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## Frequency of Hepatitis C in blood donors at Hayatabad Medical Complex Peshawar, Pakistan

Attallah<sup>1\*</sup>, Farman Ullah<sup>2</sup>, Mahboob Ul Haq<sup>3</sup>, Ikram Muhammad<sup>4</sup>, Ayesha Bibi<sup>5</sup>, Abdullah<sup>6\*</sup>, Qaisar Shah<sup>7</sup>, Hamidullah<sup>8</sup>, Khurshid Anwar<sup>9</sup>, Wali Khan<sup>10</sup>, Ahmadullah<sup>1</sup>, Aman Ullah<sup>11</sup>, Muhammad Asif Zeb<sup>11</sup>, Chongyi Zhao<sup>12</sup>

<sup>1</sup>Department of Genetics (Centre for Human Genetics), Hazara University, Mansehra, **Pakistan**

<sup>2</sup>Department of Pharmacy, Kohat University of Science and Technology, Kohat, KP, **Pakistan**

<sup>3</sup>Department of Biotechnology, University of Malakand, KP, **Pakistan**

<sup>4</sup>Laboratory of Plant Metabolic Engineering, Faculty of Life Science and Technology, Kunming University of Science and Technology, **China**

<sup>5</sup>Department of Human Nutrition and Dietetics, Women University Mardan, **Pakistan**

<sup>6</sup> Department of Health and Biological Sciences, Abasyn University Peshawar, **Pakistan**

<sup>7</sup>Department of Allied Health Sciences, City University of Science and Information Technology, Peshawar, KP, **Pakistan**

<sup>8</sup>Department of Zoology, Bahawalnagar Campus, Islamia University Bahawalpur, **Pakistan**.

<sup>9</sup>Department of Livestock and Dairy development, Investigation Center, Balogram Swat, KP, **Pakistan**

<sup>10</sup>Laboratory of Parasitology, Department of Zoology, University of Malakand, Lower Dir, **Pakistan**

<sup>11</sup> Institute of Paramedical Sciences Khyber Medical University Peshawar, **Pakistan**

<sup>12</sup>Faculty of Life Science and Technology Kunming University of Science and Technology Kunming Yunnan **China**

\*Correspondence: [atta.scientist@gmail.com](mailto:atta.scientist@gmail.com), [abdullah4us.71@gmail.com](mailto:abdullah4us.71@gmail.com) Received 24-03-2021, Revised: 08-06-2021, Accepted: 16-06-2021 e-Published: 20-06-2021

Infection caused by Hepatitis C virus is dangerous to health; it causes hepatic diseases including cirrhosis and hepato-cellular carcinoma. Therefore, the main objective of the study is to find out the frequency of Hepatitis C among blood donors at Hayatabad Medical Complex (HMC) Peshawar which is a tertiary care hospital and blood transfusion is a routine process in this facility that need to be observed keenly. The study was carried out during June 2018 to September 2019. To find out the frequency of Hepatitis C a total of 1900 blood donors were screened for anti HCV antibodies through ELISA (Enzyme linked immune sorbent assay) method. The frequency of HCV positive individuals was 1.26 % out of the total screened blood donors. Age wise frequencies of hepatitis C shows that 10 donors were infected in the age range from 18-30 years, 9 in 31-40 years and 5 in 41-50 years of age. The present study concluded that the frequency of HCV found among blood donors with relatively lower frequency as compared to the previous published reports. This indicates people are getting awareness day by day and the standard of living is improving. Still rate of transmission is high therefore screening of blood be done carefully. Government must improve living standard of people through public health by adopting international standards.

**Keywords:** hepatitis C virus, blood donors, transfusions, frequency, screening, HMC, Peshawar.

### INTRODUCTION

The trend of blood donation is common throughout the world. Transfusion of blood has

shown that it prolongs the lifespan of patients and has saved millions of lives. But later, it became evident that blood transfusion can be a mean of

dissemination for the blood borne pathogens which can be lethal for the immuno-compromised patients (Solanki et al.2017). Due to unsafe blood transfusions millions of people are at risk to get infected with blood transfusion transmissible infections (TTIs).These infections can be reduced by proper selection of blood donors, accurate procedures and proper and sensitive screening of the blood ( Shrestha et al.2009). Hepatitis C is one of the diseases which can be caused via blood transfusion and is one of the main causes of the chronic viral Hepatitis which causes liver diseases including liver cirrhosis and hepatic cells carcinoma (Daw et al.2016). The common sources of their transmission are; transfusion of blood products, contaminated needles and the use of unsterilized medical equipment( Wilkins et al.2010) HCV is an RNA virus and has single stranded circular RNA which is a positive sense strand. Around 30 different genotypes of HCV are prevalent ( Karim et al.2016). Hepatitis becomes chronic if it lasts more than six months. About 170 million of people are chronic HCV carriers throughout the world, a major portion belongs to the developing countries( Shah et al.2010). Whereas in contrast to the developing countries, in developed countries like United States of America most of the blood donors are educated and modern test procedures are applied for screening, consequently only 1 out 103000 donors is infected with HCV, similarly in Australia 1 out 6387000 is infected with hepatitis C virus which results in hepatitis via blood transfusion ( Khan et al.2011). Generally, in Asia the people of pacific region, 4% to 12% of population has hepatitis C infection. In Pakistan 6% of population is infected with this virus. Different studies reported different frequencies of HCV infection which are 16% in Lahore, 20% in Faisal Abad and 23.8% population of Gujranwala are infected with this lethal virus ( Khan et al. 2013). A retrospective study conducted from 2008-2012 at Mirpur Azad Jammu Kashmir, Pakistan which shows 2.5% prevalence of HCV ( Umair et al.2012). Another study conducted in 2016 by S. Naizi et al at Armed Forces Institute of Pathology Rawalpindi Pakistan shows 2.61% frequency of HCV ( Niazi et al.2016). A previous article reported 1.69% frequency of HCV among blood donors in Peshawar ( Abdullah et al.2014). The main aim of the study is to find out the frequency of hepatitis C caused by blood transfusion in apparently healthy blood donors at the blood bank of Hayatabad Medical complex Peshawar

**MATERIALS AND METHODS**

**Sample collection:**

A total of 1900 blood donors were screened in Hayatabad Medical Complex (HMC), Peshawar during June 2018-September 2019 the samples taken were consecutive and non-probabilistic. The inclusion criterion was healthy donors aged between 18-50 years of age. Donors were selected according to World Health Organization criteria i.e. having weights equal to more than 50kg and hemoglobin value more than 12 g/dl Donors were non-symptomatic for malaria and any type of hepatitis.

Screening Method: Screening of blood samples was done through enzyme-linked immune-sorbent assay (ELISA 3rd generation) for anti-hepatitis C antibodies present in the serum of the donors ( Nkrumah et al. 2011) According to the manufacturer guidelines serum were added to the each micro-well of ELISA plate. A cut-off value is determined by production of color in the positive control and is compared with the test wells. Stop solution was added to the wells to stop the enzyme reaction. The reading of the plate was performed with the plate ELISA plate reader. All values given by the ELISA plate’s reader less than 1 were considered as negative and values of 1 were taken as positive ( Kheirabad et al.2016)

**Statistical analysis**

The data was calculated by applying descriptive statistics for frequencies and percentages of variables calculation through SPSS version 22.

**RESULTS AND DISCUSSION**

According to the conducted study a total of 1900 donors were selected to in the study. Out of 1900 cases 24 (1.26%) were anti HCV antibodies positive cases (Table 1)

**Table 1 : Total number of infected cases**

Type of Infection	Infected cases	Total cases	Percentage
HCV	24	1900	1.26%

According to the age wise frequency of hepatitis C 11 donors were infected from 18-30 years of age, 9 belonged to range from 31-40 years of age and 4 were from 41-50 years of age

**Table 2: Age wise frequency of HCV**

Age group	Total number of cases (n)	HCV infected cases
18-30	900	11 (1.22%)
31-40	700	9 (1.30%)
41-50	300	4 (1.33%)

Blood transfusion is one of the key process in dealing trauma and surgeries in all major hospitals but to ensure the administration of safe blood to the already immune-compromised patient is always a challenging job. This certainly need sophisticated labs and well-trained hospital's personnel. Previous studies have shown that among the volunteer donors some of the individuals might be carriers or have active viral infections including hepatitis C ( Shah et al.2010). Similar problem exists all over the world even in the developed countries where the rates of such infections are too low (Vermeulen et al.2017; Vieira et al.2017). Considering the socio-economic status of maximum population in Pakistan it was expected that the chance of positive individuals will be too high but amazingly the results i.e. 1.26% were a bit low. Other studies conducted in Pakistan shows variation in the prevalence of HCV in different areas of the country. A study carried out at Hayat Abad medical complex in 2013 in healthy blood donors which shows 1.96% frequency of HCV which shows high frequency of hepatitis C than our finding. Such differences may be due to the awareness of people about this fetal ailment as people gets educated day by day and also the new and more sensitive tests methods are applied in recent times, so the spread of the blood born infections are decreasing (Abdullah et al.2014) as the time go on. Another study conducted in Armed Forces Institute of Pathology Rawalpindi Pakistan which shows the prevalence of HCV 2.61%, which shows an increased frequency of hepatitis C in blood donors ( Bharadva et al.2016). The reason of their high frequency is the very large proportion (95.4%) of the exchange of blood for another group of blood such donors are known as replacement donors who contrast with our study where most of the donors were volunteers' healthy individuals. In the latter case, some donors sell their blood in routine, who might be known positive carrier of Hepatitis C. Therefore, we should prefer volunteer donors as compare to replacement donors. A study published in 2016 among the blood donors at blood bank of Ittefaq

Hospital Lahore which shows the HCV percentage of 2.51%. Such variations exist in different part and cities of the country where it may depend on the sample size, age of the donors and their socio-economic status ( Niazi et al.2016).

A study conducted among healthy blood donors in Jamnagar , Gujarat , India which shows 0.57% ( Bharadva et al.2016). HCV prevalence. Similar study conducted at Tehran which has reported the incidence of HCV among blood donors ( Saber et al.2017). Another report published from Sudan which shows the 1.016% prevalence of HCV in blood donors ( Al-Noor et al.2016). A report published from Suez Canal University Hospital Blood Bank, the percentage of their HCV infection was 7.2% ( Nada et al. 2013).

It means that the trend of volunteer donors should be promoted, pre-donation tests must be done and latest sensitive test procedures should be applied to reduce the risks of transfusion transmissible infections (TTIs).

**CONCLUSION**

The present study conducted shows that the frequency of HCV found among blood donors with relatively lower frequency as compared to the previous published reports. This indicates the people get aware day by day. Infection still transmits therefore we should need proper and sensitive screening of blood. It is strongly recommended that proper pre-donation tests should be done to further reduce the risks of transmitting the blood born infections

**CONFLICT OF INTEREST**

The authors declared that present study was performed in absence of any conflict of interest.

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**AUTHOR CONTRIBUTIONS**

Mr. Attaullah performed experiments and also wrote the manuscript. FU, MUH, and IM helped in sample collection and compiling the whole data. AB, A, QS, HU, KA, WK, AU and CZ designed experiments and reviewed the manuscript. All authors read and approved the final version.

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