 DOI:https://doi.org/10.52206/jsmc.2023.13.1.636 OPEN ACCESS

Hepatitis B Vaccination Status among Nursing Students in Karachi, Pakistan

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ABSTRACT

Background: Hepatitis B infection is a fatal occupational hazard for health care professionals especially for student nurses. They can be easily protected from hepatitis B infection by their HBV vaccination.
Objective: To determine the frequency of HBV Vaccination among student nurses in Karachi Pakistan.
Material and Methods: This cross-sectional study was conducted in ten nursing institutes (five public and five private) among 529 nursing students.
Results: Out of 529 nursing students, only 270(50.6%) were vaccinated. Among 270 respondents, 58.8% were completely vaccinated and68% were vaccinated before clinical exposure. The most common reasons for not being vaccinated included lack of knowledge about HBV vaccine (31.88%), unavailability of free of cost vaccine (22 %), have no time for vaccination (11.96%), afraid of vaccine side effects/complications (10.14%), afraid of injection (9.42%), have prior immunity (5.43%), not effective vaccine (5.07%) and high vaccine cost (3.99%).
Conclusion: There is alarmingly low vaccination coverage of hepatitis B among nursing students of Karachi, leading to a great professional risk of hepatitis B infection. Consequently, policy should be implemented for making hepatitis B vaccination mandatory for admission in nursing institutes to prevent nursing students from acquiring this fatal disease.
Keywords: Hepatitis B vaccine; Hepatitis B virus; Nursing students; Vaccination; Pakistan.

This article may be cited as: Ali J, Shah H, Khalilullah, Ali M, Khan J. Hepatitis B Vaccination Status among Nursing Students in Karachi, Pakistan. J Saidu Med Coll Swat 2023;13(1):24-28.

INTRODUCTION

Hepatitis B Virus (HBV) infection is the most common fatal infection across the globe.[1] The number of HBV infected people are more than 2 billion out of which 400 million are chronically ill with complications including (liver cancer or cirrhosis), and every year about 1 million people die due to its fatality.[2] Hepatitis B is an immense health problem and ranked 15th among fatal causes.[3] In the developing countries like Pakistan, this problem is severe as 5% of the total population is infected with hepatitis B, which constitutes 11 million individuals.[4] Thus Pakistan, is in the intermediate HBV prevalence zone.[5] Hepatitis B viral infection is considered as a professional risk for healthcare workers (HCWs), including HCWs trainees because of their frequent contact with patients' blood, blood products and other body fluids.[6] Amongst the HCWs, HBV is transferred by the contaminated needle stick injury or over incidental inoculation of small quantities of blood during clinical procedures[1]. HCWs do not seek post prophylactic management even if they recognize the exposures of HBV.[7] The risk of acquiring HBV infection by nurses is four times greater as compared to general adult population.[5] In health care system of Pakistan, the lack of infection control activities and intermediate prevalence of HBV infection in general public further increase the threat of nosocomial transfer of HBV to nurses.[8] HBV infection is preventable as vaccine is available since 1981 the primary vaccination consists of three intramuscular doses of HBV vaccine, and after the third dose in >90% cases the protective antibodies are produced.[9] Furthermore, studies shows that the risk of acquiring HBV infection is higher , ranges from 6 to 30% during exposure to needle stick or pointed injury among unvaccinated nurses.[5]

Like other HCWs, Nurses are more prone to get HBV infection particularly the nursing students due to lack of clinical experience, lack of knowledge about HBV and its vaccine.[10] So vaccination of nursing students is a wise strategy for the prevention of HBV infection.[11]

Unfortunately, in Pakistan, there is alarming situation due to low HBV vaccination coverage as only 37% of nursing students are immunized against HBV. Although studies recommended that nursing students should be vaccinated against HBV before their clinical exposure.[12] There are very few studies in Pakistani context in this regard. Therefore, based on this rationale, present study is designed to assess the “vaccination status of HBV among nursing students in Karachi, Pakistan"

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Received: June 22th, 2021 Accepted: February 13th, 2023

MATERIALS AND METHODS

This cross sectional, descriptive study was conducted among students of diploma nursing program in both private and public sector nursing institutes in Karachi. Out of total 22 (13 private and 9 public) nursing institutes in Karachi, we conveniently selected 10 institutes (5 public and 5 private).The duration of the study was six months from 15th September 2017 to 31st March 2018.

Permissions were obtained from the directors or principals of the selected institutions. Convenient sampling design was used to collect the data from the study participants by distributing the questionnaire, after obtaining individual based informed written consent. The Principal Investigator was standing in each class to clarify any question or issue as it arises during the filling of the questionnaire without the discussing with each other .The inclusion criteria were nursing students regardless of their gender; who attended clinical practice and agreed to participate in the study. Where nursing students who had a history of HBV infection in the previous 12 months or who did not agreed were excluded.

The Institutional Review Board (IRB) of Dow University of Health Sciences, Karachi, approved the study Ref No IRB-889/DUHS/Approval/ 2017/195 dated 15th September 2017. The aim of the study was explained to the nursing students. The participants were assured that privacy and confidentiality would be maintained.

Data was collected through a structured questionnaire written in English language. The questionnaire consisted of two parts, the first part was comprise of questions about demographic variables such as age, gender, name of nursing institute, class, contact number and roll number, and the second section was consisted of information about history of vaccination status (unvaccinated, fully vaccinated or partially vaccinated, and vaccinated before or after clinical exposure), reasons for vaccine refusal, and partial vaccination. Students who received three or more doses of hepatitis B vaccine were considered fully vaccinated, those who received one or two doses were considered partially vaccinated and those who never received hepatitis B vaccination were considered unvaccinated.

Statistical Analysis

The data from the study was analyzed through SPSS version 21.0.Frequency and percentages were calculated for demographic variables, of nursing students and their vaccination status, and the reasons for not receiving vaccination. Chi-square test was applied for association among categorical variables. P-value less than 0.05 was considered significant.

RESULT

Out of 529 nursing students,57.1 % were males& 51.8 % were from government institutes of nursing. Furthermore 32.7 % were from 1st year, 33.1% of 2nd year and 34.2% were of 3rd year of Diploma in nursing program. Majority of the participants 49.5 % were between the age of 21-25 years and 46.5% of the participants' age ranging from 16 to 20 years. Table 01

Table 01.
Demographic Characteristics of Participants

Demographic Characteristics (N=529)	Frequency	%
Gender		
Male	302	57.1
Female	227	42.9
Institutes of Nursing		
Public	274	51.8
Private	255	48.2
Class		
1st year	173	32.7
2nd year	175	33.08
3rd year	181	34.2
Age (years)		
16-20	246	46.5
21-25	262	49.5
≥ 26	21	4
History of Infectious Diseases		
No	426	80.5
Yes	103	19.5

Hepatitis B vaccination status shown in Table 2 that out of 529, half of the participants were vaccinated 270(50.6%) at least once in their life time. Out of those vaccinated,59.3% were

completely and 40.7 % were partially vaccinated, while 68%of respondents were vaccinated before clinical exposure while 32% were vaccinated after clinical exposure.

Table 02. Hepatitis B Vaccination Status (n=529)

Vaccination (n=529)	Frequency	%
Yes	270	50.6
No	259	49.4
Vaccination status (n=270)		
Completely vaccinated	160	59.3
Partially vaccinated	110	40.7
When you received Hepatitis B vaccine (n=270)		
Before clinical exposure	183	68
After clinical exposure	87	32

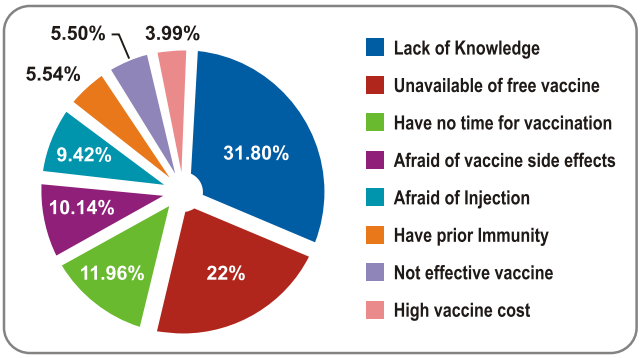
This study showed that vaccination status of the nursing students is significantly associated with public and private nursing students (<0.001%).Furthermore, it revealed that majority (80%) of the students from public institutes were vaccinated which was significantly different from those in private institutes (<0.001). Percentage of vaccinated students was also high in 3rd year as compared to 1st and 2nd year which was statistically significant (P-value 0.001). Vaccination status among the age group was also statistically significant (P-value 0.018) while gender was not associated with vaccination status of nursing students. Table 03

Table 03. Association Between Nursing Characteristics and Vaccination Status

	Vaccination		
	Yes	No	Chi-square
Demographic Characteristics	**F (%)**	**F (%)**	**P-value**
Gender			
Male	151 (50)	151 (50)	0.673
Female	119 (52.4)	108 (47.6)	
Institutes of Nursing			
Public	219 (80)	55 (20)	<0.001*
Private	51 (20)	205 (80)	
Class			
1st year	69 (40)	104 (60)	<0.001*
2nd year	87(49.7)	88(50.3)	
3rd year	114 (62.9)	67 (37.1)	
Age (years)			
16-20	112 (45.3)	134 (54.7)	0.018*
21-25	143 (54.5)	119 (45.6)	
≥26	15 (71.4)	6 (28.6)	

Reasons for Not Vaccination

The most common reasons for not being vaccinated included lack of knowledge about HBV vaccine (31.88%), unavailability of free of cost vaccine(22 %), have no time for vaccination (11.96%), afraid of vaccine side effects/ complications (10.14%), afraid of injection (9.42%), have prior immunity (5.43%), not effective vaccine (5.07%) and high vaccine cost (3.99%) as shown in figure No. 01.



Reasons for Not Vaccination

DISCUSSION

The percentage of vaccinated nursing students varies from place to place. The vaccination coverage of nursing students as observed in this study (50.6%) was much lower than some other similar studies conducted on nursing students in different countries i.e. in Turkey(85.3%),[13] in Greece (81.4%),[14] and in Ho Ghana (70.6%),[15] but it is higher than the studies done in India (12.1%)[16] and Makerere University College of Health Sciences (44.3%).[17]

Our study showed that out of 270 vaccinated nursing students, 160 (59.2%) were completely vaccinated while 110 (40.8%) were partially vaccinated. The percentage of completely vaccinated nursing students in our study was low as compared to a similar study was in Nepal 75.8%.[18] Present study reported that out of 270(50.6%) vaccinated nursing students 68% were preclinical vaccinated while 32 % were vaccinated after clinical exposure which is lower than a study conducted in Nepal among dental and medical students reported high preclinical vaccination coverage 73.5 %.[19]

This study reports that HBV vaccination coverage was significantly high among nursing students of Public institutes (80%) as these institutes provide free of cost vaccine for nursing students. Similarly, a study conducted in Turkey reported that vaccination coverage was high among nursing students of 11 schools out of 14. They organized HBV vaccination program before the commencement of students' clinical practice.[13]

We found significant increase in the uptake of vaccine in advanced professional years in nursing which shows increasing awareness among nursing students about the disease. Similar result were reported in the nursing students of tertiary care hospital of Quetta, Pakistan.[12]

Similarly, a study conducted to know about the knowledge, attitude, and practice on hepatitis B among medical and nursing undergraduate students of an apex healthcare institute at Uttarakhand foot hills India reported that 70 % of student nurses received one or more doses of hepatitis B vaccine.[20] On the other hand a study conducted among Medical Students of a Private Medical Institute in Multan Pakistan, which reported that (68%) students were vaccinated against HBV [21] which is higher than our study.

CONCLUSION

There is alarming low coverage of hepatitis B vaccination among nursing students of these ten nursing institutes in Karachi. Therefore, nursing students are more at risk of acquiring hepatitis B infection during their career.

Recommendations

Nursing students should be routinely vaccinated upon entry into the nursing institutes. Furthermore, education on prevention and management of occupational exposure should also be provided to nursing students. Pakistan nursing council (PNC) should declare hepatitis B vaccination mandatory for nursing students before their clinical practice. Health Ministry with collaboration of nursing institutions should provide free of cost hepatitis B vaccine for nursing students. Nursing institutes should arrange awareness workshops about hepatitis B and its preventive measures.

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DATA SHARING STATEMENT: The data that support the findings of this study are available on request from the corresponding author. The data are not publicly available due to privacy or ethical restrictions.

CONFLICT OF INTEREST: Authors declared no conflict of interest.
GRANTED SUPPORT AND FINANCIAL DISCLOSURE: Nil

AUTHOR'S CONTRIBUTION
The following authors full fill authorship criteria as per ICMJE guidelines;

Ali J, Shah H:	Idea conception, data acquisition, final approval, agreed to be accountable for all the work.
Khalilullah:	Design of the work, drafting the work, critical rivision, final approval, agreed to be accountable for all the work.
Ali M:	Data analysis, drafting of the work, final approval, agreed to be accountable for all the work.
Khan J:	Data interpretation, critical revision, final approval, agreed to be accountable for all the work.