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Original Article

Knowledge Regarding Hepatitis B Virus Infection and its Prevention among Nursing Students in Karachi

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ABSTRACT

Hepatitis B Virus (HBV) infection is a significant global health concern. All healthcare professionals especially nurses are always at a greater risk of getting the HBV. **Objective:** To assess knowledge regarding Hepatitis B Virus infection and its prevention among nursing students in Karachi. **Methods:** A descriptive cross-sectional study design was used to assess the knowledge of student nurses regarding Hepatitis B infection at ten nursing institutes in Karachi for six months; the calculated sample size was 529 by Open Epi version 3.0 by using convenient sampling technique. The data were collected by well-structured questionnaire and involved the questions about knowledge of Hepatitis B Virus infection and its prevention. All the students of Diploma in Nursing above the age 16 years were included while all the students of other nursing discipline were excluded. **Results:** The overall level of knowledge of the respondents on HBV infection was very good in this study, 93.2%, in response to the question concerning about the causes of Hepatitis B Virus infection (76.7%) responded positive. Knowledge regarding the incubation period of Hepatitis-B was very less (31.4%). 59.0 % consider that they are at risk to get Hepatitis B at their job, while 96.7% knew that it can be transmitted by unsterilized syringes, needles and surgical instruments which is similar to our study. **Conclusions:** All healthcare professionals especially student nurses are always at a greater risk of getting the HBV. Therefore, comparable research with a larger population and sample size has to be carried out.

INTRODUCTION

Infection with the Hepatitis B Virus (HBV) is a serious global health risk. With between 257 and 291 million expected cases worldwide, it is linked to significant disease and death because of clinical consequences such liver cirrhosis and hepatocellular cancer. While the resources available of immunization, screening, and management, the prevalence of prolonged Hepatitis B Virus is still significant [1]. HBV modes of transmission include exposure to the infected and body and body transmission. Additionally, contaminated instruments and multiple sexual partners are also thought to be involved [2]. The Health Care Workers (HCWs) have to deal with the patients who are suffering from multiple infectious diseases therefore, they are more susceptible to develop as well as spread the infection in hospital settings. They come into contact with potentially dangerous blood-borne infections including the Hepatitis B Virus (HBV) and Hepatitis C Virus (HCV) in their line of work [3]. According to the Global Health Sector Strategy on Viral Hepatitis 2016-2021, as well as Sustainable Development Goal 3, the goal is to eradicate viral Hepatitis, including Hepatitis B infection, by 2030 [4]. Hepatitis B infection is the seventh biggest cause of death

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worldwide, affecting approximately one-third of the world's population and accounting for 1.34 million deaths annually and is included in top ten diseases of the world which has serious threats to life [5]. As nurses spend a greater amount of time with patients than other healthcare professionals, therefore their mental and physical health is in danger [6]. HBV infection is a significant public health issue that may lead to psychological disorders and work-related illnesses [7]. For a nurse, accomplishing life's most important goal involves safeguarding both the quantity and quality of a healthy life [8]. It is easily spread from one infected person to another by blood contact, mother-to-child transmission, unprotected sexual contact, and the use of equipment in barbershops and beauty parlors. Prenatal infections, skin and mucous membrane infections from contaminated blood or bodily fluid, injections, and drug misuse are the main ways that the disease is spread. Moreover, acupuncture, dialysis, tattoos, ear piercings, and even syringe use might spread infections. Infection from hospitals settings with blood borne infections is a larger alarm for HCWs, amongst nurses and specially student nurses [9]. In Pakistan, student nurses are at higher risk to HBV, due to insufficient resource of individual protecting utensils, deficiency of training programs of medical procedures to reduce risk of infection and lack of knowledge as well as low vaccination coverage in 50.6 % [10]. Nursing students engage in activities that include observation, imitation, continuous assessment, investigation, practical application, and reflective processes in order to enhance their nursing abilities [11]. Other trainees, such as medical and nursing students, are also exposed to high levels of Hepatitis B infection alongside doctors and nurses. Because of their inexperience and lack of skills, these individuals have a very high chance of suffering an accidental injury. Regular contact with blood, ignorance of preventative and control methods, a negative mindset, and a lack of practices are some of the factors contributing to this high risk. [12].

The literature review did not reveal any study regarding HBV infection awareness among nursing students in Karachi. Therefore, based on this rationale, present study was designed to evaluate understanding regarding Hepatitis B Virus infection amongst student nurses in Karachi, Pakistan.

METHODS

A cross-sectional descriptive study methodology was employed to evaluate student nurses' knowledge on Hepatitis B infection. The sites of this research study were the ten nursing institutes (5 public and 5 private) of Karachi, Pakistan and it was carried out for six months. The participants of this study were the students studying in ten nursing institutes in Karachi. Sample size was calculated by using open epi version 3.0 and it was 529 for selecting the study applicants, a convenient non probability sampling technique was used. The data were collected by well-structured close ended questionnaire comprising 24 multiple choice questions [13]. A knowledge summary score was calculated for the 24 questions addressing causes, signs transmission, at risk groups, complications, vaccination doses of Hepatitis B, routes of transmission and preventive measures against HBV infection. A score of 1 was given for a right answer and 0 for an incorrect answer. Possible scores ranged between 0 and 24. The maximum score that could be obtained was 24, as these scores were determined by adding up all of the right answers. Individuals who correctly answered over 16 questions were classified as having acceptable knowledge, while those who scored fewer compared to 16 were classified as having weak knowledge. The participants completed the printed version of the questionnaire, answering all the questions in accordance with their own interpretations. About thirty minutes were allotted for completing the surveys. After that, the completed questionnaires were gathered. With SPSS version 21.0, data analysis was carried out. The study was descriptive in nature, and SPSS software was used to generate all of the descriptive statistics. The participants of this study were the students of diploma nursing above the age 16 years while all the other nursing's discipline e.g., midwife nurses and post RN students were excluded from the study. All participants gave their consent before being given the freedom to choose whether or not to participate in the study. Participants also had the option of mentioning their names. With the aid of full consent, which was acquired by attaching a consent form to the questionnaire, participants were given sufficient information about the research. By telling participants, confidentiality was taken into consideration. The Nuremberg Code of Ethics protected the participants' rights.

RESULTS

Socio-demographic properties of the student nurses participating in the research were presented in Table 1. Total 529 nursing students take part in the study. Out of 529 participants, 409 (77.31%) were male and 120 (22.68%) were female. Furthermore, 302 (57.08%) were from government schools of nursing and 227 (42.91%) were from private schools of nursing. Among 529 student nurses, 198 (37.4%) were of 1st year, 184 (34.78%) of 2nd year and 147 (27.79%) were from 3rd year of Diploma in Nursing program. Out of total participants, 225 (42.53%) of the participants' age was ranging from 16 to 20 years. Whereas, 245 (46.31%) of the respondents were between the age 21- 25 years, lastly only 59 (11.15%) of the participants were having age more than 25 years.

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Table 1: General Characteristics of the Nurses

Demographic Characteristics		Frequency (%)
Gender	Male	409 (77.31)
	Female	120 (22.68)
Schools of Nursing	Public	302 (57.08)
	Private	227 (42.91)
Class	1st Year	198 (37.43)
	2nd Year	184 (34.78)
	3rd Year	147 (27.79)
Age (years)	16-20	225 (42.53)
	21-25	245 (46.31)
	≥ 26	59 (11.15)

Knowledge about Hepatitis B infection of the student nurses is given in table 2. The results showed that out of 529 participants, 439 (82.98%) had enough information and 90 (17.02%) had lack of knowledge regarding Hepatitis B infection.

Table 2: Knowledge about Hepatitis B Infection

Knowledge	Frequency (%)
No	90 (17.02)
Yes	439 (82.98)

Table 3 presents the knowledge of participants evaluated by queries aiming on causal agent and clinical manifestations as well as incubation period, complications, organ affected best precaution, vaccination doses, route of transmission and preventive measurement against Hepatitis B infection. The results showed that 406 (76.7%) of study participants correctly identified the causative agent of Hepatitis B infection. Among 529 respondents, 476 (90%) knew that blood and its products have large quantity of Hepatitis B Viruses and 363 (68.6%) selected incorrectly the incubation of HBV infection. Additionally, 446 (84.3%) respondents understood signs and symptoms of HBV infection while 289 (54.6%) of the respondents incorrectly selected the HBV carriers. Interestingly, 312 (59.0%) participants considered themselves at risk of getting Hepatitis B infection through their job whereas about 350 (66.2%) participants agreed that arthritis in not the complication of HBV infection. Regarding the organ affected by HBV, 522 (98.7%) of the participants correctly answered by choosing liver while 455 (86.0%) knew that vaccination was the best preventive measure for the HBV infection. 332 (62.6%) respondents correctly selected the three doses of HBV vaccination. 'Yes' and 'No' indicate the correct and incorrect answers respectively.

Table 3: Individual Responses of Population per Question Concerning Hepatitis B Infection

Knowledge Questions	Frequency (%)
What is the most common cause of Hepatitis?	
Yes	406 (76.7)
No	123 (23.3)
Which body fluids of an infected person contain large quantity of HBV?	
Yes	476 (90)
No	53 (10)
The usual incubation period of the HBV is about?	
Yes	166 (31.4)
No	363 (68.6)
What are the major signs and symptoms of viral Hepatitis?	
Yes	446 (84.3)
No	83 (15.7)
If HBV carriers look and feel healthy, do you think that person can spread HBV?	
Yes	239 (45.2)
No	290 (54.6)
Do you consider yourself at risk of getting Hepatitis B through your job?	
Yes	317 (59.0)
No	312 (41.0)
Which one is not the complication of HBV infection?	
Yes	350 (66.2)
No	179 (33.8)
Which organ is affected by HBV?	
Yes	522 (98.7)
No	7 (1.3)
What is the best precaution for HBV infection?	
Yes	455 (86.0)
No	74 (14.0)
How often are needed for administration of HBV vaccination?	
Yes	322 (62.8)
No	197 (37.2)

Table 4 outlines the respondents had knowledge about Hepatitis B could be prevented by HBV vaccination (99.6%), sterilization of instruments (96.4%), avoiding needle and sharp injuries (98.7%), unsafe sex (94.7%), use of gloves (96.8%), use of gown (91.9%), and disposable syringes (95.8%). In sum, almost all the participants had good knowledge about preventive measurements against Hepatitis B infection. 'Yes' and 'No' indicate the correct and incorrect answers respectively.

Table 4: Knowledge on Preventive Measures of Hepatitis B Infection

Knowledge Questions	Frequency (%)
HBV Vaccination	
Yes	527 (99.6)
No	2 (0.4)
Sterilization of Instruments	
Yes	526 (99.4)
No	3 (0.6)
Avoiding Needle/Sharp Injury	
Yes	522 (98.7)

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No	7(1.3)
Avoiding Unsafe Sex	
Yes	501(94.7)
No	28(5.3)
Use of Gloves	
Yes	512(96.8)
No	17(3.2)
Use of Gown	
Yes	486(91.9)
No	43(8.1)
Use of Disposable Syringe	
Yes	507(95.8)
No	22(4.2)

DISCUSSION

In this study, the respondents' general level of HBV infection knowledge was quite good. 93.2% of the study participants were aware of it similarly the nurses had good knowledge and practice regarding blood transfusion [14]. This finding is almost similar to study done in the SVBP Hospital, College of Nursing, Meerut, Uttar Pradesh, India, 94.9% [15]. In this cross-sectional survey done in February 2017 among University of Health and Allied Sciences undergraduate public health, students' knowledge about the Hepatitis-B causative agent was high (76.7%). This figure is lower than that reported by Abdela *et al.*, who found that 98.6% of nursing students knew that a virus is the cause of Hepatitis-B [16]. Unexpectedly, only 31.4% of people knew how long Hepatitis-B takes to incubate. It's interesting to note that about 84% of participants reported jaundice as one of the symptoms of Hepatitis-B weakness, nausea, vomiting and abdominal pain. 45% mentioned that if the HBV carrier's look and feel healthy, he can spread HBV infection. 59.0 % consider that they are at risk to get Hepatitis B which is higher than the research on nursing students at Sabya College in Saudi Arabia's knowledge, attitude, and practice (KAP) on Hepatitis B infection is 48.3% [17]. The majority of medical students surveyed in a study conducted in Northwest Ethiopia (97.2%) were aware that contaminated blood and bodily fluids can spread HBV, which is less than the percentage of participants in our study (95.3%) who were aware that unsterilized syringes, needles, and surgical instruments can also spread the infection [18]. 95.3% of participants in the current study who had their knowledge of the different ways that Hepatitis-B can spread were aware that the virus can spread through contaminated blood and its products, needlesticks, and sharp objects. 96.2 %, sexual transmission 88.5 % & using (same razor for tattoo / piercing 92.6% similar as described by Sannathimmappa *et al.*, [19]. In the present study, nearly 35.25 % of research partakers had the misunderstanding that this infection could communicated by contaminated water & hugging or holding hands of the infected person 25.1 % which is lower than a study reported by Swarnalatha, 44.8% participants knew that shaking hand is not the mode of its transmission [20]. In present study, student nurses were aware regarding HBV preventive measures that HBV can be prevent through vaccination (99.6 %), sterilization of instruments (99.4 %), avoiding needle/sharp injury (98.7%), use of gloves (96.8 %), and use of gown (91.9 %). Similarly, in a study conducted in Syrian in a private university, 87.5% subject were aware of prevention of Hepatitis B [21].

CONCLUSIONS

The results of the study showed that most of the participants knew enough about Hepatitis B. As none of the volunteers had received all recommended vaccinations against Hepatitis B, they were all particularly vulnerable to contracting the illness at work. Due to the increased risk of needle stick injuries and exposure to blood and blood products during practical training, student nurses are particularly vulnerable.

Authors Contribution

Conceptualization: JA
Methodology: JA, AS, SK, GM, KB
Formal analysis: JA, AS, SK, AUK
Writing-review and editing: JA, AS, SK, YA,

All authors have read and agreed to the published version of the manuscript.

Conflicts of Interest

The authors declare no conflict of interest.

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REFRENCES

[1] Lim JK, Nguyen MH, Kim WR, Gish R, Perumalswami P, Jacobson IM. Prevalence of chronic hepatitis B virus infection in the United States. Official Journal of the American College of Gastroenterology. 2020 Sep; 115(9): 1429-38. doi: 10.14309/ajg.0000000000000651.

[2] Nguyen MH, Wong G, Gane E, Kao JH, Dusheiko G. Hepatitis B virus: advances in prevention, diagnosis, and therapy. Clinical Microbiology Reviews. 2020 Mar; 33(2): 10-128. doi: 10.1128/CMR.00046-19.

[3] Hebo HJ, Gemeda DH, Abdusemed KA. Hepatitis B and C viral infection: prevalence, knowledge, attitude, practice, and occupational exposure among healthcare workers of Jimma University Medical Center, southwest Ethiopia. The Scientific World Journal. 2019 Feb; 2019. doi: 10.1155/2019/9482607.

[4] Shi Y and Zheng M. Hepatitis B virus persistence and reactivation. BioMedical Journal. 2020 Sep; 370. doi: 10.1136/bmj.m2200.

DOI: https://doi.org/10.54393/nrs.v4i01.78

[5] Ali Y, Khan S, Alamgir A, Younas M, Qayyum S. Prevalence of Workplace Violence against Female Nurses at Tertiary Care Hospital Karachi, Pakistan: Prevalence of Workplace Violence against Female Nurses. Pakistan Journal of Health Sciences. 2023 Jun: 296-300. doi: 10.54393/pjhs.v4i06.881.

[6] Daida YG, Boscarino JA, Moorman AC, Lu M, Rupp LB, Gordon SC *et al.* Mental and physical health status among chronic hepatitis B patients. Quality of Life Research. 2020 Jun; 29: 1567-77. doi: 10.1007/s11136-020-02416-6.

[7] Ali J, Sami F, Ali Y, Ali S, Qadir G. Overweight, Obesity and its Associated Factors among Nurses at Tertiary Care Hospitals Karachi: Overweight, Obesity and its Associated Factors. Pakistan Journal of Health Sciences. 2023 Jul: 13-8. doi: 10.54393/pjhs.v4i07.907.

[8] Herrscher C, Roingeard P, Blanchard E. Hepatitis B virus entry into cells. Cells. 2020 Jun; 9(6): 1486. doi: 10.3390/cells9061486.

[9] Iqbal M, Rakhia A, Raza FA, Ambreen A, Anwar O. Prevalence and Vaccination Status of Hepatitis B among Healthcare Workers in Allied Hospital of Faisalabad: A Cross-Sectional Study, 2017-18. Journal of Occupational Health and Epidemiology. 2019 Sep; 8(4): 185-9. doi: 10.29252/johe.8.4.185.

[10] Mehmood S, Raza H, Abid F, Saeed N, Rehman HM, Javed S *et al.* National prevalence rate of hepatitis B and C in Pakistan and its risk factors. Journal of Public Health. 2020 Dec; 28: 751-64. doi: 10.1007/s10389-019-01081-5.

[11] Khan S, Ali Y, Ahmed F, Mustafa G, Haider A, Rehman B. From Nerves to Knowledge: Class Room Anxiety among Nursing Students at Nursing Institutes in Pakistan. Journal of Population Therapeutics and Clinical Pharmacology. 2024 Mar; 31(3): 451–5. doi: 10.53555/jptcp.v31i3.4739.

[12] Akazong E, Tume C, Njouom R, Ayong L, Fondoh V, Kuiate JR. Knowledge, attitude and prevalence of hepatitis B virus among healthcare workers: a cross-sectional, hospital-based study in Bamenda Health District, NWR, Cameroon. BMJ Open. 2020 Mar; 10(3): e031075. doi: 10.1136/bmjopen-2019-031075.

[13] Machmud PB, Mikolajczyk R, Gottschick C. Understanding hepatitis B vaccination willingness in the adult population in Indonesia: A survey among outpatient and healthcare workers in Community Health Centers. Journal of Public Health. 2023 Dec; 31(12): 1969-80. doi: 10.1007/s10389-022-01775-3.

[14] Ali Y, Khan S, Ali J, Ejaz K, Fatima K, Qayyum S *et al.* Knowledge and Practices of Nurses Regarding Blood Transfusion in a Public Sector Hospital, Pakistan. Journal of Population Therapeutics and Clinical Pharmacology. 2024 Feb; 31(2): 84-91. doi: 10.53555/jptcp.v31i2.4238.

[15] Shah PD, Mehta TK, Patil LV. Interventional Knowledge, Attitude and Practice Study Regarding Hepatitis B Virus Infection and its Vaccination Using Educational Video among Health Care Workers. National Journal of Community Medicine. 2019 Mar; 10(03): 130-4.

[16] Abdela A, Woldu B, Haile K, Mathewos B, Deressa T. Assessment of knowledge, attitudes and practices toward prevention of hepatitis B virus infection among students of medicine and health sciences in Northwest Ethiopia. BMC Research Notes. 2016 Dec; 9: 1-7. doi: 10.1186/s13104-016-2216-y.

[17] Modawi HA. Knowledge, attitude, and practice (KAP) about Hepatitis B Infection among nursing students in Sabya College, Saudi Arabia. Electronic Physician. 2020; 12(3): 7752-8. doi: 10.19082/7752.

[18] Ray SS, Pattnaik S, Sharma AK. Hepatitis BA killer study of awareness and practice among dental students regarding hepatitis B infection and prevention. Age. 2017; 19(20): 114.

[19] Sannathimmappa MB, Nambiar V, Arvindakshan R. Hepatitis B: Knowledge and awareness among preclinical year medical students. Avicenna Journal of Medicine. 2019 Apr; 9(02): 43-7. doi: 10.4103/AJM.AJM_164_18.

[20] Swarnalatha N. Do nursing students know about hepatitis B? A study from nursing college in Tamil Nadu. International Journal of Health and Rehabilitation Sciences. 2014; 3(2): 69-74. doi: 10.5455/ijhrs.000000055.

[21] Ibrahim N and Idris A. Hepatitis B awareness among medical students and their vaccination status at Syrian Private University. Hepatitis Research and Treatment. 2014; 2014. doi: 10.1155/2014/131920.