

**Original article**

**Assessing the level of awareness and vaccination status of Hepatitis B among young female community of Pakistan.**

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**Abstract:**

**Objectives:** Hepatitis B virus (HBV) infection is a global health problem with about 2 billion infected persons. Pakistan is one of the endemic areas for viral hepatitis B. Prevention is merely a safe approach rather than curing against high incidence of viral hepatitis. Therefore, the aim of the present study was to assess the knowledge and awareness of HBV infection, its prevention and transmission, perception of HBV vaccine and vaccination status among young females of Karachi, Pakistan. **Methods:** This cross sectional study was conducted from Oct till Dec 2014 by adopting a pre-validated questionnaire distributed to female individuals in Karachi, Pakistan. Descriptive statistics were used to demonstrate students' demographic information and their response to the questionnaire items. Kruskal Wallis H test was executed to evaluate the association of age and educational status of the respondents with their response. A p-value <0.05 was considered as significant. **Results:** Out of 550 survey questionnaires, only 434 were returned back in useable form. Hence the response rate was 78.9%. More than 90% had knowledge of HBV infection and 85.94% knew that HBV infection can be prevented by vaccination. However, only 17% had received HBV vaccination during childhood. 67.05% and 54.60% knew that HBV can be transmitted from mother to infant and an infected mother may transmit hepatitis B to her newborn baby through breast milk respectively. Only 24% had been tested for HBV in adulthood. General excuses for not having their HBV status tested, were lack of motivation (36.76%) and lack of time to check (21.54%). **Conclusion:** It indicates that majority of respondents showed some awareness of HBV and its related consequences. Yet, there are some misapprehensions regarding the attitudes that imitate a fallacy perception of the disease. It identifies a more standardized approach coupled with the well-structured health education programs pointing out such misconceptions.

**Keywords:** Hepatitis B; vaccination status; females; Pakistan

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**Introduction:**

Viral hepatitis is a key problem in several countries all over the world and particularly in Asia, Middle East and Africa<sup>3</sup> The prevalence rate of hepatitis B (HBsAg) reported was 2.5% in Pakistan. General HBeAg positivity was 14.4% with 15.3% in Sindh,

8.4% in NWFP, 17% in Balochistan and 14.1% in Punjab. The prevalence for HBV within provinces showed 2.5% in Sindh, 2.4% in Punjab, 1.3% in NWFP and 4.3% in Balochistan<sup>18</sup>. Pakistan has a high carrier rate of hepatitis B. It is between 10 to 14 % with enzyme-linked immunosorbent

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assay (ELISA) and radioimmunoassay (RIA) techniques. In a number of studies, the prevalence of anti-HBs was 12.2 - 40 percent<sup>11, 26</sup>. It has been estimated that 15–40% of chronic hepatitis B patients develops complications such as acute exacerbation, liver cirrhosis and hepatocellular carcinoma (HCC) during the development of hepatitis B virus (HBV) infection<sup>9, 15, 17</sup>. It is estimated to be the cause of 30% of cirrhosis and 53% of HCC worldwide. It is also a considerable fact that hepatitis B virus has been linked to membranous glomerulonephritis, which give HBV a capability to have an effect on various organ systems including the liver and kidney<sup>24</sup>. The virus is existent in high concentration in various body fluids such as in serum, blood, serous exudates, saliva, semen, vaginal fluid.

In most of the endemic areas, perinatal transmission is supposed to be the utmost mode in zones with intermediate and high HBV prevalence rates while sexual transmission is the prime route amongst adolescents in low prevalence and developed countries<sup>14, 21</sup>. The quantifiable symptoms and usual history of HBV infection differ with age. Clinical acute hepatitis B is usually more common in adults than children, and the possibility of becoming a chronic carrier of hepatitis B is larger in children than adults: 80–90% of populace perinatally infected compared to <5% of infections going on in adults<sup>8</sup>. HBV infection is primarily acquired during birth and infancy, and vertical communication accounts for more than 50% of the chronic infection cases<sup>4, 5, 13, 29, 31</sup>. The male-to-female HCC incidence ratio is prejudiced toward men in all populations; women are also at greater risk. About 80 percent of HCCs are etiologically related with HBV infection<sup>27</sup>.

Prevention is merely a safe approach rather than curing against high incidence of viral hepatitis. Vaccination has been revealed to be the most successful way in averting HBV infection and its consequences in children as well as the grown persons<sup>19</sup>. Since the implementations of mass immunization programs recommended by the World Health Organization, the incidence of HBV infection and liver cancer among population has significantly decreased<sup>8</sup>. Knowledge concerning precautionary measures plays a significant role in managing the disease. Successful education strategies need to evaluate the baseline knowledge of the community that could help in educating them regarding the risk factors. It will

be an effective tool in dropping the extent of HBV within the nation as well as in other neighboring countries. An initiative in this regard would be to assess people's knowledge of viral hepatitis, especially among the educated persons those who may be in contact with infected individuals (12, 13) this will help in designing proper prevention tools.

Fewer studies are conducted to evaluate the knowledge of women about Hepatitis B until now. A study conducted in Pakistan showed that women misjudge the approach for transmission, symptom and risks associated with disease though mass population was aware of the cause of disease<sup>7</sup>. Nazir reported that around 92% of subjects are aware of hepatitis B infection, only 16.4% of all the students have gone through the test of HBV infection and 37.5% students had taken the hepatitis B vaccine. Never thought of vaccination, lack of motivation, afraid of needles, lack of belief, and no need felt were the common reasons when they were inquired about not taking the hepatitis B vaccine<sup>8</sup>. Studies have also shown that horizontal transmission has perhaps assumed a larger part in supporting the existing rate of infection<sup>12</sup>, particularly in the female population of reproductive age<sup>25</sup>. Therefore, this study was conducted to assess the knowledge and awareness of HBV infection, its prevention and transmission, perception of HBV vaccine and vaccination status among young females of Karachi, Pakistan.

#### **Materials and Methods:**

##### ***Study design and setting:***

This cross sectional study was conducted from Oct till Dec 2014 by adopting a pre validated questionnaire distributed to female individuals in Karachi, Pakistan. Inclusion criteria were Pakistani female adults aged 18 to 24 years, who had agreed and given verbal consent to the study. The females younger than 18-years or more than 24 years and not willing to participate were excluded. Overall n=434 female individuals participated in this study. The questionnaires were distributed in different private and public sector educational institutes. Respondents were motivated to respond to given questionnaire on spot. After completion the questionnaires were consequently collected for further analysis.

##### ***Data Collection:***

A pretested questionnaire comprising of 30 questions developed by the researchers from different published sources was administered to

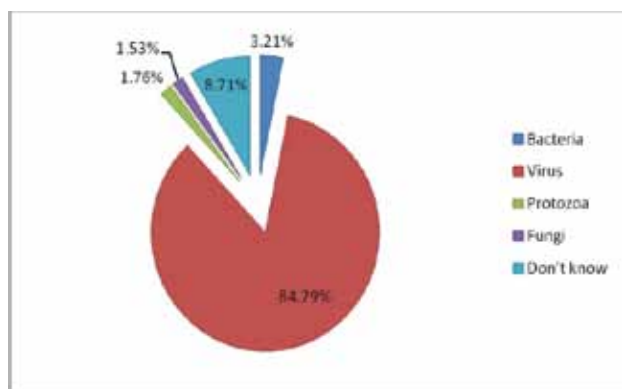


Figure I: Respondents' knowledge about the causative agent of Hepatitis B.

participants. The questionnaire was structured to obtain the demographics of the respondents, their knowledge on HBV infection, and its consequences, vaccination status during childhood or afterwards, transmission, precautionary measures and attitude towards an infected person.

**Statistical analysis:**

The filled questionnaires were analyzed by using SPSS 20.0. Descriptive statistics were used to demonstrate students' demographic information and their response to the questionnaire items. Kruskal Wallis H test was executed to evaluate the association of age and educational status of respondents on their response to the questionnaire. A p value < 0.05 was considered as significant.

**Results:**

**Respondents' Demographic information:**

Out of 550 survey questionnaires, only 434 were returned back in useable form. Hence the response rate was 78.9%. The age of the targeted participants ranged from 18 to 24 years (mean: 22.4). The study population comprised of O & A grade (36.2%), graduate (58.6%) and post graduate (5.1%).

**Respondents' awareness towards HBV and their HBV testing status:**

More than 90% had knowledge of HBV infection and 85.94% knew that HBV infection can be prevented by vaccination. However, only 17% had received HBV vaccination in childhood. Majority of the respondents (84.79%) knew that virus is the causative agent of Hepatitis B (Figure I). Only 24% had been tested for HBV in adulthood. General excuses for not having their HBV status tested, were lack of motivation (36.76%), lack of time to check (21.54%), no family history of hepatitis (13.87%), fear of injection (10.76%), they were not familiar with HBV screening (7.51%) and from where to have the test done (9.31%) (Figure

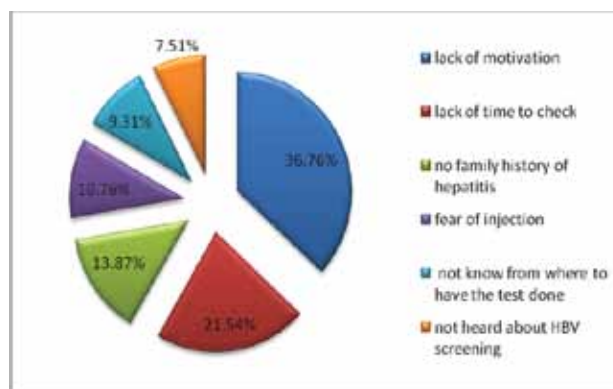


Figure II: Respondents' commonest excuses for not having their HBV status tested

II). Only 52% students had received three to four doses of Hepatitis B vaccine, 19% have only one to two doses and 27% had received no dose in adulthood.

**Respondents' understanding towards the source of transmission:**

Respondents' opinions towards the sources for the transmission of HBV are illustrated in Table I. Majority (78.11%) considered that major source of transmission of HBV is sharing use of needles followed by blood/blood product (76.49%). However 58.98% thought that food or drinks can be the source of transmission of HBV. 67.05% and 54.60% knew that HBV can be transmitted from mother to infant and an infected mother may transmit hepatitis B to her newborn baby through breast milk respectively. 75.57% and 74.19% of the respondents thought that hugging and shaking hand with an infected person cannot be the reason for the spread of infection.

**Respondents' Knowledge about the containment measures and associated risks of HBV:**

Respondents' knowledge for the containment measures to prevent from HBV is illustrated in Figure III. It revealed that majority of the

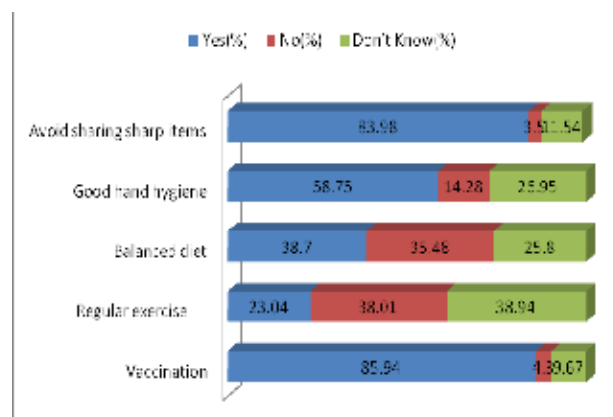


Figure III: Respondents' opinion for the containment measures to prevent from HBV

**Table I:** Respondents’ understanding towards the source of transmission of HBV

Statement	Yes	No	Don't Know
	N(%)		
HBV can be transmitted through food or drink	256(58.98)	128(29.49)	50(11.52)
HBV can be transmitted through blood/blood product	332(76.49)	35(8.06)	67(15.43)
HBV can be transmitted through sharing use of needles	339(78.11)	39(8.98)	56(12.90)
HBV can be transmitted from mother to infant	291(67.05)	51(11.75)	92(21.19)
An infected mother may transmit hepatitis B to her newborn baby through breast milk	237(54.60)	63(14.51)	134(30.87)
You may get hepatitis B by eating from the same plate with HBV infected person.	242(55.76)	129(29.72)	63(14.51)
HBV can be transmitted through shaking hand with infected person	55(12.67)	322(74.19)	57(13.13)
HBV can be transmitted by hugging an infected person	36(8.29)	328(75.57)	70(16.12)
You may get hepatitis B by sitting on a toilet seat used by an infected person	114(26.26)	160(36.86)	160(36.86)
HBV may be transmitted by sneezing and coughing	250(57.60)	108(24.88)	76(17.51)

**Table II :** Respondents knowledge about treatment and vaccination

Statement	Yes	No	Don't Know
All HBV patients can be cured by drugs	214(49.3)	95(21.88)	125(28.8)
There is blood screening for hepatitis B infection.	267(61.52)	30(6.91)	137(31.56)
There is antiviral therapy for hepatitis B infection	254(58.52)	28(6.45)	152(35.02)
Neonatal Hepatitis B vaccination can prevent the transmission of hepatitis B infection from mother to babies	263(60.59)	33(7.60)	138(31.79)
A complete set of HBV vaccination includes 3 doses of vaccination	145(33.41)	24(5.52)	265(61.05)
Screening blood donors for hepatitis B virus renders blood safe for transfusion	235(54.14)	31(7.14)	168(38.7)

respondents (85.94%) agreed that vaccination is the most effective preventive measure against HBV whereas 83.98% knew that avoid sharing sharp items(razors, blades) can prevent them from infection. The symptoms were well understood by only (51.63%). In addition, 78.12% of the respondents did not know that chronic HBV infection is often asymptomatic. They knew that chronic HBV infection confers a high risk of cirrhosis (42.16%), liver cancer (64.05%), kidney disease (6.93%) and lung disease (4.37%).

**Respondents’ knowledge about treatment and vaccination:**

Respondents’ knowledge about treatment and vaccination is illustrated in Table II. Around 61% knew that there is blood screening for hepatitis B infection. Most of the respondents (60.59%) considered that neonatal Hepatitis B vaccination

can prevent the transmission of hepatitis B infection from mother to babies. More than 50% shared their knowledge that screening blood donors for hepatitis B virus renders blood safe for transfusion and there is antiviral therapy for hepatitis B infection. Around 49% believed that all HBV patients can be cured by drugs.

**Respondents’ Attitudes and behaviors toward infected individuals**

66.82% responded that they would not mind having a person with hepatitis B in my classroom or work place and 61.06% have an opinion that caring for a patient would not make them uncomfortable. Near about 51% shared their opinion that people with hepatitis B should not be allowed to work in restaurants or cafeterias. Around 44% and 41% agreed that they would feel uncomfortable to hug and cannot eat from the same plate with an

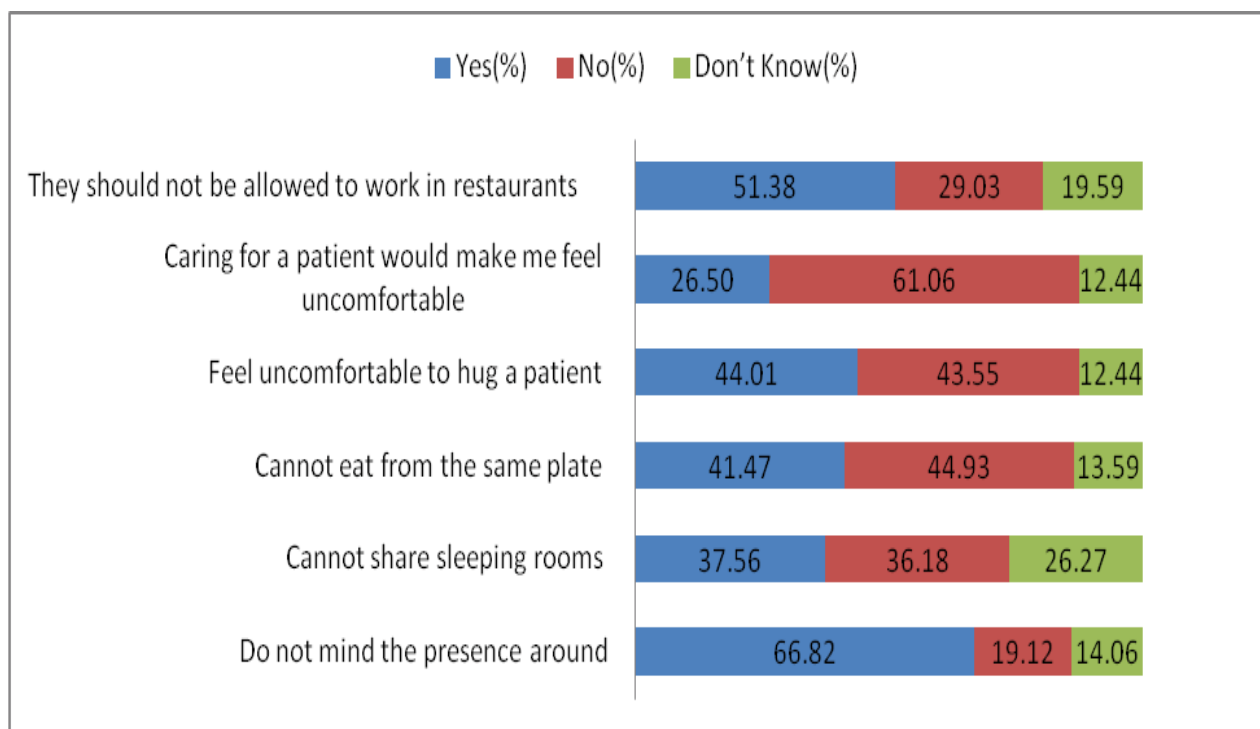


Figure IV: Respondents ‘Attitudes and behaviors toward infected individuals

infected person.

**Discussion:**

This explanatory study was conducted with the primary objective to assess young females’ knowledge of HBV its transmission, vaccination uptake, and attitude with an infected person. It revealed that 91% respondents have awareness of HBV infection and 85.94% knew that infection can be prevented by hepatitis B vaccination. Majority of the respondents (85.94%) agreed that vaccination is the most effective preventive measure against HBV. However only 52% respondents had received three to four doses of Hepatitis B vaccine, 19% have only one to two doses and 27% had received no dose. Mengal *et al.* investigated nursing students in Pakistan and reported that only 37.2% of them were completely vaccinated and 25.0% had not been vaccinated for HBV<sup>6</sup>. One more study shown that 79% of the respondents knew about HBV vaccination and that 92% knew that HBV may possibly be prevented by vaccination, the uptake rate of HBV vaccination was only 26%<sup>30</sup>. Hepatitis B infection is a global public health dilemma; as no simple treatment is accessible. The most successful regime is vaccination in the prevalent regions of hepatitis B<sup>10</sup>.

General excuses for not having their HBV status tested, was lack of motivation(36.76%), lack

of time to check (21.54%), no family history of hepatitis(13.87%), fear of injection(10.76%), they were not familiar with HBV screening (7.51%) and from where to have the test done (9.31%). A study conducted in Syria also revealed that the main reason for not being vaccinated is the lack of motivation (34.2%)<sup>8</sup>. In one study it was explored that majority of the participants knew that hepatitis B can be transmitted during childbirth (83%) and by anybody who looks and feels well (78%)<sup>26</sup>. Another analysis showed that the majority of the women (67.76%) were familiar that HBV is a viral disease, 75.20% mentioned that it have an effect on liver, 33.88% believed that it could be spread by infected blood transfusion, 17.35% believed that it could be communicated from mother to child. While 40.49% and 38.0% responded that contaminated needles and unsterilized instruments as a major cause of HBV infection, respectively<sup>2</sup>. Our study also revealed that 67.05% and 54.60% knew that HBV can be transmitted from mother to infant and an infected mother may transmit hepatitis B to her newborn baby through breast milk respectively. Fewer respondents knew that infection is not transmitted by eating food that has been prepared by an Hepatitis patient (36%), nor by coughing (31%), and is more easily communicated to others as compared to AIDS (19%)<sup>26</sup>. Unlike the current

study explored that 75.57% and 74.19% of the respondents thought that hugging and shaking hand with an infected person cannot be the reason for the spread of infection. Precautionary strategies for HBV infection comprises of vaccination against HBV, healthy blood transfusion services, shaving by barbers needs to be dispirited and enhanced working out of healthcare workers<sup>20</sup>. In Pakistan due to lack of patient knowledge about sterile needles and greater demand for injection, is attributable to spread of Hepatitis<sup>23</sup>. Usman also reported that therapeutic injections administered in health care settings have been recognized as the most important and constantly found risk factors for HBV in Pakistan<sup>28</sup>. Majority of the respondents (85.94%) in our study agreed that vaccination is the most effective preventive measure against HBV whereas 83.98% knew that avoid sharing sharp items (razors, blades) can prevent them from infection. Several studies have reported that HBV can be transferred by blade sharing and barber-related instruments<sup>16, 22</sup>.

Ali reported that an infected fellow in similar classroom or working place was accepted by 58% participants. On the other hand, mostly (63.2%) hesitate to take care of a HBV infected patient<sup>1</sup>. It was similar to the findings of our study in which 66.82% responded that they would not mind having a person with hepatitis B in my classroom or work place and 61.06% have an opinion that caring for a patient would not make them uncomfortable. Near about 51% shared their opinion that people with hepatitis B should not be allowed to work in restaurants or cafeterias. Around 44% and 41% agreed that they would feel uncomfortable to hug and cannot eat from the same plate with an infected person.

Influence of age and educational status on respondents' opinions was studied using Kruskal Wallis H test, a non-parametric test. There was a significant association between the age of the respondents on their responses i.e. Hepatitis B can be transmitted through blood/ blood product ( $p=0.036$ ), through sharing use of needles ( $p<0.0001$ ), through shaking hand with infected person ( $p<0.0001$ ), by hugging an infected person ( $p=0.001$ ), by sneezing and coughing ( $p=0.002$ ), HBV can be prevented by regular exercise ( $p<0.0001$ ), by good hand hygiene ( $p=0.036$ ), hepatitis B patients can be cured by drugs ( $p<0.0001$ ). Knowledge about the vaccination and the attitude of the respondents

towards an infected patient was also significantly associated with their ages ( $p<0.0001$ ). Compared to age, educational status of respondents have shown more significant influence on majority opinions i.e. Hepatitis B can be transmitted through blood/ blood product, through sharing use of needles, through shaking hand with infected person, by sitting on a toilet seat used by an infected person, by sneezing and coughing ( $p<0.0001$ ). Educational status impact their opinion that Hepatitis B infection can be prevented by regular exercise and balanced diet ( $p=0.001$ ). Knowledge regarding vaccination, risks factors associated with HBV and their attitude towards an infected patient was also significantly associated with their education ( $p=0.001$ ). Various studies have shown the similar trend that age and education of participants has significant impact on the knowledge and attitude for HBV<sup>11, 23</sup>.

The objective to assess females' knowledge of knowledge regarding HBV transmission, risk behaviors and prevention was accomplished. It indicates that majority of respondents showed some awareness of HBV and its related consequences. Yet, there are some misapprehensions regarding the attitudes that imitate a fallacy perception regarding the transmission of the disease e.g. by shaking hands, sneezing and coughing, sharing food with hepatitis infected patients, using toilet with hepatitis infected person etc. The findings of the study suggest that more attention should be given in providing health tutoring on hepatitis B to women. The national campaigns for HBV can effectively enhance the understanding of population.

#### **Conclusions:**

The study identifies a more standardized approach coupled with the well-structured health tutoring programs pointing out misconceptions regarding the transmission of the disease. Knowledge about a disease is naturally the primary initiative towards risk reduction and improvement in the quality of life. Government should come forward to increase awareness by equally incorporating the media and modifying the academic curriculum that includes the concrete measures regarding how to prevent against the viral hepatitis and other communicable diseases. Screening campaigns could elevate the uptake rate of HBV vaccine. The campaigns should be intended to increase awareness of HBV status, the importance of screening for HBV infection, recommending vaccination to those

at risk, and administering proper treatment and adequate counseling on those who are revealed to be chronic carriers.

**Conflict of interests:**

The authors declare that there is no conflict of interests regarding the publication of this paper.

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