

“Knowledge of Hepatitis B and C Infections and Sero-prevalence Among Blood Donor University Students in District, Lahore, Pakistan”

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Abstract

Background: The Hepatitis B and C infections are spreading like epidemic in Pakistan. The hidden portion of iceberg is huge, because of undiagnosed patients and carriers. The knowledge level needs to be assessed and improved in order to effectively implement the prevention and control strategies.

Objectives: The study was conducted to estimate the sero-prevalence of Hepatitis C and Hepatitis B infections in blood donor university students and to determine their knowledge of Hepatitis B and C infections.

Method: This is a cross – sectional study, conducted in public and private sector, non-medical Universities in District Lahore recognized by Higher education Commission of Pakistan. A representative sample of 340, male and female, voluntary or on payment blood donor students was selected using two – staged Probability Sampling. Data was collected using structured pre-tested questionnaires after taking informed consent.

Results: Among 340 study subjects 66.2% were females. Hepatitis B seroprevalence was (4/340) 1.176%, and Hepatitis C seroprevalence was also estimated to be (4/340) 1.176%. Combined hepatitis B and C seroprevalence was 2.35%. Among the seropositives 37.5% were females while 62.5% were males. The knowledge level about mode of transmission varies from 63.2% to 90.3%, while the knowledge level range from 51.2% to 94.7% about at risk groups and the knowledge range came out to be 63.2% to 94.7% about prevention and control measures.

Conclusion: The seroprevalence of Hepatitis B and C is much less. The educated youth of our community is much aware about the common routes of transmission of Hepatitis B and C infections.

Key words: Knowledge, Hepatitis B, Hepatitis C, seroprevalence, blood donors.

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Introduction

Hepatitis B and C is a major health burden globally

casting enormous burden on health care system and a major source of patient's misery. There are 400 million HBV carriers and 160 million people infected with HCV¹ of which more than 250 million reside in Asia. About 20% of infected patients develop cirrhosis of liver and 5% of this progress to Hepatocellular carcinoma.² The virus infects people of all ages and disease imposes a burden on the national economics. Globally 2 billion people are infected with virus of which 360 million have chronic infection.³ In Pakistan the estimate is 4.5 million carriers for HBV with carrier rate 3 – 4% and 10 million people are infected with HCV with prevalence rate 4 – 7% in different parts of Pakistan.⁴ Chronic liver disease (CLD) is a major cause of mortality in Northern Pakistan where HCV infection is the main cause of chronic liver disease followed by either HBV or a combination of these viruses.⁵ HBV and HCV are prevalent in Hazara and other parts of NWFP.^{6,7}

The factors contributing to HBV and HCV infection include unsafe use of therapeutic injections, transfusion of contaminated blood and blood products, haircut, mother to infant transmission and unsafe sexual practices.^{8,9} Various studies undertaken by different workers in different areas have shown ethnic differences in sero-prevalence of HCV in the country, but more data is needed to confirm this observation.¹⁰ The global seroprevalence of HCV among blood donors varies from 0.4 – 19.2 per cent.¹¹ In Pakistan the National figures are unavailable and the sero-prevalence of Hepatitis B as weighted average among healthy adults (blood donors and non-donors) is 2.4% (range 1.4 – 11.0%) and for hepatitis C antibody is 3.0% (range 0.3 – 31.9%). Rates in the high – risk subgroups are far higher.¹² In Pakistan more than 1.5 million pints of blood are collected each year.^{13,14}

Among them about 65% is from replacement donors, 25% from volunteer donors and about 10% from professional donors.^{13,15,13} Blood is one of the major sources of transmission of Hepatitis B, Hepatitis C, HIV and many other diseases. Knowledge about hepatitis B and C is a neglected but very important issue which was assessed in a cross – sectional study of 300 adults aged 18 or older attending family medicine clinics at Aga Khan University Hospital, Karachi, Pakistan. Gaps in knowledge were identified and it was suggested that health education about these infections should be provided to the public. Family physicians can play an important role in educating people about the prevention of these diseases.¹⁶

The current study aims to estimate the seropreva-

lence of HCV and HBV in voluntary blood donor students of all non-medical Universities of District Lahore, Pakistan and also to determine their knowledge and attitude regarding Hep. B and C infection.

Material and Methods

Study Area / Setting:

All the public and private sector, non-medical Universities of District Lahore recognized by Higher education Commission of Pakistan.

Study Subjects

Eligibility Criteria: Both male and female, voluntary or on payment blood donor students.

Exclusion Criteria: All Medical Universities recognized by HEC. All small universities having student less than 1,000.

Study Design: Cross – sectional analytical study.

Sample Size: With expected prevalence of 4%, worst acceptable 2%, margin of error 5%, confidence level of 95% the sample size is 340.

Sampling technique: Two – stage sampling a type of Probability Sampling was used.

In first stage simple random sampling was done and all the public and private sector Universities of District Lahore recognized by Higher education Commission of Pakistan was included. After making sampling frame the random number table was used for selection of 50% of total Universities, so out of total 16 Universities 8 were selected.

In the second stage A list of blood donors (who have ever donated blood voluntarily or on payment) among the students of these universities was developed. The required sample size was taken by using proportionate sampling and students are included in the study after taking informed consent by simple random sampling.

The apparently healthy students were screened for hepatitis B surface antigen (HBsAg), antibody to HBV core antigen (anti-HBc), and anti-HCV antibodies (anti-HCV). Ethical clearance was obtained by the institutional ethical review committee and written informed consent was taken.

Results

The study results showed that the mean age of the study subjects was 21.59 with SD \pm 2.515. Among the

340 study subjects 66.2% were females, 97.6% subjects were single. Male to female ratio is 1:0.51. The demographic details are shown in Table 1. Hepatitis B seropositivity was present in 1.176% (4/340) blood donor students, while Hepatitis C seropositivity was also present in 1.176% (04/340) subjects. Over all hepatitis B & C seroprevalence was 2.35%. Among the seropositives 37.5% were females while 62.5% were males. The blood group distribution among seropositives was, 37.5% A+, 12.5% B+, 25% O+ and 25% don't know there blood group.

The assessment of knowledge showed that 333/340 (97.9%) ever heard about the Hepatitis B and C infections. Upon answering about the source of information 112/340 (33.63%) said that they got information from their friends, while 79/340 (23.72%) and 76/340 (22.82%) from family and school respectively. 215/340 (63.2%) knew about the sexual route of transmission, 307/340 (90.3%) knew about the transmission through infected blood. 252/340 (74.1%) had knowledge about the transmission of these infections from mother to fetus.

Upon asking about their knowledge about the risky behaviors or at risk groups, 322/340 (94.7%) knew

about the needle sharing in IV drug users as risky behavior. 305/340 (89.7%) knew about the razor sharing, while 238/340 (70%) knew about the at risk group who goes to dentists. 236/340 (69.4%) knew about surgery patients who are at risk. 211/340 (62.1%) knew about the homosexual group. 250/340 (73.5%) had knowledge about heterosexual risky behavior. 174/340 (51.2%) knew about the truck drivers spreading the infections. Tattooing was also labeled as risky behavior by 257/340 (75.6%) students.

Knowledge about prevention and control of hepatitis B and C infections included avoiding needle sharing as specified by 322/340 (94.7%) students. Avoid tattooing was mentioned by 261/340 (76.8%) students. Avoiding razor sharing was mentioned by 301/340 (88.5%) students. 237/340 (69.7%) said to ensure sterilization during surgery. Sterilization of dental equipment, as a preventive measure was mentioned by 242/340 (71.2%) students. Avoid homosexuality can reduce the prevalence of hepatitis B and C, as mentioned by 215/340 (63.2%) students. 250/340 (73.5%) students knew about avoiding the heterosexual behavior.

Table 1: Demographic Characteristics of the Study Population

Variables	Sub-categories	Frequency	Percentage
Gender	Females	225	66.2
	Males	115	33.8
	Total	340	100
Marital status	Single	332	97.6
	Married	7	2.1
	Divorced	1	.3
	Total	340	100
Blood group	A+	60	17.6
	A-	4	1.2
	B+	91	26.8
	B-	11	3.2
	AB+	23	6.8
	AB-	4	1.2
	O+	72	21.2
	O-	11	3.2
	Don't Know	64	18.8
Total	340	100	

Table 2: Knowledge about route of transmission of Hepatitis B & C.

Knowledge areas	Categories	Frequency (340)	Percentage
Heard about Hepatitis	Yes	333	97.9
	No	7	2.1
Specify the source	Print Media	35	10.51
	Family	79	23.72
	Friends	112	33.63
	School	76	22.82
	Electronic Media	31	9.31
Route of Transmission, sexual transmission	Yes	215	63.2
	No	125	36.8
Route of Transmission, infected blood	Yes	307	90.3
	No	33	9.7
Route of Transmission, infected mother to fetus	Yes	252	74.1
	No	88	25.9

Table 3: Knowledge about the risky behaviors / at risk groups in Hepatitis B & C infection

Knowledge Areas	Categories	Frequency (340)	Percentage
IV drug user and needle sharing	Yes	322	94.7
	No	18	5.3
Razor sharing	Yes	305	89.7
	No	35	10.3
Patient of dentists	Yes	238	70.0
	No	102	30.0
Patient of surgery	Yes	236	69.4
	No	104	30.6
Homosexuals	Yes	211	62.1
	No	129	37.9
Heterosexuals / Prostitutes	Yes	250	73.5
	No	90	26.5
Truck Driver	Yes	174	51.2
	No	166	48.8
Tattooing	Yes	257	75.6
	No	83	24.4
Others	Hair Cutting	1	7.69
	Parlor	1	7.69
	Sharing Cloth with Hep Patient	2	15.38
	Unsafe Food and Water	9	69.23

Table 4: Knowledge about prevention and control of Hepatitis B & C infection.

Knowledge Areas	Categories	Frequency (340)	Percentage
Avoid needle sharing	Yes	322	94.7
	No	18	5.3
Avoid tattooing	Yes	261	76.8
	No	79	23.2
Razor sharing	Yes	301	88.5
	No	39	11.5
Ensure sterilization of Dental equipments	Yes	242	71.2
	No	98	28.8
Ensure sterilization in Surgery	Yes	237	69.7
	No	103	30.3
Avoid homosexuality	Yes	215	63.2
	No	125	36.8
Avoid heterosexuality / prostitutes	Yes	250	73.5
	No	90	26.5

Discussion

In this study the seroprevalence of Hepatitis B is 1.176% (4/340) in blood donor students, while Hepatitis C seropositivity is also 1.176% (04/340) but over all hepatitis B & C seroprevalence is 2.35%. If we review the relevant studies world over they show the prevalence of anti-HCV 1.1% in Brazil.¹⁷

The prevalence of HBsAg among rural population of Egypt was 2.0%. With anti-HCV antibodies an overall prevalence of 12.5% was observed.¹⁸ An extremely low prevalence (0.1%) has been reported in the UK and Scandinavia, a slightly higher prevalence (0.2 – 1%) has been reported in other European countries, Australia and North America. An intermediate prevalence (1.1 – 5%) has been reported in South America, Eastern Europe, Mediterranean countries and the highest prevalence has been reported from Egypt (28%). In Asia the prevalence of HCV in the blood donors has been reported 5.1% from India and 1.5% from Saudi Arabia.^{19,20} So the seroprevalence of HCV varies from 0.27% to 6.8% among healthy blood donors from different parts of country. The highest seroprevalence of HCV is reported from Karachi (6.8%) and Rawalpindi (6.21%).²¹

In present study, frequency of Hepatitis C is 2 (50%) in A positive blood group and 2 (50%) in O positive blood group. While frequency of Hepatitis B

is 1 (25%) in A positive blood group, 1 (25%) B positive blood group and 2 (50%) don't know their blood group status. A single centered study in NWFP, Pakistan shows the rate of incidence of hepatitis C was higher in donors with blood group B negative while the rate of incidence of hepatitis B was higher in donors with blood group B positive,²² So the findings of the our study are different in comparison to most common blood group infected. A study conducted in Bangladesh, documented HBV-seropositivity in 29% participants and 0.2% participants were positive for anti-HCV, 0.3% for both anti-HBc and anti-HCV.²³ The situation of these infections is getting worse and the developing countries are facing high burden of disease. The current study highlights the knowledge of literate and educated young blood donors in a provincial capital. The knowledge is just adequate in many areas but still correct information need to be disseminated to them, so more effective behavior change can be seen at least among educated class. Because of unawareness 41.2% health care workers were not getting the vaccination in a study done by Hussain S.²⁴ Current study among youth shows how important is to educate them about these common infections as youth itself is one of the at risk groups because of their curious nature and risk taking attitude. Same is mentioned by CDC about youth risky behavior.²⁵

In the present study the assessment of knowledge showed that 333/340 (97.9%) were those who ever heard about the Hepatitis B and C infections. This really seems good that our students are aware of this disease. Upon answering about the source of information 112/340 (33.63%) said that they got information from their friends, which is the largest source reported and means that the word of mouth is more effective and on second number is the school environment and curriculum. 215/340 (63.2%) knew about the sexual route of transmission, 307/340 (90.3%) knew about the transmission through infected blood. 252/340 (74.1%) had knowledge about the transmission of these infections from mother to fetus. This means the knowledge level about mode of transmission varies from 63.2% to 90.3%. The knowledge about sexual route is much well known as compared to other routes. Similar findings of good knowledge level among students were reported in a study in Lahore, which showed 89.3% were knowledgeable about the mode of transmission through contaminated needles / syringes in group I and 82.1% in group II. Similarly blood transfusion, used blades, tattooing and ear/nose piercing were stated higher in group I (92.2%, 90.7%, 68.3% and 73%, respectively) than in group II (72.2%, 75.6%, 45% and 36%, respectively).²⁶

In this study their knowledge about the risky behaviors or at risk groups was assessed. 322/340 (94.7%) knew about the needle sharing in IV drug users as risky behavior. 305/340 (89.7%) knew about the razor sharing, while 238/340 (70%) knew about the at risk group who goes to dentists. 236/340 (69.4%) knew about surgery patients who are at risk. 211/340 (62.1%) knew about the homosexual group. 250/340 (73.5%) had knowledge about heterosexual risky behavior. 174/340 (51.2%) knew about the truck drivers spreading the infections. Tattooing was also labeled as risky behavior by 257/340 (75.6%) students. This showed they have knowledge level ranging from 51.2% to 94.7% about at risk groups. Maximum students knew about the needle sharing risky behavior as compare to homosexual group. This needs to be improved and the knowledge level can be built up with health education, media involvement and curricular changes which is a positive point as compared to illiterate population studies. In a study on illiterate population of barbers showed just 13% knew that hepatitis is transmitted through parenteral route and could also be transmitted by razor.²⁷

In a study on medical students whom we think will be more knowledgeable, only 57.1% medical students

showed excellent knowledge regarding the route of transmission of hepatitis B and C. 49.8% showed good knowledge of spread of hepatitis by dental procedures.²⁸ In our study the knowledge levels ranges are much better in non-medical university students as compared to these medical students.

Knowledge about prevention and control of hepatitis B and C infections included avoiding needle sharing as specified by 322/340 (94.7%) students. Avoid tattooing was mentioned by 261/340 (76.8%) students. Avoiding razor sharing was mentioned by 301/340 (88.5%) students. 237/340 (69.7%) said to ensure sterilization during surgery. Sterilization of dental equipment, as a preventive measure was mentioned by 242/340 (71.2%) students. Avoiding homosexuality can reduce the prevalence of hepatitis B and C, as mentioned by 215/340 (63.2%) students. 250/340 (73.5%) students knew about avoiding the heterosexual behavior. The knowledge range came out to be 63.2% to 94.7%, more knowledge about preventing needle sharing than hetero and homosexuality. A study on adolescents and young adults show very little knowledge about vaccinations in general, or hepatitis B, in particular. These adolescents were found to be engaged in high – risk behaviors, the most frequent of which include sexual activity, body piercing, and tattooing.²⁹ The present study highlights the range of knowledge levels through detailed assessment of knowledge of non-medical university students.

Conclusion

The seroprevalence of Hepatitis B and C is less as compared to other studies in Pakistan. The educated youth of our community is much aware about the common routes of transmission of Hepatitis B and C infections. We just need to improve their knowledge base by using media, health education seminars and curricular changes.

Acknowledgements

This paper is developed from the research done by the **technical and financial support** from the joint WHO-Eastern Mediterranean Region (EMRO), Division of Communicable Disease (DCD) and WHO – Tropical Disease Research (TDR): The EMRO / TDR Small Grant Scheme for Operational Research in Tropical and other Communicable Diseases.

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