Prevalence of Hepatitis B in the Students, and Employees of Abdul Wali Khan University Mardan Shankar Campus

Mehwish Munir¹, Sulaiman Shams¹*, Muhammad Arif Lodhi¹, Zahida Parveen¹, Nazif Ullah²

¹ Department of Biochemistry, Abdul Wali Khan University Mardan. 23200.
² Department of Biotechnology, Abdul Wali Khan University Mardan, 23200.

*Corresponding Author: sulaiman@awkum.edu.pk

ABSTRACT

Hepatitis B is a common health problem throughout the world especially in developing countries like Pakistan. Hepatitis B Virus (HBV) infection causes a verity of liver diseases in humans, such as, liver fibrosis, liver cirrhosis and hepatocellular carcinoma. The current study focused on the determination of the frequency of HBV in the students and faculty members of Abdul Wali Khan University Mardan. A total of 200 subjects, 69% males and 31% females during the period of 31st August, 2012 to 22nd April, 2013 were screened for HBV by one strip method. One mL of blood was taken from each subject and collected in an eppendorf tube and isolate the serum by centrifugation. The total prevalence of hepatitis B was found to be 3.0% and it was more common in females (3.2%) as compared to male (2.03%). Compared to general populations of Khyber Pakhtunkhwa, the prevalence of hepatitis B is low in the university students of Mardan. It might be possible that student populations are more aware of risk factors of HBV as compared to general populations. But still, there is great need to launch major public health awareness programs to prevent transmission of HBV infection. Moreover, accurate and timely reported data is essential for early identification and response to outbreaks and for implementation of evidence based prevention strategies.

Key words: HBV, Mardan, Students, University
1. Introduction

Hepatitis B virus (HBV) infection is a serious global public health problem [1-3], particularly in Asia, Africa, Latin America and southern Europe [4]. About 2 billion people are infected with HBV worldwide [2,4,5] and 400 million people are suffering from chronic HBV infection [6]. In Pakistan 9 million people infected with HBV [7] and its infection rate increases at a high speed [8]. The high infection rate may be due to lack of proper health facilities, less public awareness and poor socio-economic status [6]. Infection with HBV leads to a broad spectrum of clinical appearances, ranging from asymptomatic carrier state to acute, chronic hepatitis with progression to fibrosis, cirrhosis, and hepatocellular carcinoma [2].

Hepatitis B infection is caused by hepatitis B virus, which is a DNA virus belonging to family hepadnaviridae. Hepatitis B virus affects the liver major cells, the hepatocytes. Diagnosis of HBV infection is confirmed by demonstrating specific antibodies and/or antigen in serum of patients. The most important laboratory test for diagnosis of HBV infection is HBsAg which is the first antigen to appear, during the incubation period, as well as during acute disease [9]. The prevention of chronic HBV infection has become a high priority in the global community. Immunization with hepatitis B vaccine is the most effective means of preventing HBV infection and its consequences [10]. Preventing HBV transmission during early childhood is important because of the substantial likelihood of chronic HBV infection and chronic liver disease that occurs when children less than 5 years of age.

Universal precautions should be used when handling human blood and body fluids. Specific precautions include the use of gloves, protective garments, and masks, when handling potentially infectious or contaminated materials [10].

The current study was planned to investigate the presence of hepatitis B surface antigen in the population of Abdul Wali Khan University Shankar campus and to elucidate the association of hepatitis B viruses’ infection with age, gender and education status of the subjects.

2. Materials and Methods
2.1. Sample and data collection
During the period (31st August, 2012 to 22nd April, 2013) total of 200 blood samples from both male and female gender were randomly collected from different Departments of Abdul Wali Khan University Mardan, Shankar Campus. All the individuals were aged between 20 to 40 years. Consent was obtained from different subjects (students, teachers and other employee’s). A structured questionnaire was also used during blood collection and collect clinical conditions, risk factors and personal information. History of each of them about previous selection for hepatitis, immunization against HBV, confrontation of HBV in family, trend of sharing personal objects, blood transfusion, donating blood and consciousness about achievable routs of transmission of hepatitis were recorded.

2.2. Study design
This was a university based cross-sectional study.

2.3. Study period
The current study was conducted from 31st August, 2012 to 22nd April, 2013.

2.4. Study population
The study population was students, teachers and other employer’s of different Departments including Biochemistry, Biotechnology, Botany, Chemistry, Computer Science, Physics and Zoology of Abdul Wali Khan University Mardan, Shankar Campus.

2.5. Ethical consideration
Ethical issues were considered for long in the study. All the research work was done according to the guideline of ethical consideration and all the data collected from subjects kept confidential.

2.6. HBV screening test device
HBV screening was carried out with Immuno-chromatographic strip (BIOMEGA) for the detection of anti HBsAg.

2.7. Serum isolation
One mL of blood was collected in eppendorf tube from each subject. The blood samples were centrifuged at 8000 relative centrifugal force (rcf) for five minutes and serum was transferred to a new labeled eppendorf tube. Serum samples were stored at -20 °C until further testing. Tests were performed on clear serum.
2.8. Test Procedure
Test devices and subject’s serum were brought to room temperature (20 - 30°C) prior to testing. The test devices was removed from its protective pouch (to avoid condensation of moisture on the membrane) and labeled. For each sample or control, a separate pipette tip and test device was used. By the help of a pipette 200 µl of serum was picked up and dispensed into the sample well and incubated for 30 minutes at room temperature.

2.9. Statistical Analysis
Data was analyzed using SSPS version 16. Graphs were made using Microsoft Excel.

3. Results
A total of 200 subjects of Abdul Wali Khan University Mardan, Shankar Campus were investigated in this study. In the observed population, both male (69%) and female (31%) volunteers were included, while majority of them were unmarried (89%). In terms of age distribution, the subjects were grouped into four categories; 20-26 years (73.5%), 27-33 years old (13%) and 34-40 year old (13.5%).

The total prevalence of hepatitis B was found to be 3.0% and it was more common in female subjects in comparison to male. In the midst of HBV positive cases no one was reported vaccinated against HBV, no one was ever been hospitalized, operated or get injected blood. Among the overall HBV negative cases, 34% students were hostilities, 13.5% shared personal things (Towel, razor, scissor) 26% have donated blood once or twice in their life time, 31% had hepatitis incident in their family.

3.1. Age-wise distribution of HBV infection
During the present study the highest rate of infection was seen in age group of 34-40 year (7.4%) followed by the 2nd highest rate of infection (3.04%) in age group of 27-33 years and the lowest rate of infection was seen in age group of 20-26 years (2.04%). In present study the highest HBV infection was found within age group of 30 to 45 years might be due to continuous exposure to risk factors (Table 4.1).
Table 3.1: Age-wise distribution of HBV infection

<table>
<thead>
<tr>
<th>Age group</th>
<th>Total No. of samples</th>
<th>No. of positive samples</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>20-26</td>
<td>147</td>
<td>3</td>
<td>2.04</td>
</tr>
<tr>
<td>27-33</td>
<td>26</td>
<td>1</td>
<td>3.04</td>
</tr>
<tr>
<td>34-40</td>
<td>27</td>
<td>2</td>
<td>7.4</td>
</tr>
<tr>
<td>Total</td>
<td>200</td>
<td>6</td>
<td>3</td>
</tr>
</tbody>
</table>

3.2. Gender-wise distribution of HBV infection

In the current study out of 62 females 2 were infected (3.2%) and out of 138 males 4 were infected (2.03%). It is shown in figure 3.1 that HBV infection is higher in females (3.2%) than males (2.03%).

3.3. HBV infection and marital status

The present study demonstrated that hepatitis B infection was high in married subjects (4.5%) as compared to unmarried (2.8%) as shown in figure 3.2.
3.4. Department wise distribution
The current study indicated the highest infection rate of HBV in Department of Zoology (33.3%) followed by 2nd highest rate of infection in Department of Chemistry (7.6%) followed by the lowest rate of infection in Department of Computer Science (7.14%). While in the department of Agriculture, Biochemistry, Biotechnology, Botany and Physics, there was no case of HBV infection (Table 3.2).

Table 3.2: Department wise infection of HBV

<table>
<thead>
<tr>
<th>Department</th>
<th>Samples</th>
<th>No. of positive samples</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agriculture</td>
<td>21</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Biochemistry</td>
<td>68</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Biotechnology</td>
<td>14</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Botany</td>
<td>18</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Chemistry</td>
<td>26</td>
<td>2</td>
<td>7.6</td>
</tr>
<tr>
<td>Computer science</td>
<td>14</td>
<td>1</td>
<td>7.14</td>
</tr>
<tr>
<td>Physics</td>
<td>30</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Zoology</td>
<td>9</td>
<td>3</td>
<td>33.3</td>
</tr>
</tbody>
</table>

4. Discussion
Pakistan lies between middle to low income countries with over one-twelfth of labor force is unemployed, over one third of the population subsists in poverty and over half the population is illiterate, with parts of the country being worse than what the national average indicates [11]. Pakistan has been rated amongst the countries with high risk of HBV infection. Prevalence of HBV
infection is different with population residing in various regions of Pakistan. The present study was designed to determine the prevalence of HBsAg infection in students and staff members of Abdul Wali Khan University Mardan Shankar Campus. HBV infection was recorded in different age groups, gender and mostly literate population.

In present study the overall prevalence of Hepatitis B virus among students and staff members of Abdul Wali Khan University Mardan Shankar Campus was recorded to 3% which was same to the prevalence (3.24%) at Mardan reported by Mirza et al., in 2006 [12] and the rate was lower than the overall prevalence in Mardan is 13.35% reported by Awan [13]. This lower rate may be due to selected group i.e. educated people and majority belongs to better socio economic group. Zuure et al., in 2010 in a study investigated HBV infection in the population of Netherlands and it was found that HBV infection is more common in (30.43%) in low medium education level [14].

In 2008, Daudpota and Soomro reported equal prevalence rate of HBV infection in both male and female genders [15]. The prevalence of HBV infection was reported to high in males as compared to females in studies conducted by Ali et al., in 2009 [16]. However, in current study the prevalence of HBV was high in female as compared to male. It might be due to less awareness of females as compared to males regarding HBV infection risk factors.

Blood transfusion is main risk factor of transmission of HBV. Using common glass could be the risk factor of HBV as Hepatitis B antigen (HBsAg) have reported in saliva and towel sharing could enhanced the chances of transmission of HBV [17]. In present study 37.5% positive subjects have trend of sharing personal belonging (razor, Scissor, injections).

Lack of awareness was the highest reason for not being vaccinated [18]. Same situation was also observed in the present study. Complete vaccination and proper blood screening at the time of blood transfusion must be given consideration to reduce its future incidents. Therefore, there is great need to launch major public health awareness programs to prevent transmission of HBV infection. Moreover, accurate and timely reported data is essential for early
identification and response to outbreaks or investigation and for implementation of evidence-based prevention strategies.

**Conclusion**

In this present study the HBV infection was recorded in different age groups, gender and mostly literate people in Abdul Wali Khan University Mardan Shankar campus. Therefore, there is great need to launch major health awareness programs to prevent transmission of HBV infection.

5. **References**


[8]. Hepatitis prevention & control program Sindh (chief minister's initiative) 2009. directorate general health services, Hyderabad, Sindh, Pakistan.


