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Research Article

**FREQUENCY AND DETERMINANTS OF HEPATITIS C
INFECTION AMONG HEALTH CARE PROVIDERS****Dr. Hania Nisar, Dr. Abdur Rehman, Dr. Rida Aslam**
Allied Hospital, Faisalabad**Abstract:**

Background: Hepatitis C infection is considered a major cause of mortality and morbidity all over the world. Owing to frequent contact and injuries, HCPs (health care providers) are at an elevated risk of exposure to HCV (hepatitis C virus) transmission.

Objective: The objective of the study is to find out the frequency and determinants of Hepatitis C infection among healthcare providers.

Method: It was cross-sectional descriptive study in which 120 health care providers working at Allied Hospital, Faisalabad participated. Data was collected through questionnaire, which was entered into computer software using SPSS 20.0.

Results: Among 120 HCPs, 70.8% were male and 30.8% were 50 years old or above. 92.5% HCPs were married, 7.5% had history of jaundice and 9.2% had history of dental procedure. Among these HCPs, 74.2% used gloves during working / handling patients, 45.8% had history of needle prick or sharp weapon injury and only 16.7% HCPs attended training workshop about hepatitis C preventive measures. 4.2% HCPs were positive for anti-HCV.

Conclusion: Study concluded that among health care providers, the prevalence of Hep-C was 4.2% and the major determinants were blood transfusion, dental procedure, shaving from barber, multiple sexual partners and lack of training program etc.

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INTRODUCTION:

Hepatitis C virus is a single stranded ribonucleic acid virus properly recognized in April 1989 as a major cause of non-A and non-B hepatitis.[1] HCV infectivity is one of the liver centripetal diseases that can lead to chronic and acute hepatitis infectivity. Major transmission routes of this virus comprise unscreened blood or blood products transfusion, reuse of syringes, unsterilized medical instruments while less common transmission routes comprise mother-to-child and sexual transmission.[2].

Hep-C virus is a worldwide health problem[3] as reported by WHO (World Health Organization) that 3 to 4 million individuals are infected yearly due to HCV and 130 to 170 million individuals are persistently infected. More than 350,000 individuals die per year caused by liver diseases associated with hepatitis C virus. Persons infected with HCV are at an elevated risk of developing cirrhosis, persistent liver disease and HCC (hepatocellular carcinoma). Hepatitis C virus is held responsible for almost 27 percent of cirrhosis and approximately 25 percent cases of hepatocellular carcinoma globally.[4] Worldwide complete prevalence of HCV is projected at 2.5 percent (177.5 million adults infected with hepatitis C virus), ranging from 2.9 percent in Africa and 1.3 percent in America, with an international viraemic rate of 67 percent (118.9 million cases positive for HCV RNA), varying from 64.4 percent in the Asia to 74.8 percent in Australia.[5]

Among developing countries, hepatitis C virus is considered a leading health issue.[6] HCV is also an important health care issue in Pakistan with severe and persistent contagions responsible for cirrhosis, HCC and liver damage.[7] Country has 2nd highest global burden of HCV infectivity, with 5 percent of populace infected (i.e. 8,000,000 individuals).[8] A few studies demonstrated that HCV prevalence differs between 4 province of the country and reported prevalence is 6.7 percent in Punjab province, 5 percent in Sind province and 1.5 percent in Baluchistan while 1.1 percent in KPK (Khyber Pakhtunkhwa) province.[9] Among developing states, lack of awareness about post exposure safety measures, and non-strict execution of standard preventive measures as well as exposure suboptimal documentation is prevalent.[10] Its medical course could be stern and can cause work inability or death. A significant cost is required for the treatment and safety measures while due to persistent disease, working hours are lost and premature death could also occur. [11]

Globally, the health care providers are at an elevated risk of getting BBP (blood-borne pathogens) like HCV as compared to some other work-related group. It is mostly owing to unique type of their job that engages working with the prone procedures in health care service delivery. An exposure which could place health care providers at a high risk for blood-borne pathogens is described like percutaneous injury (for example a needle prick or sharp object cut) or mucous membrane contact or non-intact skin (such as exposed skin namely chapped, afflicted or abraded with dermatitis), tissue, blood or other fluids of body which are potentially transmittable.[12] The highest risk of HCV takes place after percutaneous injury, for example, cuts with a sharp object and needle prick injury.[9] Out of all HCPs who exposed to sharp infected devices yearly, number of those becoming infected through HCV was 926000 among world countries. The yearly prevalence of work-related exposure to blood and body fluids of patients has been found 3% for hepatitis C virus. Among HCPs, the transmission risk of HCV due to needle prick injuries was reported 3 to 10 percent. The transmission risk of HCV with an elevated virus load among source patient raises by greater than tenfold.[13] Studies carried out in Pakistan reported the prevalence of HCV among health care providers from 5.2 percent to 5.6 percent.[12] Hence, transmittable work-related diseases can not only be communicated from patients to health care providers but also to community and their families, as well.[13]

MATERIAL AND METHODS:

It was cross-sectional descriptive study in which 120 health care providers (doctors, nurses, dentists, lab technicians, pharmacists) working at Allied Hospital, Faisalabad participated. Data was collected through questionnaire, which was entered into computer software using SPSS 20.0. Under total aseptic environment, 5 ml venous blood was taken from each respondent to detect anti-HCV antibodies. Polymerase chain reaction (PCR) was performed to confirm hepatitis C virus for seropositive cases. Proper consent was taken before data collection and confidentiality of data was ensured.

RESULTS:

Table-1 describes the socio-demographic characteristics of health care providers. Among 120 health care providers, 23 (19.2%) were upto 29 years old, 31 (25.8%) were 30-39 years old and 29 (24.2%) were 40-49 years old while 37 (30.8%) HCPs were 50 years old or above.

Among these HCPs, 85 (70.8%) were male and 35 (29.2%) were female health care providers.

Out of 120 health care providers, majority 111

(92.5%) was married while only 9 (7.5%) health care providers were unmarried.

Table-2 explains the determinants of HCV among health care providers. Result shows that among 120 HCPs, 9 (7.5%) had history of jaundice, 5 (4.2%) had transfusion history of blood or blood product and 9.2% had history of dental procedure. Among these health care providers, 26 (21.7%) visited barbers for shaving, 4 (3.3%) HCPs shared their toothbrush, 38 (31.7%) had history of body part piercing and 7 (5.8%) had history of tattooing while 2 (1.7%) health care providers had extra marital relations.

Table-3 demonstrates the preventive measures regarding health care providers at their workplace. Table indicates that among 120 health care providers, 117 (97.5%) were examined at the time of joining

Govt. service. Among these health care providers, mainstream 89 (74.2%) used gloves during working / handling patients for the prevention of HCV infectivity. Out of 120 HCPs, 106 (88.3%) had needle cutter while 55 (45.8%) had history of needle prick or shape weapon injury at their work place. Result shows that only 20 (16.7%) health care providers attended training workshop about hepatitis C preventive measures but 85 (70.8%) HCPs adopted safety measures during handling patients with hepatitis C infection.

Table-4 exhibits that among 120 health care providers, 5 (4.2%) were positive for anti-HCV while majority 115 (95.8%) of HCPs were anti-HCV negative.

Table-1: Socio-demographic characteristics

	Frequency	Percentage (%)
Age (years)		
Upto 29	23	19.2
30-39	31	25.8
40-49	29	24.2
50 or above	37	30.8
Total	120	100.0
Mean \pm SD	40.65 \pm 11.11	
Gender		
Male	85	70.8
Female	35	29.2
Total	120	100.0
Marital status		
Married	111	92.5
Unmarried	9	7.5
Total	120	100.0

Figure-1: Age distribution

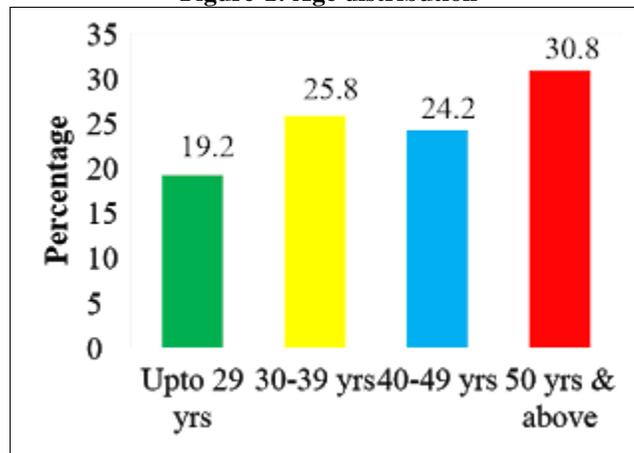


Figure-2: Sex distribution

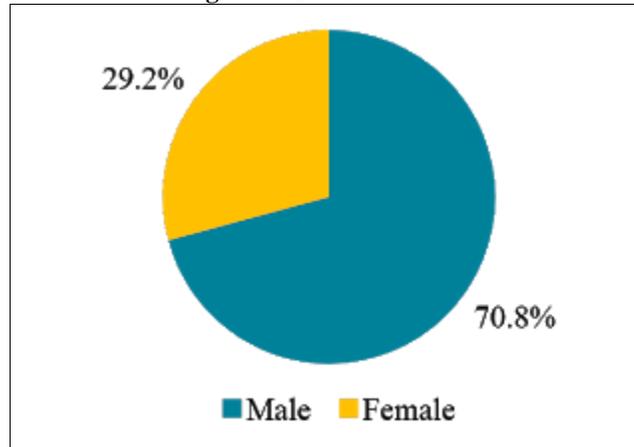


Table-2: Determinants of hepatitis C infection

	Frequency	Percentage (%)
History of jaundice		
Yes	9	7.5
No	111	92.5
Total	120	100.0
History of blood/blood products transfusion		
Yes	5	4.2
No	115	95.8
Total	120	100.0
History of dental procedure		
Yes	11	9.2
No	109	90.8
Total	120	100.0
Shaving practices		
Self	46	38.3
Barber	26	21.7
Not applicable	48	40.0
Total	120	100.0
History of toothbrush sharing		
Yes	4	3.3
No	116	96.7
Total	120	100.0
History of body part piercing		
Yes	38	31.7
No	82	68.3
Total	120	100.0
History of tattooing		
Yes	7	5.8
No	113	94.2
Total	120	100.0
Extra marital relations		
Yes	2	1.7
No	118	98.3
Total	120	100.0

Table-3: Preventive measures at workplace

	Frequency	Percentage (%)
Examined for HCV at the time of entry in Govt. service		
Yes	117	97.5
No	3	2.5
Total	120	100.0
Use of gloves during working / handling patients		
Yes	89	74.2
No	31	25.8
Total	120	100.0
Availability of needle cutter		
Yes	106	88.3
No	14	11.7
Total	120	100.0
Ever suffered a needle prick/sharp weapon injury at workplace		
Yes	55	45.8
No	65	54.2
Total	120	100.0
Training workshop attended regarding safety measures on Hepatitis C		
Yes	20	16.7
No	100	83.3
Total	120	100.0
Safety measures during handling Hepatitis C patients		
Yes	85	70.8
No	35	29.2
Total	120	100.0

Table-4: Anti HCV Test

	Frequency	Percentage (%)
Positive	5	4.2
Negative	115	95.8
Total	120	100.0

DISCUSSION:

The prevalence of hepatitis C infection is increasing in both developed and developing countries but developing countries are more vulnerable to this infection due to numerous factors. Therefore, current study was conducted to know the frequency and determinants of Hep-C infection among health care providers. To obtain adequate results, a group of 120 HCPs was included in the study and found that mean age of age of the health care providers was 40.65 ± 11.11 year while most of them (70.8%) were male and 29.2% were females. A similar study carried out in Egypt by El-Sokkary et al. (2015) also asserted that majority (52.2%) of HCPs were male and 47.8% were female.[3]

As far as marital status of HCPs is concerned, study disclosed that significant majority (92.5%) was

married and only 7.5% HCPs were unmarried. The findings of our study are comparable with the study undertaken by Yaghi and associates (2012) who reported major proportion (85.8%) of health care providers was married and only 14.2% HCPs were unmarried.[14]

During study determinants of Hep-C infection were evaluated to know the frequency of HCV infection among health care providers. Study indicated that 7.5% HCPs had history of jaundice. The results of our study are much better than the study done by Ghosh and coworkers (2015) who confirmed that 25.0% health care providers had history of jaundice.[15] Similarly in our study 4.2% health care providers had transfusion history of blood or blood products while findings of another study carried out by Alam and teammates (2007) showed that 20.0%

health care providers had been transfused with blood or blood products.[16]

Dental procedure could be a leading cause of hepatitis C infectivity if the instruments are not sterilized adequately. Study highlighted that 9.2% HCPs had history of dental procedure. The results of our study exhibited better scenario than the study performed by Sarwar and fellows (2008) who asserted that mainstream (70.0%) of health care providers had history of dental procedure.[17] Study further disclosed that 21.7% HCPs visited barber for shaving. The findings of our study are much better than the study conducted by Okasha and partners (2015) who confirmed that significant majority (80.2%) of HCPs visited barber for shaving.[18]

Tooth brush sharing and such other practices could cause Hep-C infection. It was very disturbing to know that among these HCPs, 3.3% shared their tooth brush with others. Almost one-third of HCPs had history of body part piercing while very little portion had history of tattooing on the body which should be avoided for the prevention of hepatitis C infection.

Extra marital relations are more perilous and even forbidden in our religion. It was appalling to note that 1.7% HCPs had multiple sexual partners while Paraná and assistant (2007) demonstrated more worst situation in their study that 17.0% health care providers had extra marital relations with multiple partners.[19]

At workplace, preventive measures play a significant role in preventing health care providers from HCV and several other infections. It is worth-mentioning here that majority (74.2%) of HCPs used gloves during working or dealing with patients. The results of our study are better than a recent study performed by Anwar and colleagues (2017) who reported that only 37.5% health care provider used gloves while dealing with patients.[10] Availability of needle cutter at workplace is essential to avoid injuries. Study indicated that major proportion (88.3%) of HCPs was provided with needle cutter. The findings of a study carried out in 2011 by Akeem et al. are comparable but exhibited better scenario than our study results who asserted that 93.5% health care providers had needle cutter available.[20] In our study 45.8% HCPs had needle prick or sharp weapon injury while study done by Anwar and colleagues (2017) showed devastating situation that 75.0% health care providers had needle prick or sharp weapon injury at workplace.[10]

It is observed that in hospitals, no adequate attention is paid regarding training of health care providers. Same results were obtained from our study that very little portion of HCPs attended any training workshop regarding safety measures of Hepatitis C.

When the prevalence of Hep-C infection was assessed, study found that 4.2% HCPs were Anti HCV positive. The results of our study are better than the study carried out in 2015 by Zia and coworkers who reported 4.5% prevalence of HCV among health care providers.[9] While another study carried out in 2011 by Khan and teammates exhibited better scenario that 4.1% HCPs had hepatitis C infection.[21]

CONCLUSION:

Hepatitis C infection is a most significant health issue that exacerbates the quality of life. Study concluded that among health care providers, the prevalence of Hep-C was 4.2% and the major determinants were blood transfusion, dental procedure, shaving from barber, tooth brush sharing, multiple sexual partners and lack of training program etc. Further researches are required to be carried out on vast level regarding frequency and determinants of hepatitis C infection among healthcare providers to keep them away from injurious effects of HCV and other infections.

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