

# Seroprevalence of Anti-HCV in Non-Professional Blood Donors

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## ABSTRACT

This study was conducted in Blood Bank, DHQ Hospital Sargodha, to assess the prevalence of Anti HCV in non-professional blood donors. 100 non-professional blood donors visiting DHQ hospital Sargodha to donate blood to their relatives (patients) were screened for Anti HCV Antibodies. Out of 100 healthy blood donors, 12 were found reactive for Hepatitis C Virus (HCV) antibodies with a prevalence rate of 12%. Various risk factors were also studied which indicated that 75% of donors had h/o I/V injection/drip and nail cutter sharing, 70% had h/o shaving from barbers while 33% had h/o razor sharing, needle stick accident and extraction dental procedure and only 8% had h/o sexual promiscuity or ear/nose piercing. 12% prevalence rate indicates an increased prevalence in the blood donors in Sargodha as compared to usual prevalence rate of 3% worldwide. Preventive strategies should be adopted for Hepatitis C which is a major viral health problem in Pakistan.

**Key words:** Hepatitis C virus, Anti-HCV, Blood donors

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## INTRODUCTION

Viral Hepatitis is a major public health problem world wide. Hepatitis C is a blood-borne infectious disease that is caused by the hepatitis C virus (HCV), affecting the liver. Some patients have acute Hepatitis but most infected people develop chronic Hepatitis. The Hepatitis C virus is transmitted by parenteral route.<sup>1</sup> Hepatitis is present in the people of all parts of the world irrespective of the socioeconomic status. World Health Organization considers Hepatitis C as a silent epidemic because it can infect a person for decades before being discovered. According to the CDC 20-30 % of people with chronic Hepatitis C will eventually develop life threatening symptoms. The extent of problem was only apparent after 1990 when reliable HCV blood tests first became available. Initially virus was called as non-A, non- B virus but in 1998, identification of this virus as Hepatitis C was confirmed.<sup>2</sup>

Hepatitis C virus infection has a higher rate of progression to chronic disease (>70%) and eventual cirrhosis estimated as 20%. Risk of developing carrier rate for HCV is 0.2%-1% in the western world. Unfortunately, even in developed countries, death due to hepatitis C is increasing because of inadequate detection and treatment.<sup>3,4</sup> In case of HCV about 170 million are chronic carriers and 3–4 million people are newly infected each year.<sup>5,6</sup> Viral hepatitis in all forms is present in Pakistan; it is believed the prevalence of hepatitis C like in other countries is also increasing in Pakistan. According to a study cases of hepatitis C have risen in Pakistan making it almost twice as Hepatitis B.<sup>7</sup>

In comparison with other Hepatitis viruses, HCV transmission occurs primarily through exposure to infected blood and blood products. Mainly infection is transmitted by transfusion of infected blood, renal dialysis, injection drug use, sharing contaminated needles, needle-stick or intra-operative cuts to surgeons, organ transplant from infected donors, occupational exposure to infected blood, unsafe medical practices. Sexual transmission and transmission from mother to child has been difficult to document.<sup>8</sup>

In developing countries like Pakistan people involved in certain practices such as use of I/V drugs, tattooing and ear piercing, sharing of shaving blades, use of un-sterilized syringes, surgical instruments and receiving dental treatment from quacks are potential candidates for acquiring HBV or HCV infection. Screening of blood donors for Hepatitis B and C in most of the public sector blood banks has decreased transfusion related spread of these infections to some extent but for further success all the blood banks in public and private sectors are required to follow the same policy.

The ideal public health approach to disease prevention and control is to use routine population based surveillance data to monitor the magnitude and distribution of disease and identify high risk groups: however establishing a broad surveillance system requires commitment, sufficient funds, technical and logistical resources which are usually difficult for developing countries. Therefore small sentinel surveillance of selected subgroups can serve as a cost-effective and viable alternative. Sentinel surveillance is based on selected population samples chosen to represent the relevant particular groups.

This study was therefore, conducted to evaluate prevalence of Hepatitis C in non-professional blood donors at DHQ Hospital Sargodha. Usually people

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ignore screening in non-professional donors believing that it is only required in professional donors. Many studies have been conducted on professional blood donors regarding prevalence of Hepatitis C, but this study in non-professional blood donors will surface the actual status and would further emphasize the need of screening irrespective of the blood donor status i.e. professional or non-professional, as well as providing health education and awareness campaigns for general public to increase their knowledge about protecting themselves and their families from this deadly disease.

**AIMS AND OBJECTIVES**

1. To determine Anti HCV prevalence in non-professional blood donors.
2. To find out factors affecting Anti HCV prevalence
3. To give recommendations.

**MATERIAL AND METHODS**

This study was conducted in July 2010 in blood donors at blood transfusion unit DHQ Hospital Sargodha to evaluate prevalence of Hepatitis C. The hospital is catering patients from all over the district and is the main referral hospital in this area. Non-professional blood donors donating blood to their relatives admitted in DHQ Hospital Sargodha were included in this study. Blood donors both male and female who visited the blood bank to give blood to their relatives (admitted in DHQ Hospital) were selected. Professional donors were excluded from the study. Persons with high blood pressure and H/o previous major surgeries were also excluded. All selection of blood donors was done by convenient sampling and first 100 blood donors who were cooperative and willing to participate in this study were tested after taking informed consent. Each blood donor was interviewed in detail regarding age, sex, H/o jaundice, sharing of razors, H/o hepatitis, H/o blood transfusion etc. similarly information about needle pricks, operations, dental extraction and I/v injections/drips was obtained. An attempt was made to minimize recall bias by asking blood donors to provide information about the same period, and by using the same standardized questionnaire. All the blood samples (5ml) from donors were tested for antibodies against HCV. The test was done by ELISA using NANBASE C-96 3.0 Kit which is an enzyme immunoassay diagnostic Kit for in-vitro qualitative detection of Antibody to Hepatitis C virus (anti-HCV) in human serum or plasma by using recombinant HCV antigens. Results were recorded on the structured proforma and data analyzed.

**RESULTS**

This study was conducted at Blood Transfusion Unit at DHQ Hospital Sargodha. Out of one hundred (100) blood donors, twelve (12%) were reactive for HCV antibodies while eighty eight (88 %) were non-reactive (Table 1). Amongst reactive blood donors 10 (83%) were males while 02 were females (Table 2). Table 3 shows positivity rates of risk factors in anti HCV reactive blood donors. Out of 12 reactive donors 09 (75 %) each had H/o I/v injections / drips and nail cutter sharing, 07 (70%) has h/o shave from barbers, 05 (42%) had H /o scissor sharing, 04 (33% ) each of razor sharing, needle stick accidents& extraction/dental procedures, 03 (25%) each had H/o jaundice & using common pin in teeth while 01(8%) had H /o ear/nose piercing and sexual promiscuity.

Table 1: Anti HCV results in blood donors

Anti HCV Test	No.	%age
Reactive	12	12.0
Non-Reactive	88	88.0
Total	100	100.0

Table 2: Distribution of reactive anti HCV blood donors according to sex

Sex	No.	%age
Male	10	83.0
Female	2	17.0
Total	12	100.0

Table 3: Risk factors in anti HCV reactive blood donors (n=12)

Risk factors	No.	%age
H/o I/v injections/drips	9	75.0
H/o nail cutter sharing	9	75.0
H/o shaving from barbers	7	70.0
H/o scissors sharing	5	42.0
H/o razor sharing	4	33.0
H/o needle stick accidents	4	33.0
H/o extraction / dental procedure	4	33.0
H/o jaundice	3	25.0
H/o using common pin in teeth	3	25.0
H/o sexual promiscuity	1	8.0
H/o ear/nose piercing	1	8.0

**DISCUSSION**

Hepatitis C is a blood-borne infectious disease and is a major but preventable disease. In developed countries, it is estimated that 90% of persons with chronic HCV infection are infected through transfusion of unscreened blood or blood products or via injecting drug use. In developing countries, the primary sources of HCV infection are unsterilized injection equipment and infusion of inadequately screened blood and blood products.

In the present study 100 healthy non-professional blood donors were selected for

screening of anti-HCV. Twelve donors (12%) were found to be reactive for HCV antibodies. In reactive donors, history showed association with injection drug use (75%), shaving from barber among male donors (70%), scissors sharing (41.66%), tooth extraction/dental procedure (33.33%), sexually transmitted diseases (8.33%).

Concerning demographic variables, the increase in the prevalence rate in our study, that is 12% as compared to the worldwide prevalence rate of 3% may be due to lack of information about Hepatitis "C" in this part of the country. There is even wider range of variation in the positivity rates for anti-HCV in different parts of Pakistan. It is reported to be higher (35.3%) in one study conducted in Lahore area whereas it is between 10%-12% among blood donors in other districts of Punjab, while it was on the lower side (3.31%) in a study conducted in Islamabad.<sup>9</sup>

A report from hospital laboratory at DHQ Hospital Sargodha indicated a prevalence rate of 10% reactive for anti H.C.V antibodies in general population in the year 2003. A similar study having 81% anti-HCV positivity rate among the blood donors at DHQ Hospital Gujranwala was documented in the same year. Picture in Sargodha is similar as in other districts of Punjab but is quite different i.e. on the higher side when compared with result of similar studies conducted in Karachi where the prevalence was 2.068%.<sup>7</sup> This low incidence of disease in Karachi may be due to awareness of risk factors and better health education in that part of the country.

Global scenario reflects a decline in the prevalence rate of blood donors for HCV antibodies as is the case in USA and Eastern Europe where seroprevalence rate is 1.8% and 0.5% respectively owing to probably improved screening procedures.<sup>10,11</sup> In the Kingdom of Saudi Arabia different reports also showed that the prevalence rate fluctuates around the worldwide prevalence rate of 3%.<sup>12</sup> In a study of blood donors in UK amongst 53% HCV infected blood donors 27% were reported with previous H/o injection drug use, while in our study it is 75%, which is very high most probably due to lack of knowledge and poverty often leading to needle sharing and repeated reuse of needle for injections.

The present study in Sargodha (Pakistan) is quite comparable to the study in United States where an estimated 60% to 80% of all IV drug users were found to be infected with HCV.<sup>11</sup> The same risk factors i.e. IV injections/drips is observed in our study with highest prevalence rate of 75%. The same higher incidence was also found among blood donors with H/o nail cutter sharing (75%). Second highest prevalence rate was observed among the male blood donors visiting barber's shop for hair cutting/shaving

purpose or nail cutting i.e. 70%. This risk factor for anti-H.C.V has not yet been studied worldwide, because in developed world shaving by barbers is not common, while in our country it is very common practice. Barbers often re-use the same blade, thus increasing the spread of infection from person to person.

A report from Nigeria showed 12.3% prevalence rate, which is comparable to prevalence rate among blood donors at Sargodha in this study. There was an association of HCV prevalence with H/o exposure to heterosexual partners and, history of exposure to STDs.<sup>13</sup> Whereas in our study anti HCV reactive rate with H/o sexual promiscuity turned out to be 8.33% which is at the lowest grade when compared with other risk factors most probably due to our religious restraints limiting mostly people to one partner. No significant difference was found between the HCV positivity rates of males' vs females in a study in New Delhi (India).<sup>14</sup> Whereas in our study at DHQ Hospital Sargodha higher infection rate in male blood donors (83%) have been found as compared to female blood donors (17%). It should be a policy matter that all cases reporting to blood bank for donation of blood should be tested for HBsAg, anti-HCV and HIV before transfusion of blood to the patients. These efforts will help to reduce the post-transfusion hepatitis in the community.

## CONCLUSION

This study at Blood Bank, Divisional Headquarters Hospital Sargodha, tested 100 healthy blood donors for anti HCV antibodies. Twelve blood donors were found to be positive (12%). This high prevalence represents a large reservoir of infection capable of inflicting significant disease burden on the society. This report was comparable to other reports in the central Punjab province, but was much higher when were compared to reports from Karachi and its adjoining areas. This report also confirmed some independent risk factor for anti HCV positive tests described in other studies of blood donors. It included post-transfusion history of jaundice, intravenous drug use, multiple sex partners with injection drug users and sharing razor and nail cutter. Some characteristics of sexual behavior were detected as independent risk factors suggesting that sexual intercourse is an important source of transmission. Because there is no vaccine and no post exposure prophylaxis for HCV, the focus of primary prevention efforts should be to target the practices that increase the risk of infection, safe blood in developing world, safe injection practices and health education especially in developing world.

## RECOMMENDATIONS

1. Including non-professional donors along with professional donors in thorough blood screening.
2. Health education at all levels for masses.
3. Media awareness campaigns should be launched.
4. Kits for testing should be provided free of cost or at subsidized rates to public and private sectors.
5. Law enforcement for ensuring safety at Barbers shops.
6. Mode of transmission of Hepatitis to be included in school and university syllabi.

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