Assiut Scientific Nursing Journal
http://asnj.journals.ekb.eg
http://www.arabimpactfactor.com
http://olddrji.lbp.world/indexedJournals.aspx
DOI: 10.21608/ASNJ.2022.147979.1404

A Survey Study: Nurses' Knowledge and Attitudes regarding Hepatitis C Virus

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Abstract:
Background: Occupational exposure from hepatitis C virus care is a substantial source of infection by blood borne pathogens among health care workers. **Aim of the study: A**ssess nurses' knowledge and attitudes regarding hepatitis C virus. **Study design:** Multi-center study was carried out as a cross-sectional survey based on a self-administered questionnaire. It was conducted on (700) nurses who attended the central-hospital, Health Affairs, Al-humiate, Reproductive Health Hospital and Nursing School at Manfalout city and both male and females. **Tools**: Data were collected by using; self-administer questionnaire sheet: It contained demographic data and assessment of nurses' knowledge about HCV and assessment of nurses' attitude regarding HCV (Likert scale). **Results:** The majority of nurses (92.9%) had good level of knowledge about hepatitis C virus. The majority of the study nurses (96.3%) had positive attitude toward patient with hepatitis C virus. There was no a statistical significance difference between demographic data and nurses' attitude regarding patients with hepatitis C virus p. value **(0.033*).** On other hand, there was a statistical significance difference between demographic data and nurses' knowledge regarding patients with hepatitis C virus. **Conclusion:** There were positive and significant correlation among total score of nurses' knowledge and their attitude toward patients with hepatitis C virus (r. 0.146 and p. value 0.001). **Recommendations:** Continuing education programs on infection control measures are needed for nurses to increase their level of knowledge regarding patients with hepatitis C virus.

Keywords: ***Attitudes, Hepatitis C Virus, Knowledge & Survey***

Introduction
Hepatitis C is a liver disease caused by the hepatitis C virus: the virus can cause both acute and chronic hepatitis, ranging in severity from a mild illness lasting a few weeks to a serious, lifelong illness. HCV is a blood borne virus and the most common modes of infection are through exposure to small quantities of blood. This may happen through injection drug use, unsafe injection practice, unsafe health care, and the transfusion of unscreened blood and blood products. There is currently no vaccine for hepatitis C: however research in this area ongoing **(World Health Organization, 2017).**

Worldwide, approximately 240 million people have chronic hepatitis B virus infection and 130–150 million have chronic hepatitis C virus infection. Without an expanded and accelerated response, the number of people living with hepatitis C virus is projected to remain at the current, high levels for the next 40–50 years, with a cumulative 20 million deaths occurring between 2015 and 2030 **(World Health Organization, 2021).**

Viral hepatitis was estimated to be the 7th leading cause of mortality globally **(Stanaway, 2017).** One of the countries most affected by HCV is Egypt. The Egypt Demographic and Health Surveys (EDHS). Egypt has managed to implement a successful nationwide HCV screening and treatment program. By screening 49.6 million persons over a period of 7 months, we have managed to identify 2.2 million HCV-seropositive persons and refer them for evaluation and treatment **(Waked et al., 2020).**

Substantially higher than global level. To attend to this challenge, Egypt developed a national strategy for HCV control and established HCV prevention and treatment programs **(Esmat , 2018).**

Factors that increase risk of getting HCV include : injection drug use (current or past) where needles, syringes, or other equipment that comes in contact with blood is shared, working in healthcare setting and having a needle stick injury involving exposure to blood from someone with an HCV infection, being born to a mother who is infected with HCV, having a blood transfusion or a solid organ transplant before July 1992 (before the HCV screening test became available), receiving blood or an organ from a donor who was positive for HCV, and sharing personal care items, such as razor or toothbrush, that have come in contact with the blood of someone who is infected with HCV **(Mohd et al., 2018)** .

Long-term infection with the hepatitis C virus (HCV) is known as chronic hepatitis C virus.

Chronic hepatitis C is usually a "silent" infection for many years, until the virus damages the liver enough to cause the signs and symptoms of liver disease. Among these signs and symptoms are: **(Evon et al., 2018)**.Bleeding easily, bruising easily, fatigue, poor appetite, yellow discoloration of the skin and eyes (jaundice), dark-colored urine, itchy skin, fluid buildup in abdomen (ascites), swelling in legs, weight loss and confusion, drowsiness and slurred speech (hepatic encephalopathy).

Egypt's HCV elimination efforts intensified with the inauguration of the 100 Million Healthy Lives campaign. Efficiency became a priority. To screen 60 million eligible Egyptians, the campaign was divided into 3 phases, each comprising 7 to 11 administrative governorates, at 5,820 testing sites throughout the country. To serve the 57% of Egyptians who live in rural areas,1,079 medically equipped vehicles were used to reach remote and underserved areas **(World Bank, 2021).**

Knowledge is understanding and skills that we get through continuous learning and experience in work field. Nurse's knowledge related to hepatitis C disease and attitude is the foundation to control and reduce hepatitis C infection **(Joukar et al., 2017)**.

Attitude is the feeling and perception of nurses about hepatitis C patient that could be positive or negatives to care HCV patient. Moreover, about attitude is that patient with hepatitis C faces incrimination in health sector, by family members and they also experience by health care providers. It incrimination can interfere with their acceptance to treat patient with hepatitis C, because they have fear regarding the undertake infection. It is due to lake of knowledge's and negative attitude toward hepatitis C patient **(Setia et al., 2017)**

Significance of the study:

Nurses staff are the largest group of health team workers and they have close and continuous contact with HCV patients. Therefor, they should have optimal level of knowledge and good attitudes and being skillful in dealing with these patients. So, this study will be carried out to assess their knowledge and attitudes regarding patients with hepatitis C virus.

Aim of the study:

This study aimed to assess nurses' knowledge and attitudes regarding hepatitis C virus.

Research question:

What are nurses' knowledge and attitudes regarding hepatitis C virus?

Subjects and Method:

Research design:

Multi-center study was carried out as a cross-sectional survey based on a self-administered questionnaire. It was conducted among the nurses.

Setting:

The study was conducted at some medical places (The central-hospital, Health Affairs, Al-humiate, Reproductive Health Hospital and Nursing School) at Manfalout city.

Study subjects:

A convenience sample (700) nurses who attended the central-hospital, Health Affairs, Al-humiate, Reproductive Health Hospital and Nursing School at Manfalout city, both male and female and who agreed to participate in this study.

Tools of data collection:

Self-administer questionnaire sheet: Consisted of three parts:

Part 1 : Demographic data: Such as (age, sex, educational level, years of experience, and previous training program) .

Part 2 : Assessment of nurses' knowledge about HCV: To assess nurses' knowledge about HCV including (definition, causes, modes of transmission, prevention and precautions).

The scoring system of knowledge consisted of:

<50% = poor knowledge
50-70% = fair knowledge
>70% = good knowledge

Part (3) : Assessment of nurses' attitude regarding HCV (Likert scale) Adopted from **(Richmond et al., 2007).**

This tool aimed to assess nurses' attitudes regarding hepatitis C virus. Nurses were asked (in Arabic language) to what extend they agree or disagree with each of statements. For the 10 statements, (patients with HCV recognized for saving and protection, HCV positive should be discouraged from having contact with patients, All patients should be tested for HCV before they receive health care, etc….).

The total scores that can be achieved ranged from 10 to 50. Score between 10 and 30 consider as negative attitudes and scores higher than 30 consider as positive attitudes.

Methods:

An official approval letter was taken from the dean of faculty of nursing at Assiut University to the director of Central Hospital, Health Affairs, Al-humiate, Reproductive Health Hospital and Nursing School in Manfalout city to collect data for conducting the study.

Tools validity and reliability:

Data collection tool was submitted to a group of five experts (3 professors) in Medical – Surgical nursing and (2 professors) in community health nursing field at Faculty of nursing, Assiut University to test the tools content validity. Some modifications were done according to the experts' judgment on the clarity of sentences, appropriateness of content and sequence of items.

The reliability of the tools was statistically tested using Cronbach's coefficient alpha test. The tools proved to be internally reliable, with a Cronbach's coefficient alpha test of 0.968 and 0.885

A pilot study:

It was conducted on 10% (70) nurses to evaluate the applicability and clarity of the tools, estimate the time needed for data collection, and test the feasibility of conducting the research. After analyzing the pilot study results, a slight modification was done accordingly. Those nurses were excluded from the study subjects.

Ethical considerations:

Research proposal was approved from ethical committee in the faculty of nursing Assiut university. There was no risk for study subject during application of the research. The study followed common ethical principles in clinical research. Written consent was obtained from director of each place and oral from the nurses that are willing to participate in the study, after explaining the nature and purpose of the study. Confidentiality and anonymity were assured. Study subject had the right to refuse to participate or withdraw from the study without any rational any time. Study subject privacy was considered during collection of data.

Data Collection and procedure:

- Self-administered questionnaire tool was all filled through interviewing group of nurses.
- The researcher introduced herself to the nurses and explained the purpose of the study, as well as she asked the participant about the possibility to join with the study. It took about 10 minutes to 15 minute.
- The researcher distributed the self-administer questionnaire sheet to each nurse and asked them to fill the questionnaire completely and honestly to assess their level of knowledge and attitude regarding HCV. it took about 20 minute to 30 minute.
- The researcher collect data during morning and after noon shifts through 6 months (from 1st of January to 30th July 2019).

Statistical analysis:

Categorical variables were described by number and percent (N, %), where continuous variables described by the mean and standard deviation (Mean, SD). Chi-square test and Fisher exact test used to compare categorical variables where compare between continuous variables by t-test. A two-tailed $p < 0.05$ was considered statistically significant. We are used a person correlation to appear in the association between scores. All analyses were performed with the IBM SPSS (23) software.

Results:

Table (1): Frequency distribution of demographic data among participant (n=700)

Demographic data	Central Hospital=100		Health Affairs=300		Alhumiate=100		Nursing School=50		Reproductive Health hospital=150		P value
Age	**Mean ±SD**		**Mean ±SD**		**Mean ±SD**		**Mean ±SD**		**Mean ±SD**		0.832
	35.85±6.53		35.23±6.63		34.89±7.26		35.44±7.34		35.72±7.17		
	No	**%**	**No**	**%**	**No**	**%**	**No**	**%**	**No**	**%**	
Sex:											
Male	5	5.0	10	3.3	2	2.0	0	0.0	1	0.7	.154
Females	95	95.0	290	96.0	98	98.0	50	100	149	99.0	
Residence:											
Urban	42	42.0	125	41.0	44	44.0	24	48.0	69	46.0	.861
Rural	58	58.0	175	58.3	56	56.0	26	52.0	81	54.0	
Level of education:											
Bachler of nursing	12	12.0	26	8.7	3	3.0	7	14.0	17	11.3	.001
high institute of nursing	61	61.0	105	35.0	47	47.0	22	44.0	65	43.3	
Diploma in nursing	27	27.0	169	56.3	50	50.0	21	42.0	68	45.3	
Years of experiences:											
Less than 5 years	21	21.0	60	20.0	38	38.0	17	34.0	49	32.7	.001
From5-10 years	32	32.0	77	25.7	19	19.0	9	18.0	24	16.0	
More than 11 years	47	47.0	163	54.3	43	43.0	24	48.0	77	51.3	
Obtaining training program about infection control :											
Yes	73	73.0	187	62.3	62	62.0	33	66.0	106	70.0	.190
No	27	27.0	113	37.7	38	38.0	17	34.0	44	29.3	
Chi- square test statistically significant p. < 0.05											

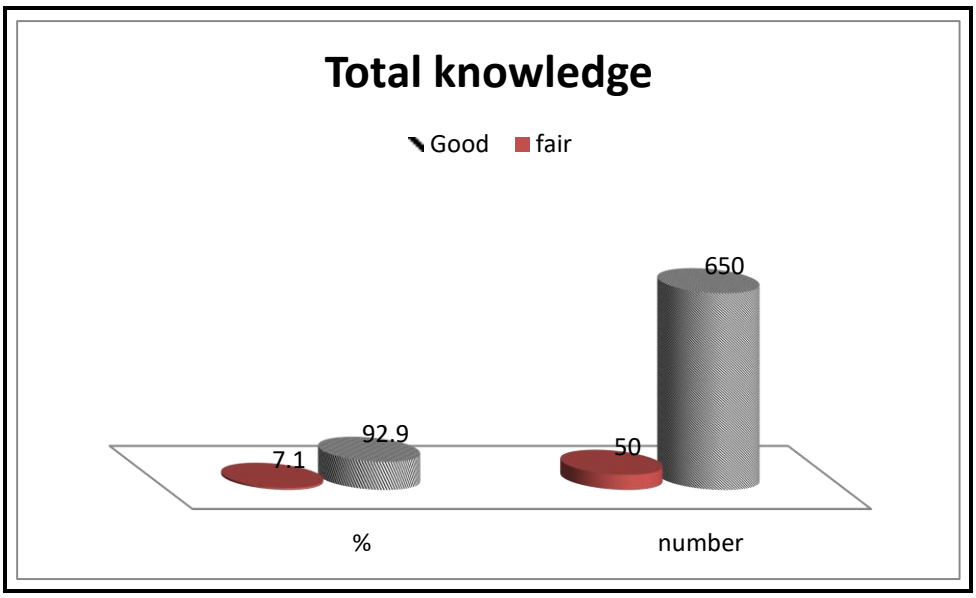

Fig (1): Total nurses' knowledge about hepatitis c viruses (n=700).

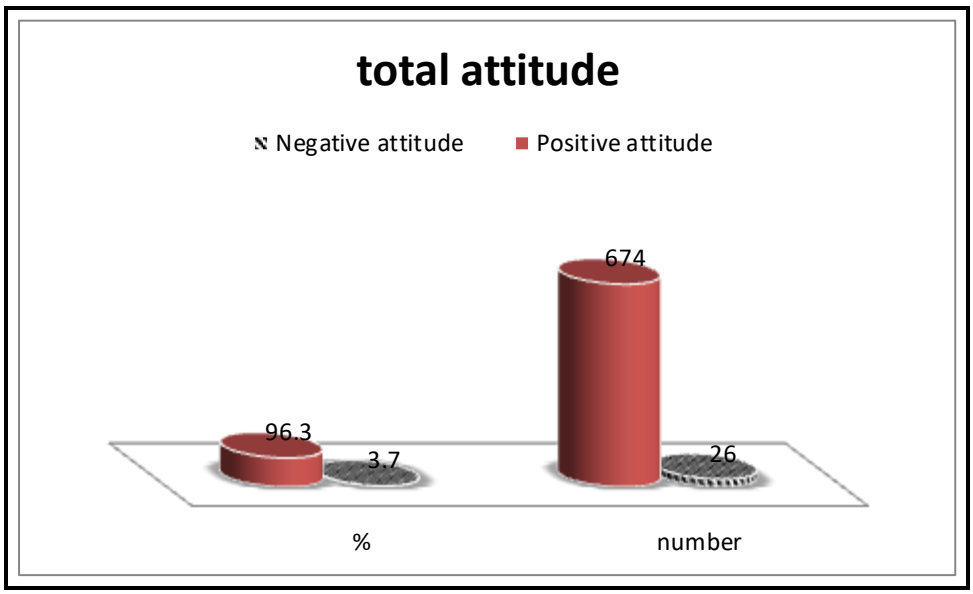

Fig (2): Total nurses' attitude toward patient with hepatitis C virus (n.=700)

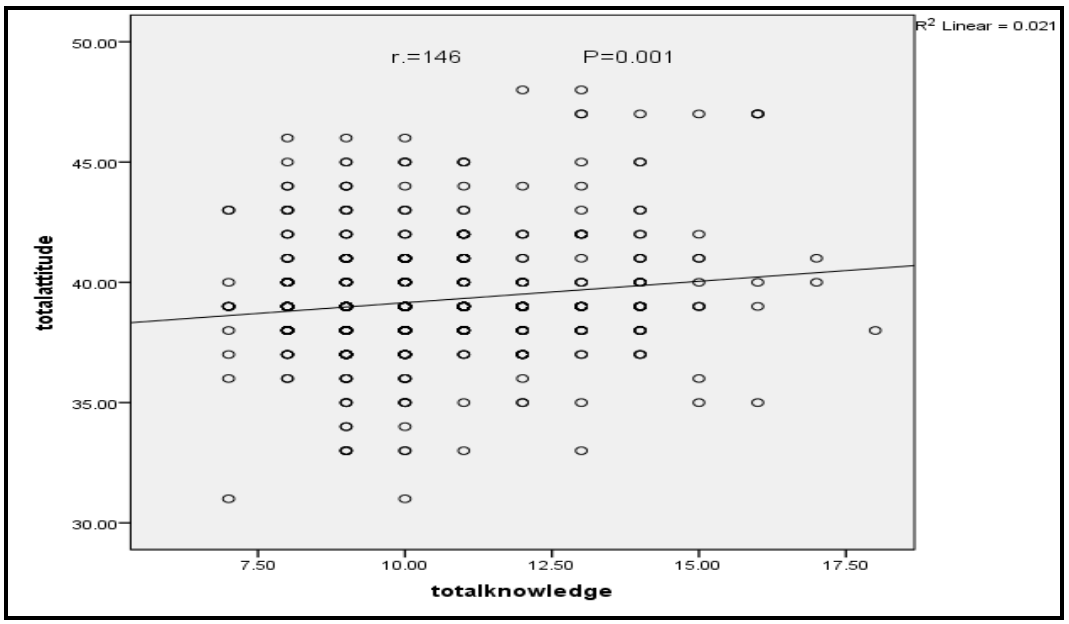

Table (3): Correlation between the total scores of nurses' knowledge and their attitude toward patient with hepatitis C virus (n= 700).

Table (2): Relation between demographic data , knowledge and attitude (n= 700).

Variables	Attitude	Knowledge	P. 1	P.2
Sex:	Mean ±SD	Mean ±SD		
Male	40.11±2.19	10.5±1.85	0.087	0.662
Females	39.19±2.23	10.36±1.83		
Level of education				
Bachler of nursing	39.16±2.69	10.38±1.52		
high institute of nursing	39.30±1.99	10.42±1.59	0.694	0.727
Diploma in nursing	39.15±2.34	10.31±2.08		
Years of experience				
Less than 5 years	39.26±1.75	10.61±1.77		
From5-10 years	39.03±2.38	10.09±1.58	0.497	***033.**
More than 11 years	39.27±2.38	10.35±1.95		

Chi- square test **statistically significant p. < 0.05*

P. 1: between attitude and demographic data

P. 2: between Knowledge and demographic data

Table (1): This table shows that the highest percentage of the study nursing are from Health Affairs (30.0%), female (68.2%), living in rural (39.6%). Concerning level of education the majority of them have diploma degree (33.5%), have experience more than 11 years (35.4%), and obtaining program about infection control (46.1%).

With no statistical significance difference between demographic and place of work.

Fig (1): This figure shows that; the majority of nurses (92.9%) had good level of knowledge about hepatitis c viruses.

Fig (2): This figure mentions that; the majority of the study nurses (96.3%) had positive attitude toward patient with hepatitis C virus.

Fig (3): This figure clarifies that; correlation between the score of nurses' knowledge and attitude were positive and significant correlation among total score of nurses' knowledge and their attitude toward patients with hepatitis C virus (r = 146 & p = 0.001).

Table (2): This table shows that; there is no a statistical significance difference between demographic data and nurses' attitude regarding patients with hepatitis C virus. On other hand, there is a statistical significance difference between demographic data and nurses' knowledge as regarding patients with hepatitis C virus.

Discussion:

Hepatitis C is a liver disease caused by the hepatitis C virus (HCV): the virus can cause both acute and chronic hepatitis, ranging in severity from a mild illness lasting a few weeks to a serious, lifelong illness. Hepatitis C is a major cause of liver cancer **(Ray & Ray, 2019).**

The aim of the study was to assess nurses' knowledge and attitude regarding hepatitis C virus at some medical places at Manfalout city.

Based on the result of the present study; the highest percentage of the study nursing are from Health Affairs and they are female and represented more than two third. This result was in the same line with **Magadmi & Kamel, (2021)** who mentioned that more than two third of the nurses were female and one less than one third of the nurses were male. Regarding residence, the majority of the sample were from rural area. This result was in the same line with **Strautmann et al., (2020)** who stated that the majority of the nurses were from rural area. The researcher opinion, this because the large areas of Assiut governorate are rural areas.

Regarding years of experience, more than one third of the sample have experience more than 11 years. This regarding to the researcher point of view their ages were high so their experience were great than 11 years old. This result is the same line with **Wahed et al., (2020)** who mentioned that nurses more than 40 years old were more knowledgeable. As well, **Lam & Schubert, (2019)** reported that nurses with less years of experience may require maximum additional instruction before they are ready to take a patient assignment. The researcher point of view that nurses working in one clinical specialty may need amount of instructions to acquire through training program.

The current study presented that around three quarters of the sample obtaining program of infection control. The researcher opinion, this might due to hospital have staff development program. This result was supported by **Żakowicz, (2021)** who said that nurses who are working in the clinical contact with patients needs additional education to provide optimal care for patients to prevent HCV infection.

Regarding total nurses' knowledge level:

The present study showed that the majority of nurses had good level of knowledge about hepatitis c viruses. The researcher point of view, this might be related to most of them were receiving any previous training and courses about nursing care guidelines for HCV infection. The researhers point of view, this satisfactory knowledge level may hinder nurses' ability to read and update their knowledge that necessary to improve their practice and so, high quality of care.

The knowledge of HIV is expected to be high in a country that has HCV an epidemic, and that conducts community sensitization and mobilizations for HCV prevention through various educational methods and approaches to change health behaviors. Various national media and community radio/ T.V stations are also involved in disseminating information on HCV in Arabic language **(Trickey et al., 2020).**

The present study was not in the line with the study conducted by **Shahid et al., (2021)** which identified that staff nurses had knowledge deficit regarding HCV infection and nurses needed to receive nursing guidelines in this area.

Also , this finding is notable by **Sturm et al., (2021)** suggests that one of the factors affecting compliance with standard measures in any hospital setting is clear awareness of its concepts and principles.

In addition to**, Joukar et al., (2017)** who indicated that there was a high level of awareness towards HCV infection among their studied nurses. **Ha & Timmerman, (2018)** reported that; insufficient knowledge is a factor most incorrect nursing care of HCV patients results in serious consequences and sufficient knowledge about these conditions is vital.

Reyad et al., (2021) reported that each organization and profession must set standards and objectives to guide individuals and practitioners in performing safe and effective care mainly infectious diseases HCV.

These results, on the researcher's opinion, may be attributed to the fact that; nurses working in the research and training hospitals had much more experience both in the profession, and almost all of them had participated.

In this respect, **Saludes et al., (2019)** mentioned that nurses must be able to expand their knowledge in this area through ongoing education, journal, and seminars. Consequently, teaching programs for nursing staff constitute an important part.

Regarding total nurses' attitude:

The present study found that the majority of the study nursing of the sample had positive attitude toward patient with hepatitis C virus.

These findings are in line with the earlier studies from **Almutairi et al., (2017)** who found there were a positive attitudes toward HCV among HCPs exist. The researcher opinion, this may be also, however, being the reluctance of HCPs to openly share their true feelings in caring HCV patients. However, although attitudes of HCWs were mainly positive (**El-Sokkary et al., 2017).**

Results of this study show that although overall attitudes toward HCV are positive, there are still misconceptions toward HCV among HCPs that may have a negative impact in caring for HCV patients. **Hiva et al., (2020)** highlighted that the variability produced by these items might cause low-reliability

estimates for HCV compared to HBV. **Friday et al., (2020)** consider that this is an important finding because it may help in explaining the reluctance of HCPs to openly share their true feelings about HCV which could result in these apparently contradictory findings.

The researcher point of view, understanding knowledge and attitudes toward these infectious diseases among health care workers is the first step in improving health education and health-care services to both the patients and HCVs. The findings of the study can be used to develop interventions addressing HCV-related knowledge and attitudes for HCPs, which in turn will help to prevent or reduce HCV infection.

Finally, the fidelity of attitudes toward HIV infection data obtained by self-reporting is a concern because of social desirability and the under-reporting of negative attitude. Thus, more studies are needed to identify strategies to enhance the reliability of self-reported attitudes toward HIV infection.

Regarding relationship between the total nurses' knowledge and attitude:

There were positive and significant correlation among total score of nurses' knowledge and their attitude toward patients with hepatitis C virus. The researcher opinion, this mean that the increase in the nurses knowledge lead to enhance nurses' attitude.

This finding was also reported in the studies of **Tshering et al., (2020).** We suggest that occupational experience and fear of contracting hepatitis C can also influence the willingness to treat people with hepatitis C.

This match with **Carter et al., (2018)** who found that the powerful influence of attitude on their the nurses knowledge and behavior. In **Souza et al., (2017)** study, some HCWs said that contact with hepatitis C and this attitude was affected by their knowledge level and influenced their willingness to treat patients with hepatitis C. In addition, **Mokaya et al., (2018)** showed that HCW willingness to treat patients with hepatitis C was significantly under the influence of their belief on injection drug users, rather than their knowledge of hepatitis C. The researcher opinion, access to health services could be difficult for people with hepatitis C because HCWs believe that they are injection drug users **(Alroy-Preis et al., 2018).**

Regarding relationship between the total nurses' knowledge and attitude scores and their demographic characteristics:

The contemporaneous study founded that there was a statistically significant difference found between nurses' knowledge and their level of education and their experience.

The researcher opinion that factors as years of experience and age contribute to achievement of knowledge and change the nurses' attitude positively.

This result was in agreement **Hickman et al., (2019)** who found that the highest mean knowledge scores among younger with low experience nurses those who have the least experience.

Cachay et al., (2021) reported that number of variables impacted on nurses' level of hepatitis C knowledge and their willingness to care for patients with hepatitis C. These variables included nurses' level of experience, perceptions of personal risk of contracting hepatitis C in the workplace, and recent incidents of sharps injuries. Strategies to reduce the level of staff anxiety related to hepatitis C infection and risks of transmission may further increase the willingness of nurses to care for hepatitis C-positive persons.

In the other hand, **Ishimaru et al., (2017)** stated no statistical significant difference between knowledge of many age groups and changed years of experience. While this study disagreement with **Scarborough et al., (2017)** found that sociodemographic are not elements of the knowledge on the values of sterile technique. But this study differs with the preceding studies showed which recognized staff nurses' experience years as a pointer of better knowledge with regards to infection control measures toward HCV **(Martínez-Pérez et al., 2021).**

The contemporaneous study founded that there was no statistical significant deference found between nurses' attitude and their demographic characteristics. The result this study was not agreed with **Barnhart et al., (2021)** who found that, not all attitude reflect knowledge and implementation of evidence-based strategies. In addition, **Starbird et al., (2020)** not agreed with our study and reported that the level of attitude of the nurses with baccalaureate degree is higher than the level of secondary school degree nurses.

Conclusion:

The majority of nurses had good level of knowledge about hepatitis c viruses. The majority of the study nursing of the sample (96.3%) had positive attitude toward patient with hepatitis C virus. There were positive and significant correlation among total score of nurses' knowledge and their attitude toward patients with hepatitis C virus ($r = 146$ & $p = 0.001$). There is no a statistical significance difference between demographic data and nurses' attitude as regarding patients with hepatitis C virus. On other hand, there is a statistical significance difference between demographic data and nurses' knowledge as regarding patients with hepatitis C virus.

Recommendations:

Based on the result of the present study the following can be recommended:

Continuing education programs on infection control measures are needed for nurses to increase their level of knowledge toward patients with hepatitis C virus. Increase level of education about the disease, its prevention, mode of transmission and the ways of treatments. Periodic checking of the nurse's performance regarding infection control regarding HCV by the training team in the hospital to evaluate the level of nurses and provision of guidance to correct the poor practices. Manual of nursing procedure regarding infection control regarding HCV should be available. Further researches ought to be done on a sample to oversimplify the results of this study and follow-up through 1 year to gain a better understanding of nursing care regarding HCV infection control.

Declaration of conflicting interests:

The authors declare that there is no conflict of interest

Funding:

The authors declare that they have not received any direct or indirect funding from any organization for the research.

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