

## ASSESSMENT OF HEALTH CARE WORKERS' KNOWLEDGE, ATTITUDE AND PRACTICE TOWARD CARING OF PATIENTS WITH HEPATITIS C

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### Abstract:

**Background:** Hepatitis C virus (HCV) is one of the major causes of liver disease. It is one of the leading causes of cirrhosis and hepatocellular carcinoma, and is a common indication for liver transplantation. **The aim of study:** To assess health care workers' knowledge, attitude and practice toward caring of patients with hepatitis c. **Materials and methods:** The study design used was a descriptive cross sectional design. A convenient sample of 227 health care workers was selected. Tool used divided to four parts including demographic data, and questions related to study subjects' knowledge, attitude and practice toward hepatitis C. **The results of this study:** Revealed that there was a positive statistical significant correlation between attitude and knowledge of the studied health care workers. **Conclusion:** Physicians were the most knowledgeable and less than half of nurses had satisfied knowledge. **Recommendation:** Providing Continuous educational programs for health care workers about hepatitis C to keep them up to date with HCV.

**Key words:** Hepatitis C, Knowledge, Attitude, Practice.

### Introduction:

Hepatitis is a disease characterized by inflammation of the liver, usually producing swelling and, in many cases, permanent damage to liver tissues <sup>(1)</sup>

Hepatitis C is a disease of significant global impact; the global prevalence is estimated to have increased from 122 million to 185 million between 1990 and 2005, with regional variations ranging from 1.5% to 3.5%. Egypt has an exceptionally high HCV prevalence (14.7% of the population) <sup>(2)</sup>. Egypt has the highest prevalence rate of HCV in the world. Nosocomial transmission has been, and probably still is, the most common route for new infections. In particular, widespread parenteral treatment of schistosomiasis in earlier decades resulted in high levels of HCV transmission <sup>(3,4)</sup>.

Hepatitis C virus is transmitted mainly by parenteral routes such as blood transfusion, injecting drug use, contaminated medical equipment, tattoos, can also spread by sharing of tooth brushes and razors and rarely sexually or perinatally <sup>(5,6)</sup>. Also, hemodialysis patients are at high risk from dialysis equipment shared with infected persons and recipients of donor organs and blood products.

In low- and middle-income countries, infection with HCV is

frequently associated with unsafe injection practices and unscreened (or inadequately screened) blood transfusions. According to the latest world health organization report on blood safety (2011), 39 countries do not routinely screen blood transfusions for blood borne viruses. The

most well documented example of health-care associated transmission is the generalized epidemic of HCV infection resulting from unsafe injection practices in Egypt<sup>(7)</sup>.

Hepatitis C is classified into acute and chronic hepatitis C. Acute hepatitis C refers to the first 6 months after infection with HCV. Recognizing acute hepatitis is critical, as it is often asymptomatic. Only a minority of patients (10–15%) report symptoms. These symptoms are generally mild and nonspecific, and rarely lead to a specific diagnosis of hepatitis C. Symptoms of acute hepatitis C infection include decreased appetite, fatigue, abdominal pain, jaundice, itching, and flu-like symptoms. The spontaneous clearance of the virus is more frequent primarily during the first 3 months of clinical onset of the disease, but may occur anytime during the 6 months of acute infection<sup>(8)</sup>.

In more than 70% of the infected people, the disease becomes chronic and leads to chronic hepatitis, 5-20% develops cirrhosis, and 1–5% died from cirrhosis or liver cancer<sup>(9,10)</sup>.

Occupational blood-borne infections are associated with significant morbidity and mortality. Health care workers (HCWs) are exposed to hazardous blood-borne pathogens such as hepatitis C virus (HCV). Physicians, laboratory technicians, nurses, are the main HCWs at risk. Nurses are the most at risk group because they have close contact with patients and are more likely to be exposed to a needle stick injury<sup>(11)</sup>.

Hepatitis C virus infection is serious public health problem that can have consequences in terms of psychological and occupational diseases. HCV is common cause of occupational diseases transmitted from patients to HCWs and *vice versa*, and also to HCWs' families. Fortunately, most occupational transmissions can be prevented by standard precautions<sup>(12)</sup>. Thus the practice of universal

precautions as a way of safeguarding against possible infections in work places had become more essential among various health workers<sup>(13)</sup>.

Patients with hepatitis C may sometimes experience discrimination and stigmatization in the work place, by family members and by members of their communities. In addition, they may face discrimination from health care workers. These discrimination practices may be a result of lack of knowledge, which may lead to negative attitudes toward these kinds of diseases, which could interfere with willingness to treat these patients because of fear of contracting the infection<sup>(14)</sup>.

Knowledge, attitude and practice (KAP) studies provide information about the people's awareness of certain topics, their feelings and their performance<sup>(15)</sup>.

Today, HCV infection and its complications are among the leading public health challenges in Egypt. Knowledge, attitude and practice of the health care workers play an important role in prevention of spread of HCV infection. So this study was made to overview the knowledge, attitude and practice of health care workers. And to identify relationship between health care workers' knowledge level, their attitude and practice and how knowledge influence on their attitude and practice.

#### **Aim of study**

To assess health care workers' knowledge, attitude and practice toward caring of patients with hepatitis C.

#### **Research questions**

1. What is the level of knowledge of health care workers regarding hepatitis C?
2. What attitude and practice do health care workers have regarding hepatitis C virus patients?

3. Is there a relationship between health care workers' knowledge level, their attitude and practice towards caring for hepatitis C virus patients?

**Materials and method**

**Materials:**

**Design:** A descriptive cross sectional research design was followed.

**Setting of the study:** The study was conducted at the Egyptian Liver Institute in Sherbein Dakahlia and Mansoura University Hospitals (Specialized Medical Hospital and medical units of Mansoura University Hospital).

**Subjects:** All available health care workers was 227 health care workers, who were available at the time of collection, were selected from the above mentioned setting, (86 physician, 115 nurses, 44 laboratory technician).

**Tool used in the study:**

Assessment sheet was developed by the researcher and used for data collection, it comprised of four parts:

**Part 1:**

It include questions related to the study subjects' socio-demographic data such as age, sex, working history (years of experience), occupation (physician, nurse, laboratory technician), needle stick injury (NSI) history.

**Part 2:**

It includes question related to study subjects' knowledge about hepatitis C such as causes, modes of transmission, complications, and treatment. It was designed by <sup>(16)</sup> and modified by the researcher.

**Part 3:**

Likert-like scale was developed by <sup>(17)</sup> and modified by researcher to assess subjects' attitudes toward patient with hepatitis C.

**Part 4:**

It was designed by <sup>(18)</sup> and modified by the researcher. It included 8 statements

related to practice that followed toward patients with hepatitis C.

**Method:**

1. An official permission was taken from the research ethics committee of the faculty of nursing at Mansoura University to the director of Mansoura university hospitals, to conduct the study after explaining its purpose.
2. The tool was developed by the researcher after reviewing the relevant literature and tested for its validity by jury of 5 expertises in the field.
3. Pilot study was conducted on 10 health care workers they were then excluded from the study. Reliability test was made by using Cronbach's Alpha and was in knowledge part (alpha= .77), attitude part (alpha= .8) and practice part (alpha= .73).

**Ethical consideration:**

- 1-Verbal consent was obtained from Health care workers.
- 2-The purpose of the study was explained to the health care workers
- 3-Reassurance was given to health care workers about confidentiality of their responses.
- 4-The researcher met with health care workers individually.
- 5-Complete instructions regarding answering the questionnaire sheet were given to health care workers.
- 6-The researcher managed from 4-6 health care workers daily. Time taken to fill the questionnaire sheet ranged from 20 – 30 minutes.
- 7-Data was collected 3 days/ week in about 4 months period (from mid of February to mid of May).

**Handling and analysis of data:**

The raw data were coded and entered into SPSS system files (SPSS package version 18). Analysis and interpretation of

data were conducted. The following statistical measures were used:

- Descriptive statistics including frequency, distribution, mean, and standard deviation were used to describe different characteristics.
- Kolmogorov – Smirnov test was used to examine the normality of data distribution.
- Univariate analyses using Chi-Square test was used to test the significance of results of qualitative variables.
- Linear correlation was conducted to show correlation between knowledge, attitude and practice scores among the studied health care workers.
- The significance of the results was at the 5% level of significance.

## Result

**Table (1):** Represent Socio-demographic characteristics among the studied health care workers. It showed that (68.7%) of the studied health care workers were between 20-<30, most of them were female (75.3) and (46.7%) were have 1-<5 years of experience. Most of the studied health care workers were nurses (50.7%), and more than half of the studied health care workers (57.7%) reported that they had a history of needle stick injury.

**Table (2):** Represents Knowledge about hepatitis C virus (HCV) among the studied health care workers. All the studied health care workers (100%) reported correct answer on the item of infection with hepatitis C through blood transfusion, and more than 90% of the studied subjects reported correct answer in the following items: Role of hair cutting and shaving instrument as scissors and razors in transmitting hepatitis C virus (HCV) (97.8%), virus nature of HCV (99.6%), spread of hepatitis c through sharing injection equipment, such as needles (99.6%), having a medical or dental procedure performed in Egypt increase a person's chances of contracting hepatitis C.

(95.6%), hepatitis C can lead to cirrhosis (95.6%), role of enclosed environment in spread of hepatitis C (93%) and presence of asymptomatic carriers with hepatitis C (91.2%). Only half of the studied subject (50.2%) reported correct answer on the item of presence of hepatitis C antibodies without detectable RNA in blood.

**Table (3):** Represents attitudes and self-reported behavior reported by the studied health care workers. The majority of the studied health care workers (95.6%) feel sorry for people who contracted hepatitis C virus (HCV) through a blood transfusion. (95.2%) of the studied subject strongly agreed / agreed with that following infection control guidelines will protect them from being infected with hepatitis C virus at work, and (94.3%) of the studied subject believed that their profession should have central role in the treatment of hepatitis C virus. Only (11.5%) of the studied subject do not like treating people with hepatitis C virus, and (38.8%) strongly agreed/ agreed with that health professional who are HCV positive should be discouraged from having contact with patients.(78.9%) of the studied subject were afraid of catching hepatitis C virus.

**Table (4):** Represents practices that followed toward patients with hepatitis C among the studied health care workers. It shows that the majority of the studied health care workers (94.3%) reported that they were always/ often using sterile equipment for each patient and the minority of them (24.2%) was recapping needles after using.

Three quarter of the studied health care workers (74.9%) reported that they were always/ often doing hands hygiene measures before starting the working activity, and (87.7) of them were doing hands hygiene measures after removing gloves.

**Figure (1):** It shows that physicians (79.4%) were the major satisfied

knowledge among the studied health care workers. in contrast were technicians, they only (29.5%) of them had satisfied knowledge. (46.9%) of nurses had satisfied knowledge. Physicians (61.8%) were the

major satisfied attitude among the studied health care workers, and (39.1%) of nurses had satisfied attitude. Nurses (68.75) are the major satisfied practice among the studied health care workers.

**Table (1):** Socio-demographic characteristics among the studied health care workers:

| Socio-demographic characteristics      | Studied health care workers<br>(n=227) |      |
|--|--|------|
|  | No.                                    | %    |
| <b>Age (years)</b>                     |  |      |
| 20-< 30                                | 156                                    | 68.7 |
| 30-<40                                 | 56                                     | 24.7 |
| 40-<50                                 | 11                                     | 4.8  |
| 50-<60                                 | 4                                      | 1.8  |
| Min-Max                                | 20.0-55.0                              |      |
| Mean±SD                                | 28.6±5.8                               |      |
| <b>Gender</b>                          |  |      |
| Male                                   | 56                                     | 24.7 |
| Female                                 | 171                                    | 75.3 |
| <b>Duration of experience (years)</b>  |  |      |
| 1-<5                                   | 106                                    | 46.7 |
| 5-<10                                  | 71                                     | 31.3 |
| 10 or more                             | 50                                     | 22.0 |
| <b>Occupation</b>                      |  |      |
| Physician                              | 68                                     | 30.0 |
| Nurse                                  | 115                                    | 50.7 |
| Technician                             | 44                                     | 19.4 |
| <b>History of Needle sticks injury</b> |  |      |
| No                                     | 96                                     | 42.3 |
| Yes                                    | 131                                    | 57.7 |

**Table (2):** Knowledge about HCV among the studied health care workers:

| Knowledge about HCV  | Studied health care workers<br>(n=227) |      |           |      |         |       |
|--|--|------|-----------|------|---------|-------|
|  | Incorrect                              |      | Uncertain |      | Correct |       |
|  | No.                                    | %    | No.       | %    | No.     | %     |
| Virus nature of HCV.   | 0                                      | 0.0  | 1         | 0.4  | 226     | 99.6  |
| Agent causing HCV.   | 6                                      | 2.6  | 15        | 6.6  | 206     | 90.7  |
| Vector role of transmitting Hepatitis C  | 42                                     | 18.5 | 42        | 18.5 | 143     | 63.0  |
| Spread of Hepatitis C through close personal contact such as kissing.  | 15                                     | 6.6  | 15        | 6.6  | 197     | 86.8  |
| Sexual contact as common way hepatitis C transmission.   | 34                                     | 15.0 | 31        | 13.7 | 162     | 71.4  |
| Spread of Hepatitis C through sharing injecting equipment, such as needles.  | 1                                      | 0.4  | 0         | 0.0  | 226     | 99.6  |
| Infection with hepatitis C through blood transfusions.   | 0                                      | 0.0  | 0         | 0.0  | 227     | 100.0 |
| Having a medical and/or dental procedure performed in Egypt increases a person's chances of contracting hepatitis C. | 5                                      | 2.2  | 5         | 2.2  | 217     | 95.6  |
| Role of hair cutting and shaving instruments as Scissors and razors in transmitting HCV.                             | 5                                      | 2.2  | 0         | 0.0  | 222     | 97.8  |
| Role of nail clippers in transmitting Hepatitis C.   | 42                                     | 18.5 | 19        | 8.4  | 166     | 73.1  |
| Role of enclosed environment in spread of Hepatitis C  | 3                                      | 1.3  | 13        | 5.7  | 211     | 93.0  |
| Hepatitis C can lead to cirrhosis.   | 3                                      | 1.3  | 7         | 3.1  | 217     | 95.6  |
| Cause of death in patients with hepatitis C  | 60                                     | 26.4 | 41        | 18.1 | 126     | 55.5  |
| Risk of liver cancer in Hepatitis C patients   | 14                                     | 6.2  | 35        | 15.4 | 178     | 78.4  |
| Relation between Hepatitis C and hepatitis B.  | 10                                     | 4.4  | 28        | 12.3 | 189     | 83.3  |
| Hepatitis C is now one of the leading reasons for liver transplantation in Egypt.                                    | 11                                     | 4.8  | 24        | 10.6 | 192     | 84.6  |
| Presence of asymptomatic carriers with hepatitis C.  | 9                                      | 4.0  | 11        | 4.8  | 207     | 91.2  |
| Availability of pharmaceutical treatment for hepatitis C.  | 31                                     | 13.7 | 25        | 11.0 | 171     | 75.3  |
| Availability of vaccine for hepatitis C.   | 50                                     | 22.0 | 18        | 7.9  | 159     | 70.0  |
| Presence of hepatitis C antibodies without detectable RNA in blood.  | 28                                     | 12.3 | 85        | 37.4 | 114     | 50.2  |
| Active immunity for hepatitis C  | 52                                     | 22.9 | 40        | 17.6 | 135     | 59.5  |
| <b>Knowledge Score (%): Min-Max [Mean±SD]</b>  | <b>52.4-100.0 [86.3±9.2]</b>           |      |           |      |         |       |

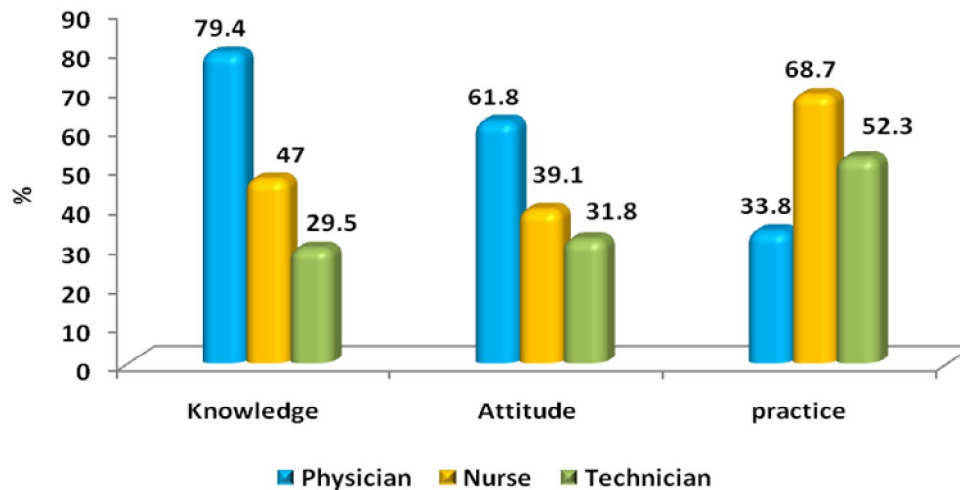
**Table (3):** Attitudes and self-reported behavior reported by the studied health care workers:

| Attitudes and self-reported behavior statements  | Studied health care workers<br>(n=227) |      |           |      |                             |      |
|--|--|------|-----------|------|-----------------------------|------|
|  | Strongly agree/agree                   |      | Uncertain |      | Strongly disagree /disagree |      |
|  | No.                                    | %    | No.       | %    | No.                         | %    |
| <b>Attitudes toward the implementation of infection control guidelines</b>   |  |      |           |      |                             |      |
| When receiving health care, patients with hepatitis C (HCV) should be identified with colored armbands or other tags for safety reasons. | 186                                    | 81.9 | 9         | 4.0  | 32                          | 14.1 |
| Health professionals who are HCV positive should be discouraged from having contact with patients.                                       | 88                                     | 38.8 | 19        | 8.4  | 120                         | 52.9 |
| All patients should be tested firstly for HCV, before they receive health care.  | 165                                    | 72.7 | 9         | 4.0  | 53                          | 23.3 |
| I deliver the same standard of care to patients with HCV as I do for other patients.   | 172                                    | 75.8 | 11        | 4.8  | 44                          | 19.4 |
| I feel that I do not have the skills needed to treat patients with HCV effectively and safely.   | 95                                     | 41.9 | 40        | 17.6 | 92                          | 40.5 |
| Following infection control guidelines will protect me from being infected with HCV at work.   | 216                                    | 95.2 | 8         | 3.5  | 3                           | 1.3  |
| I often use additional infection control precautions when treating patients with HCV.  | 188                                    | 82.8 | 8         | 3.5  | 31                          | 13.7 |
| I would prefer to wear two pairs of gloves when treating a patient with HCV.   | 179                                    | 78.9 | 5         | 2.2  | 43                          | 18.9 |
| The infection control guidelines necessary to treat patients with hepatitis C would be a financial burden on my practice/ward.           | 63                                     | 27.8 | 31        | 13.7 | 133                         | 58.6 |
| <b>Attitudes toward people with hepatitis C</b>  |  |      |           |      |                             |      |
| I feel sorry for people who contracted HCV through a blood transfusion.  | 217                                    | 95.6 | 1         | 0.4  | 9                           | 4.0  |
| I feel sorry for people who contracted HCV through IV drug use.  | 147                                    | 64.8 | 18        | 7.9  | 62                          | 27.3 |
| <b>Attitudes and willingness to treat people with hepatitis C</b>  |  |      |           |      |                             |      |
| I do not like treating people with HCV.  | 26                                     | 11.5 | 19        | 8.4  | 182                         | 80.2 |
| I am willing to treat people with HCV.   | 203                                    | 89.4 | 16        | 7.0  | 8                           | 3.5  |
| I believe my profession should have central role in the treatment of HCV.  | 214                                    | 94.3 | 8         | 3.5  | 5                           | 2.2  |
| <b>Attitude and fear of contracting hepatitis C</b>  |  |      |           |      |                             |      |
| I am afraid of catching HCV.   | 179                                    | 78.9 | 10        | 4.4  | 38                          | 16.7 |
| I am afraid that I might have HCV.   | 166                                    | 73.1 | 22        | 9.7  | 39                          | 17.2 |

**Table (4):** Practices that followed toward patients with hepatitis C among the studied health care workers (n=227)

| Practice that followed toward patients with hepatitis C      | Studied health care workers (n=227) |      |           |      |              |      |
|--|-------------------------------------|------|-----------|------|--------------|------|
|  | Never/rarely                        |      | Sometimes |      | Often/always |      |
|  | No.                                 | %    | No.       | %    | No.          | %    |
| Hands hygiene measures before starting the working activity. | 19                                  | 8.4  | 38        | 16.7 | 170          | 74.9 |
| Hands hygiene measures after removing gloves                 | 6                                   | 2.6  | 22        | 9.7  | 199          | 87.7 |
| Wearing gloves when at direct contact with a patient.        | 3                                   | 1.3  | 23        | 10.1 | 201          | 88.5 |
| Changing gloves before going to another patient.             | 10                                  | 4.4  | 16        | 7.0  | 201          | 88.5 |
| Wearing mask when at direct contact with a patient.          | 64                                  | 28.2 | 66        | 29.1 | 97           | 42.7 |
| Using sterile equipment for each patient.                    | 4                                   | 1.8  | 9         | 4.0  | 214          | 94.3 |
| Placing needles in sharp's containers                        | 2                                   | 0.9  | 13        | 5.7  | 212          | 93.4 |
| Recapping needles after using.                               | 136                                 | 59.9 | 36        | 15.9 | 55           | 24.2 |
| <b>Practice Score (%): Min-Max [Mean±SD]</b>                 | 42.5-100.0 [85.9±10.9]              |      |           |      |              |      |

**Satisfactory level of knowledge, attitude and practice among the studied health care workers according to their occupation**



**Figure (1):** satisfactory level of knowledge, attitude and practice among the studied health care workers according to their occupation



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**Discussion:**

Hepatitis C is a significant, global public health concern because of the large and increasing number of infected people and the associated morbidity, such as chronic liver disease and mortality. Hepatitis C virus (HCV) infection is also an important occupational hazard for health care workers<sup>(19,20)</sup>. Interventional measures have been proposed to minimize exposure of health care workers and patients to infection with the implementation of universal precautions<sup>(21)</sup>.

The result of the present study revealed that more than two third of the studied health care workers aged from 20 to less than 30 years old, three quarter of them were female, less than half of them were have 1 to less than 5 years of experience, and half of them were nurses.

In the current study, more than half of the studied health care workers reported that they had a history of needle stick injury, as in the study of<sup>(22)</sup> who reported that two third of the health care workers had got needle stick injury. In the study of<sup>(23)</sup> who reported that more than three quarter of the health care workers have a history of needle stick injury. This is may be due to lack of information about sharp wastes management and also due to recapping of needle.

In the present study, it revealed that health care workers' knowledge score was moderate (the satisfied percentage score was 53.3%). Physicians were more knowledgeable than other groups. That is in agreement with the study of<sup>(24)</sup>, whose study was about knowledge, attitude and behavior of primary health care workers about hepatitis C, that showed that participants' knowledge is fair (the overall percentage score was 44%) and also indicated that physicians were better informed about HCV as compared to other groups. I see that higher knowledge level of physician was likely because of more

advanced and professional education on gastrointestinal and liver disease.

Also in my study, there is a statistical significant difference between knowledge score and occupation which is in agreement with the study of<sup>(25)</sup>, whose study was about improvement of knowledge, attitude and practice of health care workers towards the transmission of blood-borne pathogens that found that there was a significance difference between knowledge score and study group. This is may be due to difference in level of education between study groups.

Concerning to nature and modes of transmission of HCV with, the current study showed that the majority of correct answers were about these items. This goes in line with<sup>(26)</sup> that showed that the majority of correct answers were about HCV nature and its modes of transmission. Also the study of<sup>(27)</sup>, which reported that the knowledge of participant about modes of transmission was acceptable, participant showed very good knowledge of routes of blood borne diseases as HCV, as they aware that blood and its products and improper usage of needles and sharps are the routes of transmission. That is may be due to availability of posters in hospitals which explain modes of transmission of hepatitis C virus and advertising about it in media. In contrast was<sup>(28)</sup>, who showed that knowledge of the correct transmission route of hepatitis B virus and hepatitis C virus was unsatisfactory in most of the participants.

In my study, only half of the studied health care workers knew that hepatitis C antibodies can be present without detectable RNA in blood. In contrast to<sup>(16)</sup> showed that only quarter of the medical participants were unaware that positive hepatitis C antibody does not indicate current infection. It may be due to lack of knowledge about diagnostic studies of hepatitis C and lack of educational programs about it.

In my study, the majority of the studied health care workers knew that following infection control guidelines will protect them from being infected with hepatitis C virus at work, but most of them used additional infection control precautions when treating patient with hepatitis C virus as they preferred to wear two pairs of gloves. In the same line was the study of <sup>(16)</sup> revealed that most health professionals understand the principles of infection control and were aware that following infection control procedures including wearing protective barriers, was standard practice. However, the use of additional precautions including double gloving when in contact with patients with hepatitis C virus was common. This may be due to fear of health care workers of contracting hepatitis C virus and lack of confidence and relying with infection control measures.

The finding was also reported that only half of the studied health care workers wear masks, and more than half of them recap needles after using. In the same line with <sup>(21)</sup> only near half of the studied subjects wear masks. In contrast was <sup>(29)</sup>, who showed that more than half of respondents always recap needles after use. Also study of <sup>(20)</sup> showed that near quarter of participants did not re-sheath needles all the time. Noncompliance among health care workers could be due to their belief that their workload is increased by adhering to universal precautions, and carelessness of some measures of infection control. Also, may be due to that knowledge of sharps safety was in complete.

Concerning safe disposal of sharps, the majority of the studied health care workers dispose sharps in safety box. This is in line with <sup>(30)</sup>, who showed that the majority of health care workers dispose of medical waste in an appropriate manner by using safety box, and he stressed on the importance of placing those containers

near the place when procedure is performed. Also, the study of <sup>(31)</sup>, who reported that the majority of the studied health care workers adhered to safe disposal of used needles and sharps and other blood contaminated items. It is may be due to availability of safety box in hospitals and continuous instructions about sharp disposal.

Finally, there was positive correlation between level of knowledge and attitude of studied health care workers in our study. This is in line with <sup>(26)</sup>, who showed that there was positive correlation between participants' knowledge about hepatitis C and their attitude toward the disease. In contrast was <sup>(32)</sup>, who reported that no correlation between knowledge and attitude. We suggest that occupational experience and high knowledge about nature and modes of transmission of hepatitis C can affect on their attitude and their well willingness to treat people with hepatitis C.

#### **Conclusion:**

Based on the findings of the present study, it could be concluded that:

- More than half of the studied health care workers had needle stick injury.
- More than half of the studied health care workers had satisfied knowledge and practice and less than half of them had satisfied attitude.
- Physicians were the most knowledgeable and laboratory technicians were the least knowledgeable. Less than half of nurses had satisfied knowledge.
- Physicians were the most satisfied attitude.
- Nurses were the most satisfied practice.
- There was positive statistical significant correlation between the attitude and the knowledge of the studied health care workers.

**Recommendation:**

Based upon the findings of the current study:

- Continuous educational programs for health care workers about hepatitis C to keep them up to date with hepatitis C virus (HCV). Also stressing on laboratory technicians' education as they expose to blood during their work and because of their bad knowledge about HCV.
- Mass media should have a role in increasing awareness about HCV.
- Educational programs about positive attitude in treating patients with HCV to prevent discrimination and prejudice toward patients with HCV.
- Educational programs about infection control measures and training on the proper technique. Stressing on sharp disposal to prevent needle stick injury.
- Continuous follow up to identify response of health care workers to infection control measures to ensure prevention of HCV transmission within hospitals and to know how prevention programs work.
- Periodic checkup for health care workers should be done to identify any occupational hazards as HCV to manage it early and to prevent additional infection for both health care workers and patients.

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