



## Seroprevalence of HIV, Hepatitis B & C viruses in healthy voluntary blood donors of college going students (16 – 25 years) at Khammam, A.P

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### Abstract:

Hepatitis-B Virus (HBV), Hepatitis-C Virus (HCV) and Human Immuno deficiency Virus (HIV) are the most important agents responsible for transfusion transmitted infections (TTI). HBV is one of the most common infectious diseases of the world, about two billion people are infected world wide with an estimated 400 million chronically infected cases and 75% of them are Asians.

**Key words:** HIV; HCV; HBV; Blood donation

### Introduction

Hepatitis-B virus (HBV), Hepatitis-C virus (HCV) and Human Immuno deficiency Virus (HIV) are the most important agents responsible for transfusion transmitted infections (TTI). HBV is one of the most common infectious diseases of the world, about two billion people are infected world wide with an estimated 400 million chronically infected cases and 75% of them are Asians [1]. HCV is another common hepatitis virus. The World Health Organisation (WHO) has estimated that 170 million people world – wide is infected with HCV [2]. In addition prevalence of HIV is increasing in the world with an estimated 5.7 million cases of HIV infection.

India has the second highest pool of these patients in the world [1].

Among these infections HBV is more infective than other viruses. Recently HCV is one of the silent killer diseases. It appears to be more dangerous than HBV because there are often no clinical symptoms. When HCV is diagnosed, considerable damage has already been done to the patient leading to chronic liver disease, liver cirrhosis and primary liver cell carcinoma [3].

HBV, HCV and HIV/AIDS are three important public health problems world wide. HIV shares common route of infection with HBV and HCV namely through blood and blood products, IV drug abuse, unsafe injections and sexual activity [3].

Transmission of these dreadful diseases warrants careful screening of blood donors [4].

As the demand for blood transfusion is increasing due to automobile road accidents, surgical and obstetrical emergencies, there is urgent need to assess the actual prevalence of these infections in order to adapt preventive strategies. With the advent of Nucleic Acid amplification Technique (NAT) western countries have decreased the risk of TTIs to a major extent [5]. But the escalating costs of medical care in India make this task of "Zero risk" blood supply more difficult to obtain. Blood supply remains an issue of major concern in transfusion medicine where blood transfusion services and policies, appropriate infrastructure, trained personnel and financial resources are inadequate.

Blood donor groups are usually young adults. The present study was conducted to assess the prevalence of markers of HBV, HCV and HIV among college going healthy young adult first time voluntary blood donors of age group 16-25 years from various junior, engineering, degree and P.G. colleges in Khammam, Andhra Pradesh.

## Material and Methods

The present study was carried out at Mamata Medical College Hospital, Khammam, in association with Mythri Charitable Trust blood bank and transfusion center, Hyderabad. A.P. The sample comprised 237 healthy young college going students (16-25 years) who volunteered blood donation for the first time. Written consent was taken from all the study subjects.

All the 237 donor serum samples were screened for HBV, HCV and HIV. Hepatitis B surface antigen (HBsAg) was screened using third generation ELISA kits (Ranbaxy) HCV and HIV antibodies were screened by third generation ELISA kits (Ranbaxy) with reported sensitivity and specificity of 100% each. Tests were performed according to the manufacturer's instructions with adequate controls and the readings were taken by Eliskan ELISA reader. All the reactive samples were repeated in duplicate and were labeled as ELISA positive cases.

## Results

Out of the total 237 blood donors 189 (79.7%) were males and 48(20.3%) were females.

Table 1: Age and sex distribution of healthy voluntary blood donors (n=237)

Age (in years)	Total no.	No. of males	No. of females
16-20	116	90 (77.5%)	26 (22.5%)
21-25	121	99 (81.8%)	22 (18.2%)
<b>Total</b>	<b>237</b>	<b>189 (79.7%)</b>	<b>48 (20.3%)</b>

HBsAg was positive in 4 (1.68%) of the blood donors (1 male and 2 females of group 21-25 years and 1 male of 16-20 years). HCV was positive in 2 (0.84%) and the two were males (1 from each group). HIV was positive in 1 (0.42%) male donor of age group 21-25 years.

Table 2: Prevalence of HBsAg, HCV and HIV in blood donors

Age (in years)	Total donors	HBsAg + (%)	HCV + (%)	HIV + (%)
16-20	116	1	1	-
21-25	121	3 (2 females & 1 male)	1	1
<b>Total</b>	<b>237</b>	<b>4 (1.68%)</b>	<b>2 (0.84%)</b>	<b>1 (0.42%)</b>

## Discussion

Our study has aimed at determining the Seroprevalence of HBV, HCV and HIV among college going voluntary blood donors. HBV and HCV infections have significant morbidity and mortality world wide. The global prevalence of HCV is 3% [2]. The carrier rate of HBsAg varies upto 15% in Africa and Asia [2]. An estimated one - third of the world's population has serologic evidence of past infection, and the virus causes more than 1 million deaths annually [6]. India has been placed in the intermediate zone (2-7%) of prevalence of hepatitis B by the WHO [7].

HCV mortality figures are expected to triple giving HCV a resultant mortality that may rival HIV by 2010.[8] For HIV India is second only to South Africa(7.4%) in terms of overall number of people living with HIV [5].

In the present study we estimated the seroprevalence of three major TTIs in college students (who volunteered blood donation for the first time). The seroprevalence of HBsAg in our donors was 1.68%. Lodha et al reported prevalence of 1-2% in India [9]. HBsAg prevalence in Punjab blood donors was 1.7% [10]. While Rajasthan was 3.44% and Delhi – 2.23% [5]. Screening of HBsAg alone does not fully reflect the epidemiology of the disease as it could indicate a carrier state, viral replication or chronic hepatitis. Though safe and effective vaccine has been available since 1982, the HBsAg prevalence in India remains high.

The Seroprevalence of HCV in our study was 0.84%. Seroprevalence of HCV among hospital based general population in India was 1.57% - 4.8% [11,12]. Garg et al. reported HCV prevalence of 0.28% in blood donors of western India [13]. Kaur et al. reported HCV prevalence of 0.78% [10]. Singh et al. documented 0.5%, Jain et al (2003) reported 1.57% while Sangeeta et al [2006] reported 0.66% of HCV prevalence in voluntary blood donors of New Delhi [5].

National AIDS Control Organisation (NACO) reported overall prevalence of HIV in India is 0.91% (2005) and 0.25% in Delhi. [14] Prevalence of HIV in Punjab is 0.26% [10], while in West India is 0.4% and 0.56% in New Delhi [5]. HIV prevalence in the present study was 0.42%.

A volunteer blood donor has been found to be the safest source of blood world wide by WHO. Unfortunately majority of blood donors in India are replacement donors which reflects the basic lack of awareness, presence of misconceptions and fears associated with donating blood. In India voluntary donations are few, so there is a need to enhance voluntary donation camps undertaken by the government of India.

## Conclusion

Government should take up programmes to create awareness among public and students about the benefits of blood donation as well as eligibility to donate blood. TTIs have direct multidimensional impact on the development of countries. The prospects of a vaccine for HCV and HIV are still remote, but we can prevent hepatitis B infection to certain extent by vaccination. The seropositive

patients must be considered highly infectious and they should be educated/counseled not to donate blood, organ, tissues or semen. So great stress must be laid on properly screened safe blood supply and non -renumerated voluntary blood donations must be strongly encouraged.

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