ORIGINAL ARTICLE

VACCINATION STATUS AGAINST HEPATITIS B VIRUS AMONG YOUNG DOCTORS WORKING AT A PUBLIC SECTOR TEACHING HOSPITAL IN PESHAWAR

Imran Ullah, Iqbal Haider, Hameed Haidar Khan, Muhammad Ishaq, Sahal Arshad, Muhammad Fayyaz

Department of Medicine, Khyber Teaching Hospital, Peshawar - Pakistan

ABSTRACT

Objectives: To determine the vaccination status and to find out reasons why young doctors working in KTH do not opt for vaccination against HBV.

Material and Methods: This cross-sectional study was undertaken at Khyber teaching hospital, Peshawar, for four months. A self-administered questionnaire validated by Lynn Criteria and pilot testing for construct, face, and content validity was distributed among young doctors to obtain the vaccination rate and demographic data.

Results: Of the total 150 doctors, who participated in the study, 68.5% were vaccinated. Among them, 38.9% were fully vaccinated with three doses, while the rest were partially vaccinated. The barrier to completing Vaccination in our study population was work overload, negligence, and non-availability of the vaccine.

Conclusion: We observed a low rate of HBV vaccination among young doctors working at Khyber teaching hospital compared to our target vaccination rate. The major frame factors to complete Vaccination in our study population were work overload, negligence, and non-availability of vaccines. Different steps should be taken to ensure the Vaccination of all healthcare workers, including young doctors.

Keywords: Hepatitis B Virus, Vaccination, Healthcare professionals.

This article may be cited as: Ullah I, Haider I, Khan HH, Ishaq M, Arshad S, Fayyaz M. Vaccination status against Hepatitis B virus among young doctors working at a public sector teaching hospital in Peshawar. J Med Sci 2023 July;31(3):240-244

INTRODUCTION

Hepatitis B virus (HBV) infection is a worldwide health threat, affecting more than 2 billion people around the globe, including 350 million people as chronic carriers. It is the 10th major cause of death globally.[1] Approximately 5 million people are suspected of HBV infection in Pakistan.[2] HBV infection is still one of the significant threats to all healthcare personnel. This high incidence of hepatitis B virus infection is due to its mode of transmission. [3]

If we compare healthcare professionals (HCPs) to the general population, healthcare professionals have a higher incidence, approximately ten times greater than the general population.[4] The W.H.O. report showed that about 6% of HCPs are exposed yearly to blood-borne HBV infections corresponding to about 66,000 HBV infections among healthcare workers worldwide. [5]

Correspondence
Dr. Iqbal Haider
Associate Professor
Department of Medicine, Khyber Teaching Hospital,
Peshawar - Pakistan.
Cell: +92-313-9696102
Email: driqbalhaiderkth@gmail.com
Date Received: 19-04-2023
Date Revised: 08-7-2023
Date Accepted: 23 -7-2023

The presentation of hepatitis B infection ranges from mild flu-like illness and jaundice to cirrhosis and hepatocellular carcinoma. Such deadly consequences can be prevented by getting vaccinated against the virus. Various studies worldwide have been done regarding vaccination status among healthcare workers. Among such studies, one of the studies was done in India. A prospective study conducted over six months recruited 500 healthcare workers. The study showed that most healthcare workers were unvaccinated, and even those vaccinated had low titers of anti-HBs, so it was made compulsory among healthcare professionals to get vaccinated to check HBsAg and Anti-HBs regularly. [6] A cross-sectional study from Ethiopia among healthcare professionals concluded that vaccination status significantly varies based on the level of education and type of profession. Unavailability and cost of the vaccine were the significant barriers to un-vaccination. [7] Another study in India was done to identify the prevalence of hepatitis B infection among healthcare professionals and their vaccination status. The study results showed that many healthcare professionals are still unvaccinated, so policies should be made to screen, vaccinate, and check serological responses. Those with low titers of antibodies should get a booster dose. [8] A study in Nigeria among health care professionals was conducted to identify vaccination status. This study identified a low

uptake of hepatitis B vaccination among doctors; this was significantly influenced by knowledge of injection safety. [9]

Our research work aims to determine the Hepatitis B vaccination status among young doctors working in Khyber Teaching Hospital (KTH) and the possible barriers that cause hindrances in the complete vaccination process. The literature shows that Vaccination plays an integral part in preventing hepatitis B infection among healthcare professionals and the general population, and studies worldwide showed a low incidence of vaccination among healthcare professionals. So for this reason, hospitals should make policies to screen, vaccinate and check titers of antibodies regularly who are already vaccinated. Our study will focus on identifying the vaccination status of young doctors working in both surgical and medical wards of Khyber teaching hospital and the significant barriers faced by the doctors who are not vaccinated.

MATERIAL AND METHODS

This cross-sectional study was conducted in the Department of Medicine, Medical Teaching Institute, Khyber Teaching Hospital (MTI-KTH), Peshawar Pakistan after getting approval from Institutional Ethical Board (IREB Ref# 796/DME/KMC Dated 3-11-2022). The study population was young doctors, including house officers (HOs) and trainee medical officers (TMOs) working in the medical and surgical wards of KTH Peshawar.

A convenient consecutive sampling technique was used and the duration of the study was four months starting from November 15, 2022. The inclusion criteria were: 1. Young doctors, including both house officers (HOs) and trainee medical officers (TMOs) working in the Clinical departments of MTI-KTH; 2. Both male and female gender fulfilling the criteria; and 3. Working doctors only. Trainee Registrars/ Experiential Registrars/ Faculty of Clinical Departments starting from Experiential Registrar and above/ Doctors with a past and current history of HBV infections and on-leave/hospitalized doctors were excluded from this study. Our study sample comprised of 149 doctors including both HOs and TMOs (20 each from the surgical and medical wards of KTH).

The term “Young Doctors” in this study implies HOs and TMOs of either gender working in the medical and surgical wards of KTH. The term “Vaccination Status” applies to the vaccination status of the doctors, whether they are vaccinated or not against HBV, and if they are vaccinated so, whether are they fully vaccinated or partially vaccinated.

A questionnaire was developed for data collection. This questionnaire was validated for construct, face, and content validity. Lynn criteria were utilized for construct and content validity with 6 faculty members from the Department of Medicine MTI KTH Peshawar having a threshold value of 0.8 for each construct. Pilot testing involving non-participating final year MBBS students of KMC Peshawar (Total of 20) determine the face validity of this questionnaire.[10] This questionnaire was distributed among young doctors and filled by them. Content and face validity of the questionnaire was performed by pilot testing on ten TMOs who were not part of this research work. Data analysis was then conducted in SPSS version 22. Frequencies and percentages were obtained for qualitative (categorical) variables, while means and SD were obtained for quantitative (numerical) variables. The chi-square test was utilized to compare the relative frequencies of categorical data with a p-value of ≤ 0.05 as significant.

RESULTS

Our study sample size was 150 doctors of which 55 % were male and 45% were female participants. The percentage of HOs was 39.6%, while TMOs were 60.4%. All the relevant demographics are presented in Table no 1.

Among the study subjects, 102 doctors were vaccinated (68.5%), while the number and percentage of un-vaccinated doctors were 47 and 31.5% respectively. Among those who were vaccinated, some of them were partially vaccinated, and the rest were fully vaccinated. Among those, the percentage of those study members who had received only one dose was 12.1%, while for those receiving two doses, the percentage was 16.8% among the study members who had received all three doses. Only 18.4% of the sample had received the booster dose. The typical schedule followed was the conventional one, which accounts for 94.11%, while the accelerated schedule was followed in 4.9% of the cases. The most common reason for being vaccinated was to protect from the infection, which counts for 49%. The second most common reason was exposure to occupational hazards, i.e., needle stick injuries and other hazards, which count for 21.5%.

Only 8.26% of the population sample has checked their antibodies status after Vaccination. When asked how serious needle stick injuries can be after exposure, they all answered that the condition could be hazardous.

About 16.8% of the study population had previous exposure to needle stick injuries, and then different strategies were applied after the exposure to minimize the extent and consequences of the insult. When asked about the suggestion that would lead to a decrease in the burden of Hepatitis B infections in the health care workers community, many different possible suggestions were mentioned by the subjects, which include Vaccination (42.2 %), proper SOP protocol which needs to be followed before having exposure to patients (32.6%), proper use of PPE (11.89%), and proper disposal of the needles and sharp objects after usage (3.96%) (Table no 2).

The total percentage of the vaccinated population was 68.5%, of which 76.1 % were vaccinated. Among the

married doctors, only 64.1 % were vaccinated. The percentage of those subjects who had doctors in their families and were vaccinated was 77.6%, while those who did not have any family doctors and were vaccinated were 61.0%. One thing which was observed and was also expected was the 100% vaccination of those doctors who had family members or friends who were infected.

One worrisome thing was the non-vaccination status of that 16.0% of the doctors who were exposed to occupational hazards but were not vaccinated (Table# 3). The major reasons elaborated by these non-vaccinated HCPs were workload, negligence, procrastination, and non-availability of HBV vaccines at the institutional level.

DISCUSSION

Healthcare workers, including young doctors, are prone to infection with HBV. Thus they play an essential role in controlling the epidemic of HBV-related infections. The best approach to prevent HBV infection is through the complete vaccination course and observing protective measures when dealing with patients. A safe and effective vaccine is available throughout the globe. Complete three vaccination doses can prevent approximately 85-95 % of HBV-related deaths. [11, 12]

Despite the availability of an effective vaccine, many doctors still need to be vaccinated. Many different reasons creating hurdles in the drive for adequate vaccination coverage among health workers have been found. Among those, the most common reason includes the cost, availability of vaccines, demanding routine schedule, and being too lazy to get vaccinated.[13]

The vaccination rate in our study population was 68.5%, which is low compared to different studies conducted across the globe and in Pakistan.[14] Different studies have been conducted across different hospitals in Pakistan, where the percentage of vaccinated HCPs varied.[15] The vaccination percentage in Allama Iqbal, medi-

Table 1: Demographic profile of study participants

Variable		Frequency	%
	Mean age	**2.069 ± 26.40**	
Gender	Male	82	55.0
	Female	67	45.0
Designation	HO	59	39.6
	TMO	90	60.4
Type of residency	Rural	60	40.3
	Urban	89	59.7
Marital status	Single	110	73.8
	Married	39	26.2
Any doctor in the family	No	82	55.0
	Yes	67	45.0
Family member infected	No	147	98.7
	Yes	2	1.3
Friends infected	No	146	98.0
	Yes	3	2.0

Table 2: Vaccination status, reasons, personal experience, attitude, and suggestion of study participants

Variables		F	%
Variables F %	**Yes**	**102**	**68.5**
	No	47	31.5
Number of doses	1	18	12.1
	2	25	16.8
	3	58	38.9
	4	1	0.7
Schedule	Accelerated	5	4.9
	Conventional	96	94.11
	Unknown	1	0.98
Reason for getting Hep-B Vaccination	Occupational Exposure	32	21.5
	Offered free of cost	2	1.3
	Part of the Workplace Requirement	3	2.0
	Self-protection	73	49.0
	Unvaccinated	21	14.1
	Others	18	12.1
Booster dose	No	102	81.6
	Yes	23	18.4
Antibody status	No	111	91.73
	Yes	10	8.26
Attitude Towards Vaccination	Institution Bound	11	6.7
	Vaccinated because of institution	3	1.8
	Personal Protection	43	26.38
	Vaccinated because of personal choice	95	58.28
	Occupational Exposure	11	6.7
How Dangerous Needle Stick Injury Is?	Can be serious	1	0.7
	Dangerous	1	0.7
	Very dangerous	148	98.6
Personal Experience with Needle Stick	No	124	83.2
	Yes	25	16.8
Measures Taken	Saline wash	17	47.2
	Vaccination	12	33.3
	Pyodine	4	11.11
	Serology	3	8.33
Suggestions	Vaccination	96	42.29
	Proper use of PPE	27	11.89
	Follow SOPs	74	32.60
	Safety precautions	12	5.28
	Mass Vaccination	9	3.96
	Proper disposal	9	3.96

cal college Lahore, was 49%, 86% in Aga Khan University Hospital Karachi, 50% in National Institute of Child Health Karachi, 64.6% in Liaquat University Hospital Jamshoro, 71.8% in Sir Ganga Ram Hospital/ Fatima Jinnah Medical College Lahore, 76.05% in King Edward Medical University Lahore and 52% in Dow Medical College and Civil Hospital, Karachi.[11] Another study conducted at LRH Peshawar showed that only 65.6% of the total sample population was vaccinated, and among these, only 66% had completed the whole three doses course of Vaccination.[12] A significant difference was observed in the percentage of vaccination in HCPs before and after they started a professional life at a hospital. A study showed 605 (73.42%) HCPs who had completed their HBV vaccination, of which 83(13.7%) had completed their vaccination before starting a professional life at a hospital. In comparison, 522 (86.3%) received their vaccination after it. [16, 17]

Hepatitis B infection is still a significant risk for healthcare workers, who are exposed to it in many ways. Our study showed the vaccination status of young doctors, which is below the expected target. The current study tried to determine the different hurdles, which is making it a challenge to achieve our target vaccination rate. By eliminating these hurdles and facilitating our healthcare workers, we can achieve our 100% vaccination target of healthcare workers. We hope our study can be used for future research purposes and as a source of awareness for young doctors who need to be vaccinated so that we can halt the spread of this infection.

Following are the recommendations to improve HBV vaccination in Pakistan: enhance awareness campaigns both in public and among healthcare professionals, improve the accessibility of HBV vaccines to all people, make it a mandatory prerequisite for all school/college admissions, appear in high stake examinations and job recruitment, encourage the families to utilize EPI vaccination programs, identify and target high-risk groups, training healthcare professionals, engage all stakeholders, monitoring, and surveillance and minimize the stigma pertinent to vaccines. All these measures are impossible without effective government support.

A single-centered, cross-sectional study with convenient sampling is the main limitation of this study. A multi-centered trial with both quantitative and qualitative perspectives of research should be conducted to avail deep insight into this problem.

CONCLUSION

A significant portion of young doctors is still unvaccinated, even though young doctors have good knowledge and understanding of the role of vaccination against HBV infection. The major frame factors are workload, negligence, procrastination, and non-availability of HBV vaccines at the institutional level.

More awareness about the effectiveness and an increase in access to vaccination needs to be done to achieve our target of 100% vaccination. The Hospital vaccination board needs to prioritize the vaccination of those unvaccinated doctors by providing them with free-of-cost vaccine availability. Vaccination including booster dose should be adopted as a mandatory step for exit examination at both undergraduate and postgraduate high stake medical education.

REFERENCES

1. Singhal V, Bora D, Singh S: Hepatitis B in health care workers: Indian scenario. Journal of Laboratory Physicians 2009,1(2):41–48. 10.4103/0974-2727.59697.
2. Jaffri W. Around 5 million suspected hepatitis B virus carriers in Pakistan. Daily Times. May 20, 2010.
3. WHO, Guidelines for The Prevention, Care, and Treatment of Persons with Chronic Hepatitis B Infection. Geneva, 2015, http:// www.who.int/hiv/pub/hepatitis/hepatitis-b-guidelines/en
4. Centers for Disease Control and Prevention, CDC guidance for evaluating healthcare personnel for hepatitis b virus protection and for administering post-exposure management, Morbidity and Mortality Weekly Report (MMWR) 2013; 62 (10).
5. A. Pruss-Ustun, E. Rapiti, and Y. Hutin. Estimation of the global burden of disease attributable to contaminated sharps injuries among healthcare workers. The Am J of Indust Med. 2005; 48 (6): 482–90.
6. Batra V, Goswami A, Dadhich S, Kothari D, Bhargava N. Hepatitis B immunization in healthcare workers. Annals of Gastroenterology: Quarterly Publication of the Hellenic Society of Gastroenterology. 2015; 28(2): 276.
7. Biset Ayalew M, Adugna Horsa B. Hepatitis B Vaccination Status among Health Care Workers in a Tertiary Hospital in Ethiopia. Hepato Res Treat 2017; 65: 6470658. doi: 10.1155/2017/6470658.
8. Singhal V, Bora D, Singh S. Prevalence of hepatitis B virus infection in healthcare workers of a tertiary care center in India and their vaccination status. J Vaccines Vaccin 2011; 2(2): 1-4.
9. Obi A, Ofili A. Hepatitis B Vaccination Uptake among Doctors in Benin City, Edo State, Nigeria. Journal of Community Medicine & Health Education 2013;3(7): 246-9.
10. Yusoff MSB. ABC of Content Validation and Content Validity Index Calculation. Education in Medicine Journal 2019; 11(2):49-54. DOI:10.21315/eimj2019.11.2.6
11. Jadoon NA, Shahzad A, Yaqoob R, Raza Ali, Hussain. Hepatitis B Vaccination status of Health care workers at a tertiary care hospital in Multan. Int J Infect Dis 2010; 14: 180-4. 10.1016/S1201-9712(10)60180-4.
12. Mast EE, Alter MJ, Margolis HS. Strategies to prevent and control hepatitis B and C Virus Infections: A global perspective. Vaccine 1999; 17: 1730–3. doi: 10.1016/S0264-410X(98)00415-0.
13. Haider I, Badshah A, Yousaf A. Knowledge, Attitudes and

Practices (KAP) Study Among Medical And Dental Students Regarding Hepatitis B Vaccination. J of Med Sci 2018: 26(4), 287–91.

14. Khan MI, Rahman S, Ur, Khan S. Knowledge And Practices About Viral Hepatitis in Blood Bank Staff at A Tertiary Care Transfusion. J of Med Sci 2017; 25(4): 409–13.
15. Haider I, Humayun M. The Global Burden Of Hepatitis And Efforts For Its Eradication. J Of Med Sci 2017; 25(3): 281-2.
16. Ahmed H, Rauf MA, Farooqi JI, Khan NS, Ali N, Jan KZ, et al. Status and attitude towards Hepatitis B virus vaccination in the staff of Lady Reading Hospital Peshawar. J Postgrad Med Inst 2011; 23 (3): 182- 9.
17. Attaullah S, Khan S, Naseemullah K, Ayaz S, Khan SN, Ali I, et al. Prevalence of HBV and HBV vaccination coverage in tertiary healthcare workers of tertiary hospitals Peshawar, Pakistan. Virol J 2011; 8: 275- 8. doi: 10.1186/1743-422X-8-275.

CONFLICT OF INTEREST: Authors declare no conflict of interest

GRANT SUPPORT AND FINANCIAL DISCLOSURE: NIL

AUTHOR'S CONTRIBUTION

Following authors have made substantial contributions to the manuscript as under

Ullah I: Concept, Design,

Haider I: Acquisition and critical review

Khan HH: Analysis and interpretation of data

Ishaq M: Data collection

Arshad S: Data collection

Fayyaz M: Bibliography and proofreading

Authors agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.