

SEROPREVALENCE OF HEPATITIS B VIRUS INFECTION AMONG NURSING STUDENTS IN KARACHI

Javid Ali¹, Khalilullah², Mahboob Ali³, Rasheed Ahmed Khan⁴, Abdul Nasir⁵, Faridullah⁶, Shahida Khan⁷

ABSTRACT

OBJECTIVE

To determine the prevalence of hepatitis B virus infection among nursing students.

METHODOLOGY

We conducted a cross-sectional study in eight nursing schools (Four private and Four public) in Karachi and selected randomly 25 diploma nursing students from each school of nursing. Venous blood was obtained from nursing students and was serologically tested using the ICT (Immunochromatographic Technique) method. A questionnaire form was used to obtain data related to the socio-demographic characteristics of the participants. Data was analyzed using SPSS version 21.

RESULTS

A total of 200 student nurses participated in this research study. Out of 200 student nurses in the study, 113 (56.5 %) were male, and 87(43.5 %) were female, 82 (41 %) . 1 % of the nursing students were serologically positive for HBV.

CONCLUSION

Health care workers are at high risk of getting viral hepatitis. A program for education about occupational risk factors and regular blood screening must be implemented in all healthcare setups of Karachi to reduce the burden of HBV infection.

KEYWORDS: Prevalence; Hepatitis B virus; Nursing students; Pakistan

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Correspondence

¹Javid Ali, Principal, Ismail Nursing Institute, Swat

✉: alijavidali83@gmail.com

☎: +92-345-4832731

²Assistant Professor, Swat Medical College Swat .

³Clinical Instructor, College of Nursing Liaquatabad Karachi.

⁴Clinical Instructor, College of Nursing Liaquatabad Karachi.

⁵Nursing Instructor, College of Nursing Liaquatabad Karachi

⁶Post RN-BSN, Co-ordinator, Ismail Nursing Institute Matta Swat

⁷Assistant Professor, Qadri College of Health Sciences, Karachi, Pakistan

public health in the universe¹ and well recognized occupational risk for healthcare workers (HCWs).² Hepatitis-B is an inflammatory disease of liver caused by the hepatitis B DNA virus.³ Hepatitis B virus (HBV) infection is confirmed by laboratory test focuses on the detection of hepatitis-B surface antigen (HBsAg). It can lead to lifelong chronic infection, resulting in cirrhosis of the liver, cancer, liver failure and death.⁴ HBV is a common viral infectious agent of public health.⁵ The numbers of HBV-infected people are more than 2 billion, out of which 400 million are suffering from liver cancer or cirrhosis. Every year, about 1 million people die due to HBV infection⁶, while approximately 2 people die in each minute from HBV infection. The HBV is 50 to 100 times more infectious than HIV.⁷ The burden of hepatitis B virus infection is highest in the developing world

INTRODUCTION

The silent killer hepatitis-B is a major threat to

particularly in Asia and Sub-Saharan Africa.⁸ HBV is ranked 15th among fatal causes. In developing countries like Pakistan, this problem is severe as around five million suspected hepatitis B carriers with a prevalence range from 1.4 to 11%. Thus, Pakistan is in the intermediate HBV prevalence zone.⁹ HBV infection is a professional risk for HCWs, including HCWs trainees¹⁰ because of their frequent connection with patients and blood. Amongst the HCWs, HBV is transferred by needle stick injury with infected needles or through percutaneous or mucosal exposure to infection blood or body fluids over accidental inoculation during clinical procedures.⁶ HBV tends to remain infectious for prolonged period even in the absence of visible blood or body fluids.¹⁰ Nursing students would not seek post prophylactic management even if they recognized the exposures of HBV.¹¹ The risk of acquiring HBV infection by nurses is four times greater than the adult general public.¹⁰ In the health care system of Pakistan, the lack of infection control activities and the high prevalence of HBV infection in the general public enhance the threat of nosocomial transfer of HBV to nurses.¹² Nursing students are at significant risk due to their limited clinical experience and knowledge about HBV and its vaccine.¹³ However, the literature review did not reveal any study regarding HBV infection among nursing students in Karachi. The study's objective was to determine the prevalence of HBV among nursing students in Karachi, Pakistan.

METHODOLOGY

This descriptive cross-sectional study was conducted in Karachi and the duration of the study was six months from 15th September 2017 to March 2018 in eight nursing institutes (four private and four public). There was a total of 742 nursing students in these eight nursing institutes in the year 2017-18. Out of 742 participants, randomly 200 volunteer students were recruited for the study. Written informed consent was obtained from all participants. The purpose of the study was explained in detail. The personal data of the participants were recorded and not shared with third parties. A structured questionnaire was used to obtain data related to the demographic characteristics of the participants. The questionnaire included names, age, gender, class, roll number, cell phone number, institute name, email ID, and any infectious disease in the past twelve months. The primary researcher took three CC Blood sample from the participants after

written consent. These blood samples were sent to the Savera Laboratory Karachi within half to one hour. Samples were centrifuged, and serum was separated and stored for Anti HBV by Immunochromatographic test (ICT). Data was entered in SPSS version 21, cleaned, and analyzed accordingly. Age was categorized into three different categories, and proportion with percentage for different age groups was calculated. The frequency with percentage was calculated for all other categorical variables.

RESULTS

Socio-demographic characteristics of the student nurses participated in the study is presented in Table 1. A total of 200 student nurses participated in this research study. Out of 200 student nurses in the study, 113 (56.5 %) were male, and 87 (43.5 %) were female, 82 (41 %) were from Government schools of nursing, and 118 (59%) were from private schools of nursing. Among 200 student nurses, 65 (32.7 %) were of 1st year, 66 (33.1%) of 2nd year, and 68 (34.2%) were from 3rd year of diploma in Nursing program. Of the total participants, 46.5% age ranged from 16 to 20 years. Whereas 49.5% of the participants were between the ages of 21- 25 years lastly, only 4 % of the participants aged more than 25 years. No history of blood transfusion, dental treatment, and surgery was recorded in these nursing students.

Table 1: Socio-demographic characteristics of respondents (n=200)

Distribution (%) according to age, gender, and class categories	Frequency	Percentage
Gender		
Male	113	56.5%
Female	87	43.5%
Schools of Nursing		
Public	82	41.0%
Private	118	59.0%
Class		
1 st year	68	34.0%
2 nd year	67	33.5%
3 rd year	65	32.5%
Age (years)		
16-20	93	46.5%
21-25	99	49.5%
≥ 26	8	4%

Table 2 Positive serologic test result for hepatitis B virus infection (total n = 200)

Sex	Total Participants	HBsAg positive	HBs Ag Negative	Total HBs Ag Positive participants
Male	113	1	112	1%
Female	87	1	86	

1% (2 out of 200) student nurses (1 male and female) were found positive for HBV infection.

RESULTS

Hepatitis B is a global health problem mainly in developing countries. Based on hepatitis B surface antigen (HBsAg) positivity in the general population, WHO classified the globe into three zones, low prevalence (< 2%), intermediate prevalence (2.0%-7.9%), and high prevalence (> 8%).¹⁴ The finding of this study is that only 2 (1%) students were positive for HBsAg is lower than a study conducted on the prevalence of HBV infection reported 2.5% among HCWs of Jimma University Medical Center, Southwest Ethiopia¹⁵, 2.9% reported among HCWs of a tertiary hospital in Rwanda¹⁶, 4.2% reported among medicine and health science students of Wollo University, Northeast Ethiopia¹⁷, 7.3% reported among healthcare workers of Bule Hora Woreda, Southern Ethiopia¹⁸, 8.7% reported among healthcare workers of the Najran region, Southwestern Saudi Arabia¹⁹, 8.1% reported among HCWs of a tertiary hospital in Uganda²⁰, and 7.0% reported among HCWs of a tertiary hospital in Tanzania.²¹ On the other hand, 0.4% prevalence was reported among healthcare workers of a tertiary care hospital in India²², which is lower than our study. This could be because of differences in the level of knowledge of HBV and standard precautions, attitude and practice of standard precautions and occupational exposure. The finding of our study is high than a study conducted in Turkey 0.7%.¹⁴ Similar to these findings, in Taiwan, HBsAg prevalence was at a ratio of 2.1% among nursing students.²³ Other results from the Royal Thai Army nursing students in Thailand reported HBV seroprevalence rates as 10.8%, among 381 nursing students.²⁴ A study conducted among the HCWs in Bolan Medical Complex (BMC) Quetta reported 16.6% of nurses were HBV positive.²⁵ In this study, 17.0% of the students stated they had provided nursing services to HBV patients, but 9.5% of them had a history of needle-stick injury.

LIMITATIONS

Only descriptive level of analysis have been performed in this study.

CONCLUSION

Before clinical training compliance in the use of universal precautions and safety enhanced devices combined with an effective immunization program against HBV must be carried out. In order to raise nursing students' awareness and protect them from viral HBV infection, students must be mandated to

consistently abide by universal precautions regarding procedures and care of the patients.

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CONTRIBUTORS

1. **Javid Ali** - Concept & Design;
2. **Khalilullah** - Concept & Design
3. **Mahboob Ali** - Data Acquisition; Drafting Manuscript
4. **Rasheed Ahmed Khan** - Data Acquisition; Data Analysis/Interpretation
5. **Abdul Nasir** – Critical Revision
6. **Farid Ullah** - Data Acquisition; Drafting Manuscript
7. **Shahida Khan** - Data Analysis/Interpretation; Drafting Manuscript



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