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# Vaccination Status of Hepatitis-B Among Dental Patients Visiting a Public Health Sector of Islamabad

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Author`s Contribution

*[1,3,4]Substantial contributions to the conception or design of the work; or the acquisition, Final approval of the study to be published, Drafting the work or revising it critically for important intellectual content [2,5]analysis, or interpretation of data for the work, [6]Active participation in active methodology*

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**ABSTRACT**

**Objective:** To evaluate the status of Vaccination against Hepatitis B Virus and reasons for Non Vaccination among dental patients visiting the public sector hospital in Islamabad.

**Methodology:** This Cross-sectional questionnaire based study was conducted at Hospital School of Dentistry, Shaheed Zulfiqar Ali Bhutto Medical University, Islamabad from January 2023 to March 2023. Total 200 dental patients participated in this study of which 91 were males and 109 were females. Questionnaire regarding receiving HBV- Vaccination and Reasons for not receiving Hepatitis-B Vaccination (HBV) was completed by dental patients. Frequency, Percentage and association was calculated for statistical analysis.

**Results:** 47.3% male dental patients and 57.8% female dental patients that visited public sector hospital in Islamabad did not receive HBV-Vaccination. Maximum number of HBV-Non vaccinated dental patients were laborers (87.2%) followed by other professions (56.8%). Strong positive association between HBV Non-Vaccination and occupation (p value= 0.001) of dental patients was confirmed. Chi-square testing also demonstrated strong association between HBV Non-Vaccination and Vaccine Non-availability (p value= 0.021), Busy Schedule (p value= 0.009), Distant Vaccination Center (p value= 0.004), Costly Vaccine (p value= 0.001), Fear of Needle (p value= 0.015), and more options (p value= 0.001) among dental patients.

**Conclusion:** Occupation along with Vaccine Non-availability, Busy Schedule, Distant Vaccination Center, Cost, Fear of Needle and More options are all factors that prohibited HBV-Vaccination in dental patients visiting public sector hospital in Islamabad because of their low socio-economic status and lack of knowledge.

**Key words:** Dental patients, Hepatitis B, Islamabad, Pakistan, Vaccination.

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## Introduction

Hepatitis-B has affected about 248 million people worldwide that has become a point of high concern.[1] The number of deaths from Hepatitis-B has increased from 1990 - 2017 which is approximately 580,500 - 799,000.[2] Every year about 10–30 million people are affected by Hepatitis-B infection, most of which are infants and children.[3] 90.0% of the infants are at the highest risk of catching Hepatitis-B and becoming carrier for life long. With the progression in age, this risk reduces to 25.0% in children aged 5 years which declines further to 10.0% in individuals aged 15 years. The adults possess the infection risk ranging between 2-5% but once they develop the disease they are the chronic transmitters of this disease.[4]

Various fluid pathways play a key role in the transfer of Hepatitis-B infection includes blood, body fluid, vaginal fluid, salivary fluid, and menstrual fluid. Few more known transmission modes are unscreened/contaminated blood transfusion, sexual activity with infected person, germy syringes, and infected mother-to-fetus. Due to the poor hygiene conditions, the utilization of contaminated razors, un-sterilized clinical Dental therapeutic processes and transplantation of body organs are also the major causative agents of the Hepatitis-B infection spread.[5] Hepatitis-B infection could be labeled as asymptomatic carrier state, severe Hepatitis-B, uncontrolled Hepatitis-B, long lasting Hepatitis-B, liver cirrhosis and hepato-cellular carcinoma. Chronic form of Hepatitis-B could be responsible for inducing more fatal conditions like hepato-cellular carcinoma and liver cirrhosis leading to mortality and morbidity eventually.[6,7]

The prevalence Hepatitis-B in Asia is about 80.0% according to the global estimation procedures[8,9] as compared to the Europe and America where it is too low.[9] There exists a close association with the Hepatitis-B infection and environmental attributes.[10] Less established healthcare systems and socio-economic factors are the primary contributors for the Hepatitis-B infection spread in the low income developing and under developing countries.[11] Being a low income country, Pakistan has limited health care resources which receives 00.75% only of about Pakistan's Gross Domestic Product. The poor socio-economic status in Pakistan is mainly responsible for the spread of this disease where contaminated medical instruments and equipments are re-used especially needles, syringes.[12] There is requirement of extensive management program's and Strong preventive interventions to combat the Hepatitis-B and its burden on health systems in Pakistan due lack of knowledge regarding Hepatitis-B vaccination and cross infection in the Pakistani population visiting dental hospitals.[13] This study focused on the vaccination status of the dental patients against the Hepatitis-B visiting a public sector hospital in Islamabad.

# Methodology

This Cross sectional, questionnaire oriented study was performed in the School of Dentistry, Shaheed Zulfiqar Ali Bhutto Medical university, Islamabad under the Ethical Approval letter: SOD/ERB/2023/22-02 from November 2022 to February 2023. Patients visiting the hospital for last three months were included in this study and those patients visiting the hospital for less than three months were excluded from this study. 200 dental patients completed this questionnaire was including those who had completed the vaccination and those who didn't complete their vaccination. Their reasons for non-vaccination, were also completed in the questionnaire. Open Epi-online calculator was incorporated to calculate the sample size by keeping the confidence interval of 95.0% and significance level of 5.0% that estimated the sample size of about 200. This desired sample size was attained by the simple random sampling procedure in this study. Written informed consent was taken from all the participants included in this study.

# Results

Statistical analysis was carried out by Pearson Chi-square testing for calculating the association after the frequency and percentage. Total 200 dental patients who visited Hospital School of Dentistry filled the Questionare of which 54.5% were females and 45.5% were males. The 53.0% of the dental patients remained HBV Non-vaccinated where female dental patients were 57.8% which was comparatively more than the 47.3% non-vaccinated male dental patients involved in the study. On the other hand, percentage of the HBV Vaccination in male dental patients was high 52.7% but low in female dental patients which was 42.2%. The marital status displayed that 49.4% married dental patients and 66.7% unmarried dental patients were HBV Non-vaccinated whereas 50.6% married dental patients and 47.0% unmarried dental patients received HBV Vaccination (Table I). The maximum number of HBV-Non vaccinated dental patients were laborers (87.2%) followed by Other professions (56.8%). On the other hand, self-employed and government servants displayed non-vaccination status in about 26.2% and 39.5% (Figure 1, Table I).

**Table I: Baseline characteristics of the dental patients involved in the study.**

| **Variables** | **Males** | **Females** | | | **Total** |
|---|---|---|---|---|---|
| Dental patients | 91 (45.5%) | 109 (54.5%) | | | 200 (100%) |
| **Variables** | **Hepatitis-B Virus vaccination status** | | | | **Total** |
| Male Dental patients | **HBV Non-Vaccinated** | 43 (47.3%) | | | 106 (53.0%) |
| Female Dental patients | **HBV Non-Vaccinated** | 63 (57.8%) | | | |
| Male Dental patients | **HBV Vaccinated** | 48 (52.7%) | | | 94 (47.0%) |
| Female Dental patients | **HBV Vaccinated** | 46 (42.2%) | | | |
| **Variables** | **Married** | **Un Married** | | | **Total** |
| HBV Non Vaccinated patients | 78 (49.4%) | 28 (66.7%) | | | 106 (53.0%) |
| HBV Vaccinated patients | 80 (50.6%) | 14 (33.3%) | | | 94 (47.0%) |
| **Variables** | **Laborer** | **Self Employed** | **Govt. Servant** | **Other** | **Total** |
| HBV Non Vaccinated patients | 34 (87.2%) | 11 (26.2%) | 15 (39.5%) | 46 (56.8%) | 106 (53.0%) |
| HBV Vaccinated patients | 5 (12.8%) | 31 (73.8%) | 23 (60.5%) | 35 (43.2%) | 94 (47.0%) |

The frequency with percentage % of reasons displayed by 53% of HBV Non- Vaccinated dental patients were given in the Table II. These reasons included 34.5% Vaccine Non-availability, 34.5% Busy schedule, 16.5% Distant vaccination center, 47% Costly vaccine, 24% Lack of motivation, 10% Fear of needle and 54% more than 1 among the dental patients of this study. More than 1 option for reasons marked by the candidates revealed the highest frequency with percentage% (54%) followed by the reason of the Vaccine cost that depicted 47% (Table II).

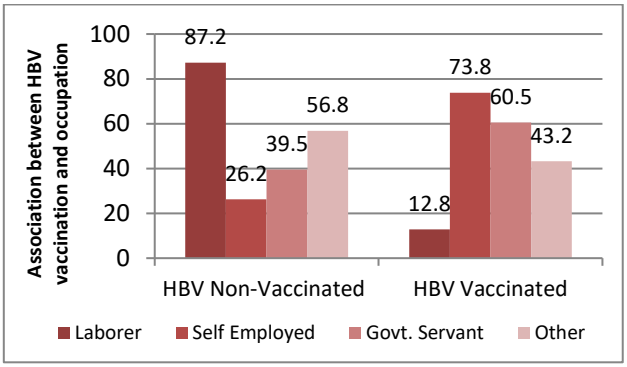


**Figure 1. Mean Percentage % values for HBV vaccinated and HBV non-vaccinated patients with respect to their occupations.**

**Table II: Frequency and Percentage of the reasons for HBV Non-Vaccination among Dental Patients involved in the study.**

| Reasons of HBV Non-Vaccination | Frequency with Percentage% of reasons for HBV Non-Vaccination among Dental Patients |
|---|---|
| Vaccine Non-availability | 69 (34.5%) |
| Busy Schedule | 69 (34.5%) |
| Distant Vaccination Center | 33 (16.5%) |
| Costly Vaccine | 94 ( 47%) |
| Lack of Motivation | 48 (24%) |
| Fear of Needle | 20 (10%) |
| More than 1 Option | 106 (54%) |

There existed a strong positive association between HBV Non-Vaccination and occupation (p value= 0.001) of the dental patients involved in this study. Chi-square testing also demonstrated strong association between the HBV Non-Vaccination and the reasons such as Vaccine Non-availability (p value= 0.021), Busy Schedule (p value= 0.009), Distant Vaccination Center (p value= 0.004), Costly Vaccine (p value= 0.001), Fear of Needle (p value= 0.015), and More than 1 Option (p value= 0.001) among the dental patients visiting the hospital in Islamabad which was statistically significant (p value <0.05) (Table III).

**Table III: Chi-Square test showing the statistically significant association between HBV Non-Vaccination status and different variables.**

| Variables | Pearson Chi-Square Value | P value |
|---|---|---|
| HBV Non-Vaccination* Occupation | 33.66 | 0.001 |
| HBV Non-Vaccination* Vaccine Non-availability | 26.11 | 0.021 |
| HBV Non-Vaccination* Busy Schedule | 46.20 | 0.009 |
| HBV Non-Vaccination* Distant Vaccination Center | 73.33 | 0.004 |
| HBV Non-Vaccination* Costly Vaccine | 59.71 | 0.001 |
| HBV Non-Vaccination* Fear of Needle | 62.98 | 0.015 |
| HBV Non-Vaccination* More than 1 Option | 39.50 | 0.002 |

# Discussion

CDC rules elaborated that fundamental well-being measures are the only option that can play a vital role in preventing the Hepatitis- B infection because Vaccination is the only possible way to avoid Cross infection among the community population especially patients[14]. Current study was performed on the dental patients visiting the public sector Hospital in Islamabad for oral treatment. The 53% of the dental patients that contributed in this study didn't receive HBV Vaccination whereas 47% got HBV Vaccination which is quite less. The findings of this study did not match the literature because previously HBV-Vaccination evaluation was conducted in the Saudi Arabian healthcare workers that revealed 88% HBV-vaccination[15] while another study depicted 48% HBV-vaccination in Bangladeshi dental assistants.[16] A study carried out in medical and dental students studying at different colleges in Pakistan also showed increased HBV-Vaccination status.[17] The possible reason for this reduction in HBV-Vaccination status in dental patients visiting a public sector hospital in Islamabad might have been their lack of knowledge, low socio-economic status and non-availability of resources.

Globally, main factors responsible for the HBV-Non Vaccination is the lack of time, non-motivation, unawareness, distant vaccination center, costly, and needle phobia[18]. The reasons for HBV-Non Vaccination among dental patients in the current study was the Vaccine Non-availability, Busy schedule, Distant vaccination center, Costly vaccine, Lack of motivation, Fear of needle and more than 1 option segment offered to them in the questionnaire. Maximum patients remained HBV- Non Vaccinated in this study because of answering multiple options strategy (54%) followed by the unaffordable Vaccine cost (47%), Busy Schedule (34.5%), Distant Vaccination Center (16.5%), Lack of Motivation (24%),

and Fear of Needle (10%). These findings were again not in collaboration with the previous study conducted in Pakistan where needle phobia was the major causative agent for not receiving the HBV-Vaccination in university students.[19] Another study in Syrian students revealed lack of motivation as the main factor for not getting the HBV-Vaccination in students.[20] Another studies showed that lack of knowledge and Distant vaccination center became the reasons of non-vaccination in Nigeria and USA in students. [21,22] Lack of knowledge and poor socioeconomic status in Pakistan might be responsible for producing the undesirable results in the current study because most of the dental patients visiting the public sector hospital in Islamabad for dental treatment belonged to laborer class. These patients might have lacked adequate knowledge and were not able to afford the cost of the HBV vaccine because of their limited resources and low income earning.

# Conclusion

The current study concluded that Occupation along with Vaccine Non-availability, Busy Schedule, Distant Vaccination Center, Cost, Fear of Needle and More options are all factors that prohibited the HBV-Vaccination in dental patients visiting the public sector hospital in Islamabad because of their low socio-economic status and lack of knowledge. These patients must be educated about receiving the HBV-Vaccination in order to prevent the disease spread and cross infection.

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