



Knowledge, Attitude, Practice of Laboratory Technicians, and Nursing Staff about Hepatitis C Viral Infection in Sohag University Hospital.

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Abstract:

Background: Laboratory technicians and nursing staff are at high-risk for acquiring hepatitis C virus (HCV) infection. As no vaccination, knowledge, attitudes, the practice of Laboratory technicians, and nursing staff play a key role in the prevention of the spread of infection.

Aim: To determine the knowledge, attitude, the practice of laboratory technicians, and nursing staff concerning HCV infection in Sohag University Hospital.

Materials and Methods: The cross-sectional survey was conducted on 446 laboratory technicians and nursing staff working at Sohag University Hospital using a self-administered questionnaire.

Results: 56.5% of laboratory technicians, nursing staff had good knowledge, 65.02% had a positive attitude and 53.81% had bad practice toward HCV patients. Laboratory technicians have better knowledge, more positive attitudes and better practices than nursing staff.

Conclusion: Knowledge, attitudes, the practices about HCV among laboratory technicians, and nursing staff are matters of concern. Educational programs should be formulated to raise their awareness about HCV.

Key Words: Knowledge Attitude, Practice, Technicians, Nursing.

Introduction:

HCV is considered a worldwide health problem. It is estimated that 170 million persons (2%–3% of the world's population) are having chronic HCV infection, and approximately 399 000 people die each year from HCV [1]. Health care workers (HCWs) are potentially at high risk

of blood-borne diseases such as hepatitis B virus or HCV. Needlestick injuries (NSIs) are the most common form of occupational exposure to blood and the most likely to transmit HCV [2]. Studies reported that the risk of HCV transmission among HCWs with NSIs has been

estimated to 3-10%, and this increases >10-fold if the source patient has high levels of virus load [3].

There are limited numbers of studies that may include different results regarding the evaluation of attitudes and practice of HCWs toward the patients with chronic HCV infection. Therefore, this study was conducted to determine the knowledge, attitude, and practice of laboratory technicians and nursing staff concerning HCV infection in Sohag University hospital.

Methodology:

Ethical consideration:

Before starting data collection ethical approval was obtained from the Scientific Research Ethics Committee of the Faculty of Medicine, Sohag University. In addition, official approval was obtained from the manager of Sohag University Hospital. During the data collection stage, informed consent was secured from each participant. This also included explanation of the purpose of the study to all the participants ensuring strict confidentiality and anonymity of all the collected data.

Study design:

The current study is a cross-sectional study conducted among the nursing staff and laboratory technicians in Sohag University Hospital from October 2018 to January 2019.

Study population:

The studied population was composed of laboratory technicians and nursing staff working at Sohag University Hospital which covered 72 laboratory technicians and 374 nurses from different departments and laboratories.

Sample size:

Total coverage of laboratory technicians and nursing staff in the hospital was carried out.

Data collection procedure:

After explaining the aim of the study and the questionnaire to the laboratory technicians and nursing staff, a questionnaire was distributed to the laboratory technicians and nursing staff who accept to participate in the study, and they were asked to fill them. The required time needed to fill the questionnaire was 15–20 min.

Study instrument:

A structured interviewing questionnaire was used in this study. It consisted of four sections: section 1 for the sociodemographic characteristics, section 2 for detection of knowledge of the participants about HCV infection, section 3 for their attitude toward HCV infection, and section 4 for their practice toward chronic HCV infected patients.

Forty-five questions were asked to the participants: 6 questions related to name, age, gender, occupation, working years, department; 25 questions related to the knowledge about HCV infection (14 questions about HCV transmission and 11 questions about HCV nature, clinical picture, and management); 5 questions related to the description of attitude toward the patients with HCV; 2 questions related to attitude and willingness to deal and treat the patients with hepatitis C; 2 questions related to attitudes and the fears about contact with HCV; and 5 questions related to practice toward HCV patients.

The level of knowledge of HCWs was evaluated with correct responses to total 25 questions given to them. The mean knowledge score was used for discrimination [4]. Scores over the mean kno-

wledge score were defined to be good knowledge level and the scores below the mean knowledge score were defined to be poor.

A five-point Likert scale ranging from strongly agree to strongly disagree was used in the questionnaire to evaluate the attitudes and practices of HCWs toward the patients with hepatitis C. the mean attitude and knowledge scores were used to classify the participants into groups with a positive attitude or with negative attitude and groups with good practice or with bad practice [4].

A pilot study was conducted on 10 laboratory technicians and 40 nurses that had not been included in the study group to assess the time, content validity of the tool and to detect any problem peculiar to the data collection tool that may face the researcher.

Statistical analysis:

Data entry and analysis were done using SPSS software for Windows (version 16.0; SPSS Inc., Chicago, Illinois, USA). The calculation of frequency and percentages for the classified data, mean, and standard deviations were obtained. While statistical differences between the classes were done with the chi-square test, and mean differences between the groups were investigated by using the Mann-Whitney U test and Kruskal-Wallis tests (as the data showed non-parametric distribution using tests of normality). A P-value of less than 0.05 was used as the cutoff of statistical significance.

Results:

The current study included 446 participants [72 laboratory technicians (16.1%), and 374 (83.9%) nursing staff] who were employed in Sohag university hospital. 87.4% were females and 12.6% were males. 38.6% have experienced less than 6 years, 24% between 6-10 years, and 37.4% more than 10 years (**Table -1**).

Demographic data	Number (%)
Age (Mean ± SD):	29.13 ± 5.82
<31y	293 (65.7%)
31-40 y	135 (30.3%)
>40 y	18 (4%)
Gender:	
Female	390 (87.4%)
Male	56 (12.6%)
Health care group:	
Nursing staff	374 (83.9%)
Lab technician	72 (16.1%)
Working years:	
<6 y	172 (38.6%)
6-10 y	107 (24%)
>10 y	167 (37.4%)
Department:	
Non-surgical	196 (43.9%)
Surgical	178 (39.9%)
Laboratory	72 (16%)

Table (1): Distribution of the studied nursing staff and lab technicians according to their socio-demographic characteristics, Sohag University Hospital, 2018/2019.

In this study, above 90% know that HCV can transmit through surgical instruments and can't be transmitted through personal contacts like handshaking and kissing. 85.4% of the studied group was aware of the presence of available pharmaceutical treatment, only 35% of them have the right knowledge about the presence of prophylactic treatment for NSI (**Table- 2**).

Item	Nursing staff		Lab technicians		P-value
	Incorrect answer N (%)	Correct answer N (%)	Incorrect answer N (%)	Correct answer N (%)	
It is a viral infection	54 (14.4%)	320 (85.6%)	11 (15.3%)	61 (84.7%)	0.85
Transmission through surgical instruments	27 (7.2%)	347 (92.8%)	5 (6.9%)	67 (93.1%)	0.93
Transmission through personal contact	17 (4.5%)	357 (95.5%)	9 (12.5%)	63 (87.5%)	0.01*
Risk of transmission through NSI is 30-50%	193 (51.6%)	181 (48.4%)	37 (51.4%)	35 (48.6%)	0.97
It can lead to liver cirrhosis	62 (16.6%)	312 (83.4%)	18 (25%)	54 (75%)	0.09
It is a mutation of HBV	103 (27.5%)	271 (72.5%)	17 (23.6%)	55 (76.4%)	0.49
It increases risk of liver cancer	158 (42.2%)	216 (57.8%)	27 (37.5%)	45 (62.5%)	0.45
It can be asymptomatic	178 (47.6%)	196 (52.4%)	17 (23.6%)	55 (76.4%)	<0.001*
Symptoms appear immediately after getting infection	125 (33.4%)	249 (66.6%)	12 (16.7%)	60 (83.3%)	0.01*
There is a vaccine for it	235 (62.8%)	139 (37.2%)	31 (43.1%)	41 (56.9%)	<0.001*
HCV pre-marriage tests are mandatory	102 (27.3%)	272 (72.7%)	35 (48.6%)	37 (51.4%)	<0.001*
There is prophylactic treatment for NSI	255 (68.2%)	119 (31.8%)	35 (48.6%)	37 (51.4%)	<0.001*
There is a pharmaceutical treatment	54 (14.4%)	320 (85.6%)	11 (15.3%)	61 (84.7%)	0.85
Positive people should restrict alcohol intake	83 (22.2%)	291 (77.8%)	25 (34.7%)	47 (65.3%)	0.02*

Table (2): Knowledge about HCV nature, clinical picture, management among the studied nursing staff and laboratory technicians, Sohag University Hospital, 2018/ 2019.

Note: Significance of difference is measured with Pearson's chi-square test.

*Indicates significance at the 0.05 level.

Regarding their attitude and practice toward HCV patients, none of the studied HCWs disagrees strongly with testing all patients for HCV before receiving health care services, wearing pair of gloves wh-

en dealing with HCV patients, using additional infection control measures with HCV patients, and the fact that following infection control measures are protective against HCV. (**Table- 3, 4**).

Item	Nursing staff					Lab technicians					P-Value
	Strongly agree N (%)	Agree N (%)	Not sure N (%)	disagree N (%)	Strongly disagree N (%)	Strongly agree N (%)	Agree N (%)	Not sure N (%)	disagree N (%)	Strongly disagree N (%)	
Testing all patients for HCV before receiving health care	194 (51.9%)	168 (44.9%)	6 (1.6%)	6 (1.6%)	0 (0%)	59 (81.9%)	13 (18.1%)	0 (0%)	0 (0%)	0 (0%)	< 0.001*
Restricting contact of positive HCWs with patients	59 (15.8%)	176 (47.1%)	24 (6.4%)	114 (30.5%)	1 (0.3%)	6 (8.3%)	43 (59.7%)	2 (2.8%)	21 (29.2%)	0 (0%)	0.21
Not having skills of dealing with HCV patients	59 (15.8%)	180 (48.1%)	91 (24.3%)	43 (11.5%)	1 (0.3%)	120 (16.7%)	44 (61.1%)	8 (11.1%)	8 (11.1%)	0 (0%)	0.14
Following infection control measures is protective against HCV	188 (50.3%)	146 (39%)	40 (10.7%)	0 (0%)	0 (0%)	31 (43.1%)	33 (45.8%)	8 (11.1%)	0 (0%)	0 (0%)	0.51
Low possibility of infection with HCV during hospital work	72 (19.3%)	44 (11.8%)	68 (18.2%)	153 (40.9%)	37 (9.9%)	0 (0%)	3 (4.2%)	2 (2.8%)	50 (69.4%)	17 (23.6%)	< 0.001*

Table (3): Attitude of the studied nursing staff and laboratory technicians toward HCV patients, Sohag University Hospital, 2018/ 2019.

The significance of the difference is measured with Pearson's chi-square test.

*Indicates significance at the 0.05 level.

Item	Nursing staff					Lab technicians					P-value
	Strongly agree N (%)	Agree N (%)	Not sure N (%)	Disagree N (%)	Strongly disagree N (%)	Strongly agree N (%)	Agree N (%)	Not sure N (%)	disagree N (%)	Strongly disagree N (%)	
Giving HCV patients the last appointment	57 (15.2%)	140 (37.4%)	92 (24.6%)	72 (19.3%)	13 (3.5%)	5 (6.9%)	40 (55.6%)	10 (13.9%)	15 (20.8%)	2 (2.8%)	0.03*
Delivering the same standard care for HCV patients	132 (35.3%)	149 (39.8%)	0 (0%)	72 (19.3%)	21 (5.6%)	39 (54.2%)	19 (26.4%)	0 (0%)	12 (16.7%)	2 (2.8%)	0.02*
Not spending enough time for HCV patients	11 (2.9%)	132 (35.3%)	36 (9.6%)	158 (42.2%)	37 (9.9%)	1 (1.4%)	17 (23.6%)	9 (12.5%)	33 (45.8%)	12 (16.7%)	0.18
Wear pair of gloves when dealing with HCV patients	225 (60.2%)	137 (36.6%)	0 (0%)	12 (3.2%)	0 (0%)	47 (65.3%)	25 (34.7%)	0 (0%)	0 (0%)	0 (0%)	0.27
Use additional infection control measures during dealing with HCV patients	143 (38.2%)	183 (48.9%)	2 (0.5%)	46 (12.3%)	0 (0%)	28 (38.9%)	41 (56.9%)	1 (1.4%)	2 (2.8%)	0 (0%)	0.09

Table (4): Practice of the studied nursing staff and laboratory technicians toward HCV patients, Sohag University Hospital, 2018/ 2019.

Note: Significance of difference is measured with Pearson's chi-square test.

*Indicates significance at the 0.05 level. In this study, there is no significant difference between total knowledge score and participants' age, occupation nor department. This study showed that there is a negligible relationship between the participants' total knowledge score, their attitude, and practice scores toward patients with HCV (**Table- 5**). However, 76% of the studied HCWs reported that they will treat and/or investigate patients with HCV, 53.6% reported their wish not to deal with HCV patients. (**Table- 6**).

This study revealed that Lab technicians have better knowledge scores about HCV, more positive attitude scores, and better practice scores toward HCV patients than nursing staff (**Table- 7**).

	Total knowledge score
Total attitude score:	
r	0.17
P value	0.00
Total practice score:	
r	0.03
P value	0.53

Table (5): Spearman correlation between total knowledge score about HCV, total attitude and practice scores toward HCV patients among the studied nursing staff and lab technicians, Sohag University Hospital, 2018/ 2019.

Item	Yes N (%)	No N (%)
Liking to deal with HCV patients	207 (46.4%)	239 (53.6%)
Willingness to treat HCV patients	339 (76%)	107 (24%)
Afraid of catching HCV infection	413 (92.6%)	33 (7.4%)
Afraid of already being HCV positive	331 (74.2%)	115 (25.8%)

Table (6): Distribution of the studied nursing staff, lab technicians according to their attitude, willingness to treat HCV patients,

and their fear of having or catching HCV, Shag University

Item	Nursing staff n (%)	Lab technicians n (%)	P value
Knowledge:			
Poor	164 (43.9%)	30 (41.7%)	0.73
Good	210 (56.1%)	42 (58.3%)	
Attitude:			
Negative	151 (40.4%)	5 (6.9%)	<0.001*
Positive	223 (59.6%)	67 (93.1%)	
Practice:			
Bad	213 (57%)	27 (37.5%)	<0.001*
Good	161 (43%)	45 (62.5%)	

Table (7): Comparison between the studied nursing staff, lab technicians regarding their knowledge, attitude, and practice scores about HCV, Sohag University Hospital, 2018/ 2019.

Note: Significance of difference is measured with Pearson's chi-square test. *indicates significance at the 0.05 level.

Discussion:

HCV can be spread in clinical settings from patient to patient, from patient to doctor, and from doctor to patient which leads to 8 out of 10 new infections occurring in hospitals and clinics [5].

The current study has shown that the mean age of the participants is 29.13 ± 5.82 years, 65.7% were below 31 years. The majority of the studied HCWs are females and work as nurses. Regarding the health department, they belong to, 43.9% work at non-surgical departments while 16.1% works at labs. This was similar to the study of *Van de Mortel*. [6], as 43% of their participants in their study were younger than 30 years old, while the mean age of the participants in the study of *Shoman et al.* [7], were (34±9.4) years for the physicians, (33±10) years for the nurses, and (38.5±8.6) years for the traditional providers.

Regarding HCWs knowledge about HCV transmission in our study, they answered most of the related questions correctly. In line with our results, *Shoman et al.* [7], reported in their study that around 97% of the physicians, 91% of nursing staff, and 83% of traditional providers reported that medical workers have a high risk to be infected with HCV and contaminated blood transfusion is a common method of HCV transmission. These percentages are higher than the results of the Kuwaiti study, which reported that 74% of the physicians, nursing staff, and paramedical staff considered health care workers at high-risk populations [8]. The possible reason for this difference may be the higher perception of risk and fear of HCV infection among Egyptian HCWs as HCV is endemic in Egypt, and Egypt has the highest prevalence of HCV worldwide [5]. Furthermore, *Bianco et al.* [9], found in their study that 92% of Italian nurses knew that sharing razors or toothbrushes is the way of transmission of HCV.

Regarding their attitude and practice toward HCV patients, in line with this study, *Shoman et al.* [7], reported that the majority of the participant physicians (99%), nurses (78%), and traditional providers (71%) realized the importance of infection control guidelines during a blood transfusion. These percentages are higher than the results of *Kabinda et al.* [10], who conducted a cross-sectional study to assess knowledge, attitude practice of the doctors, nurses, and midwives from 12 general reference hospitals, 11 hospitals and 65 health centers in Congo, and found that 60% of them knew the ultimate control measures before blood transfusion. However, the results of the present study are higher than the results of *Yaghi et al.* [8], who

found that 80% of the physicians, nursing staff, and paramedical staff believed in wearing gloves, and also higher than the results of *Rasslan et al.* [11], who conducted a cross-sectional study among 404 physicians, nurses and technicians in Ain Shams University hospitals and reported that 93% of them knew the importance of wearing gloves. This high percentage of correct knowledge may be due to high attendance to infection control courses among the Lab technicians and nurses of the present study. Therefore, training courses play an important role in improving the knowledge of health care workers. In the study of *Shoman et al.* [7], around 93% of the participating physicians, 90% of nurses, and 80% of the traditional providers knew that HCV can be prevented. Regarding fears of catching or having HCV infection, HCWs who aren't afraid of being HCV positive reported a more positive attitude compared to those who are afraid. There is no significant relationship between the willingness of HCWs to treat HCV patients, their fear of catching HCV, and their attitude toward HCV patients. In contrast to the current results, *Joukar et al.* [4], found a statistically significant difference between the doctors, nursing staff, and paramedical staff regarding the observational practice score, however, they found that there was a statistically significant difference between the physicians and the nursing staff regarding the total practice score ($p < 0.05$) with the physicians had a higher percentage of correct practice than the nursing staff. These results also agree with the results of *Setia et al.* [12], who reported that there was a significant difference between the physicians and the nursing staff regarding total practice score.

The study revealed that Lab technicians have a better knowledge score about HCV, a more positive attitude score, and a better practice score toward HCV patients than nursing staff. Similar to the results of this study, *Shoman et al.* [7], reported in their study that physicians had the best knowledge about the cause of HCV (100%) followed by the nurses (94%) then the traditional providers had the least correct knowledge. These percentages are higher than the results of *Van de Mortel*. [6], who conducted a cross-sectional study among Australian physicians, nursing staff, paramedical staff and reported that 72% of them knew that hepatitis C is caused by a virus. The possible cause of that difference is that 43% of the participants in de Mortel study were younger than 30 years old, while the mean age of the participants in the study of *Shoman et al.* [7], were (34±9.4) years for the physicians, (33±10) years for the nursing staff, (38.5±8.6) years for the traditional providers, and their age reflected on their years of experience.

Limitations:

This stud is a self-reported questionnaire-based study. Therefore, in this study, the subjective self-reported information should be carefully evaluated, because there was no validation of self-reported behavior against the actual clinical behavior. Furthermore, absence of some workers as data couldn't be collected from those workers and they were excluded from data collection and analysis because we did not coordinate a specific time and place for filling a questionnaire.

Conclusion and recommendations:

This study highlights the knowledge, attitude, and practice about HCV among

laboratory technicians and nursing staff in Sohag university hospital. Health care managers, as well as the government, should take more measures by running awareness programs to strengthen the Knowledge, attitude and improve the practice of HCWs especially of nursing staff as the cost of treating patients with HCV infection far outweighs the cost of implementing prevention programs as educational programs about HCV infections. It is necessary to increase the level of quality of training among HCWs as it remains the key preventive measure for improving HCWs' compliance with improved standard precautions to prevent discrimination, prejudice towards the infection and the patients.

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Conflict of interest:

Authors have no conflict of interests, and the work was not supported or funded by any organization.

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