

## ORIGINAL ARTICLE

## SCREENING OF HEPATITIS B AND C AMONG PEOPLE VISITING GENERAL PRACTICE CLINICS IN A RURAL DISTRICT OF SINDH, PAKISTAN

Ameet Kumar, Saima Lalani\*, Asad Ali Khan Afridi\*, Ali Khan Khuwaja\*

Jinnah Postgraduate Medical Centre, Karachi, \*Department of Community Health Sciences, Aga Khan University Medical College, Karachi, Pakistan

**Background:** Hepatitis B (HB), Hepatitis C (HC) and their risk factors are amongst the major health problems in developing countries including Pakistan. This study aimed to screen for HB and HC among people who visited General Practice clinics and also to identify the differences of screening positive cases by age and sex. **Methods:** This was a retrospective study conducted in Tando Muhammad Khan city, one of the rural districts of Sindh. All together we reviewed 5989 laboratory reports of people for hepatitis B and C on consecutive basis from two laboratories. A pre-designed and structured perform was used to collect the required information. Chi-squared test and univariate analysis was calculated to assess the difference in HB and HC proportion by age groups and sex. **Results:** One-fourth of reports were positive for at least one entity whereas 8% and 17% of reviewed reports of adults (>18 years and above) were screened positive for HB and HC respectively. Positive screened tests were higher among older age group compared to young age group (HB: older age group=56.6% vs. younger age group=43.4%; OR=1.07) and (HC: older age group=58.3% vs. younger age group=41.7%; OR=1.08). In the same way, positive screened tests were higher among men compared to women (HB: men=67.0% vs. women=33.0%; OR=1.2) and (HC: men=62.0% vs. women=38.0%; OR=1.3). **Conclusion:** A large proportion of people were screened positive for HB and HC in this study. Prevention and screening are suggested at larger scale for urgent planning and implementation of intervention strategies in this regard. Further research is also recommended to explore this important health issue at large scale.

**Keywords:** Screening, Hepatitis B, Hepatitis C, General Practice

### INTRODUCTION

Hepatitis B and Hepatitis C are a major health concern worldwide, causing 500 million people to be infected with either HB or HC and approximately 1.5 million people deaths each year.<sup>1</sup> Hepatitis B alone results in more than one million deaths each year, making it the 10th leading cause of death worldwide and causes around 350 million people to live with chronic HB infection.<sup>2,3</sup> Similarly Hepatitis C is known to infect 180 million people, around 3% of the world's population with 130 million chronic HCV carriers and mortality figures are expected to triple by the year 2010.<sup>4,5</sup>

In Pakistan the prevalence has been estimated as up to 10% for HB surface antigens (HbsAg) and up to 14% for HCV antibodies.<sup>6-9</sup> In addition, Pakistan has high prevalence of risk factors for these diseases including un-screened blood transfusion, re-usage (contaminated/infected) of syringes,<sup>10-12</sup> use of un-sterilised instruments in dental procedures<sup>13</sup> and high number of people having their face or armpit shaved by street barbers<sup>14</sup>. Furthermore the high prevalence of the disease also arises as there is less public awareness about prevention and risk factors of transmission of HB and HC.<sup>15</sup> With this prevalence continuously on the rise, urgent interventions need to be done for earlier diagnosis and prevention in order to reduce the mortality and loss to society.

Prevention is the only way to cope the epidemic of viral hepatitis and hence screening provides an opportunity to detect the virus in its asymptomatic period and helps establish early diagnosis and management. Screening programs are now widely used to detect the virus in patients with prior infection of hepatitis B and C and so helps prevent its complications like chronic liver diseases, cirrhosis and malignancies.<sup>16</sup>

This study aimed to identify the proportion of people screened positive for hepatitis B and C among high risk adults in rural district of Sindh and to determine its differences by sex and age groups.

### MATERIAL AND METHODS

This was a retrospective study conducted in Tando Muhammad Khan city, Sindh, Pakistan. We approached the two diagnostic laboratories of the city in private sector. After taking permission from laboratory administration, we reviewed the blood test reports of those people who were referred by their treating physician for screening of Hepatitis B and C.

We reviewed 5,989 laboratory reports of Hepatitis B and C consecutively from both laboratories. We excluded those who were <18 years of age and those with missing information about sex and age. A pre-designed and structured perform was used to collect the required information.

Data was analysed using SPSS-17. Proportions along with their 95% CI were calculated for positively screened reports of Hepatitis B and C. Chi-square test and univariate analysis along with 95% CI was calculated to assess the differences in HB and HC by age groups and sex.

## RESULTS

The percentage of high-risk persons screened positive for HB and HC are given in Table-1. One-fourth of the study population was found to screen positive for either HB or HC, 8% screened positive for HB while 17% screened positive for HC.

The univariate analysis for general demographic characteristics (age and sex) associated with HB and HC is shown in Table-2. Both for HB and HC, positive screened tests were higher among older age group compared to young age group (HB: older age group=56.6% vs. younger age group=43.4%;  $p=0.53$ ; OR=1.07; 95% CI=0.86–1.33), and (HC: older age group=58.3% vs. younger age group=41.7%;  $p=0.51$ ; OR =1.08; 95% CI=0.89–1.33) however the difference is not statistically significant. In the same way, positive screened tests were higher among men compared to women (HB: men=67.0% vs. women=33.0%;  $p=0.06$ ; OR =1.2; 95% CI=0.99–1.55) and (HC: men=62.0% vs. women=38.0%;  $p=0.05$ ; OR=1.3; 95% CI=1.00–1.57).

**Table-1: Percentage of people with HB and HC (n=5,989)**

Tests	Percentage
Hepatitis B Positive	8
Hepatitis C Positive	17
Hepatitis B or C Positive	25
Hepatitis B and C Negative	75

**Table-2: Univariate regression analysis for Hepatitis B and C by age and sex**

Characteristic	Hepatitis B			Hepatitis C		
	Posi tive	<i>p</i>	Odds Ratio (95% CI)	Posi tive	<i>p</i>	Odds Ratio (95% CI)
<b>Age (Year)</b>						
18–30	43.4	0.53	1	41.7	0.51	1
>30	56.6		1.07 (0.86–1.33)	58.3		1.08 (0.89–1.33)
<b>Sex</b>						
Women	33.0	0.06	1	38.0	0.05	1
Men	67.0		1.2 (0.99–1.55)	62.0		1.3 (1.00–1.57)

## DISCUSSION

Viral hepatitis affects the general population disproportionately, with the highest burden on certain risk groups including those associated with having a tattoo, undergone blood transfusion or nosocomial transfusion with different epidemiological characteristics.<sup>17</sup> Prevention and control of HBV and HCV infections require continuous monitoring as well as evaluation of surveillance and prevention strategies.

The proportion of people who screened positive for Hepatitis B (8%) was almost one half of

those who screened positive for Hepatitis C (17%), showing higher risk of chronicity associated with HCV, resulting in higher prevalence of HC compared to HB. These results are 4–6 times higher than the prevalence of Hepatitis B (2.4%) and C (3%) found in adult population by Ali *et al*<sup>18</sup> and ascertains the effectiveness of screening in suspected population for early diagnosis of disease and measure for prevention. The high rates of infection could be attributed to the presence of high poverty with low education level, unnecessary use of injections, re-use of syringes and lack of knowledge about the transfusion of unsafe blood and blood products.<sup>19–21</sup> Furthermore, over 25% of the population screened was positive for either Hepatitis B or Hepatitis C which shows high prevalence of the disease in this region.

Hepatitis B and C were also found to be more prevalent amongst older compared to younger patients, which can be explained due to increased probability of exposure to the virus with increasing age. The older population poses a higher risk of transmission of the virus as compared to the younger population. Similarly a higher incidence of both Hepatitis B and C were found in the male population as compared to female population which could arise due to high risk behaviour found in males in contrast to females. This is comparable to a local study done by Daudpota *et al*<sup>22</sup> where the sero-prevalence of HB and HC in males were found to be higher than that found in females.

While this study shows high proportion of Hepatitis B and C and the effectiveness of screening in its prevention, some limitations are worth mentioning. The laboratory reports of people for this study included all those patients who had been referred by their physicians to undergo screening. Hence the study population does not truly represent the general population. Furthermore, individual risk factors and their association with those who screened positive for HB and HC viruses was not carried out, and as a result risk factors for acquiring these diseases could not be established.

With the increasing rate of Hepatitis B and C infection in Pakistan, the use of screening has become a vital tool in preventive measure for the disease. As these viruses frequently cause asymptomatic infection and lead to chronic carrier state, screening is essential for early diagnosis in order to prevent further hepatic damage and complications. In case of hepatitis C, prevention apart from regular screening is even more challenging as there is no vaccine available. Medical practitioners should frequently employ screening in high risk/suspected cases for prevention of disease.

## ACKNOWLEDGEMENTS

We are grateful to Mr. Rajesh Kumar, Mr. Muhammad Ather Ahmed, and Mr. Rizwan Talpur (Students at

Liaquat University of Medical and Health Sciences, Jamshoro) for helping in data collection and data cleaning. We are thankful to administration and staff of the studied laboratories for their permission to review the reports required for this work and their support through this period. Special thanks to Dr. Saima Akhund, Senior Instructor Research, Family Medicine, Aga Khan University, Karachi for her review and feedback on this manuscript.

## REFERENCES

1. World Health Organization. Regional office for Europe Facts and Figures. [Cited: 2010, February 9]. Available at [http://www.euro.who.int/hepatitis/facts/20090123\\_1](http://www.euro.who.int/hepatitis/facts/20090123_1)
2. Lavanchy D. Hepatitis B virus epidemiology, disease burden, treatment, and current and emerging prevention and control measures. *J Viral Hepat* 2004;11:97–107.
3. World Health Organization. Hepatitis B Fact sheet N°204 revised August 2008. [Cited: 2010, February 9]. Available at <http://www.who.int/mediacentre/factsheets/fs204/en/>
4. World Health Organization. Initiative for vaccine research Hepatitis C. [Cited: 2010, February 9]. Available at [http://www.who.int/vaccine\\_research/diseases/viral\\_cancers/en](http://www.who.int/vaccine_research/diseases/viral_cancers/en)
5. Butt T, Amin MS. Seroprevalence of Hepatitis B and C infections among young adult males in Pakistan. *East Mediterr Health J* 2008;14:791–7.
6. Jawaid A, Khuwaja AK. Treatment and vaccination for hepatitis C: present and future. *J Ayub Med Coll Abbottabad* 2008;20:129–33.
7. Mujeeb SA, Aamir K, Mehmood K. Seroprevalence of HBV, HCV and HIV infections among college going first time voluntary blood donors. *J Pak Med Assoc* 2000;56:S24–25.
8. Asif N, Khokar N, Ilahi F. Seroprevalence of HBV, HCV and HIV infection among voluntary non-remunerated and replacement donors in Northern Pakistan. *Pak J Med Sci* 2004;20:24–8.
9. Khokhar N, Gill ML, Malik GJ. General seroprevalence of hepatitis C and hepatitis B virus infections in population. *J Coll Physicians Surg Pak* 2004;14:534–6.
10. Bhatti FA, Ullah Z, Salamat N, Ayub M, Ghani E. Anti-hepatitis B core antigen testing, virus markers and occult hepatitis B virus infection in Pakistani blood donors: implication for blood transfusion practice; *Transfusion* 2007;47:74–9.
11. Zafer A, Aslam N, Nasir N, Meraj R, Mahraj V. Knowledge, attitude and practices of health care workers regarding needle stick injuries at a tertiary care hospital in Pakistan. *J Pak Med Assoc* 2008;58:57–60.
12. Shaikh MA, Shaikh WM, Solangi GA, Abro H. Frequency of transmission mode of hepatitis C virus in northern Sindh. *J Coll Physicians Surg Pak* 2003;13:691–3.
13. Rashid F, Butt MZ. Spread of hepatitis through orthodontic clinics. *Pak Oral Dental J* 2006;26:51–4.
14. Janjua NZ, Nizamy MA. Knowledge and practice of barbers about hepatitis B and C transmission in Rawalpindi and Islamabad. *J Pak Med Assoc* 2004;54:116–9.
15. Khuwaja AK, Qureshi R, Fatimi Z. Knowledge of hepatitis B and C among patients attending family medicine clinic in Karachi. *East Mediterr Health J* 2002;8:787–93.
16. Krishani MK, Qidwai W, Ali BS, Khuwaja AK. Educational intervention among barbers about liver cancer inducing viruses: a pilot study from a developing country. *J Cancer Edu* 2010;25(4):632–6.
17. Rantala M. Surveillance and epidemiology of Hepatitis B and C in Europe—a review. *Euro Surveil* 2008;13(21).pii: 18880.
18. Ali S, Donahue R, Qureshi H, Vermund SH. Hepatitis B and hepatitis C in Pakistan: prevalence and risk factors. *Int J Infect Dis* 2009;13:9–19.
19. Bari A, Akhtar S, Rahbar MH, Luby SP. Risk factors for hepatitis C virus infection in male adults in Rawalpindi-Islamabad, Pakistan. *Trop Med Int Health* 2001;6:732–8.
20. Luby S, Khanani R, Zia M, Vellani Z, Ali M, Qureshi AH, *et al.* Evaluation of blood bank practices in Karachi, Pakistan, and the government's response. *Health Policy Plan* 2000;15:217–22.
21. Luby SP, Qamruddin K, Shah AA, Omair A, Pahsa O, Khan AJ, *et al.* The relationship between therapeutic injections and high prevalence of hepatitis C infection in Hafizabad, Pakistan. *Epidemiol Infect* 1997;119:349–56.
22. Daudpota AQ, Soomro AW; Sero prevalence of Hepatitis B and C in surgical patients; *Pakistan Journal of Medical Sciences Pak J Med Sci* 2008;24:483–4.

## Address for Correspondence:

**Dr. Ameet Kumar**, Flat 213, Block-B, Jam Street, Plot No. 137/3, Own Paradise, Garden West, Karachi, Pakistan.

**Tel:** +92-333-3893418

**Email:** [ameetkumar\\_22@hotmail.com](mailto:ameetkumar_22@hotmail.com)