
	Gender	0.759	0.313	0.080	2.423	0.016*

R= 0.56.

Our results showed that medical students had the highest knowledge score, followed by nursing students due to their basic knowledge .In a survey by [13]. On the knowledge of health care workers about HCV, the mean knowledge level score was acceptable and doctors were the most knowledgeable group too.

There was no significant difference between males and females regarding knowledge or dangerous practices [14], also found that there was no significant difference between genders regarding knowledge, however, in their study it was shown that female students had more positive attitudes than male students towards risk taking and prevention of hepatitis C.

Knowledge among dental students in our study was found to be low. This is contrary to the results found in a study by [15]. In Bulgaria on dental medicine students, where the majority of participants in the study showed high or average rate of knowledge concerning HCV route of transmission and prevention. Similar results were found in previous studies assessing Hepatitis knowledge in dental students and dentists worldwide [16-18].

Unlike the present study, where the proportion of dentistry students complying with hand washing and using protective gloves was lowest, in Todorova's work, it was found that students in the faculty of Dental Medicine were relatively aware of current risk posed by hepatitis in dental practice and knew how to protect themselves and patients from hepatitis spread. As the knowledge of this group about the prevention and transmission of hepatitis was not high, it is predictable that they do not follow preventive strategies completely. In a study in a teaching hospital in Lahore, it was determined that lack of awareness was the commonest reason for not being vaccinated against hepatitis B [19].

In our study, less than half of the students with different faculties received hepatitis

vaccination. This indicates lack of knowledge about the means of prevention of infection. Also in the Pakistan survey, knowledge about hepatitis B vaccine was not satisfactory among study groups [11]. This is contrary to the findings of [13]. Who found that the majority of the medical students (97.2%) had received Hepatitis B vaccination.

Our results show that there is a positive correlation between age and the degree of knowledge, and that the 4th year students had the highest mean knowledge score. In a study conducted by [20]. On medical students of Delhi to measure their level of information about hepatitis A and B, a questionnaire including information on hepatitis B vaccine, its transmission, symptoms and prevention, was distributed among the first, third and last year students. The results showed that senior students had the highest level of information compared with other two groups [21].

We conclude that knowledge and attitude of university students in our region is partial too weak in those groups of students of non-biological sciences who have less close contact with the patients.

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