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Knowledge, Attitude and Practice of Hepatitis B Vaccination among Health Care Workers at Manipal Teaching Hospital

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ABSTRACT

Background

Hepatitis B vaccine is the single most effective and safest strategy for the prevention of the disease among health care workers. Despite the knowledge, higher occupational risk among themselves and increasing prevalence of hepatitis B virus worldwide, there is scanty information on knowledge, attitude and practice (KAP) concerning HBV vaccination among health care workers in our country.

Objective

To understand the knowledge, attitude and practice of hepatitis B vaccination among health care workers at Manipal Teaching Hospital at Pokhara, Gandaki Province in Nepal.

Method

Four hundred and eight health care workers were enrolled for an observational, cross-sectional study at Manipal Teaching Hospital, Gandaki Province, Nepal after obtaining ethical clearance from Institutional Review Committee. Pre-tested questionnaire including knowledge, attitude and practice regarding hepatitis B vaccination were studied.

Result

All participants demonstrated good knowledge and positive attitude towards Hepatitis B infection and vaccination. However many had risky practice towards it. Only about half (51.7%) of these participants were completely vaccinated. The most common reason for non vaccination was negligence.

Conclusion

Despite good knowledge and positive attitude towards hepatitis B infection and vaccination, low rates of vaccination and risky practice was observed among HCW. Various occupational, behavioural, economical and psychological factors associated with it must be explored. Easy availability of vaccine, regular hepatitis B campaigns must be conducted and policy guidelines need to be formulated by the government to manage all aspects of knowledge, attitude and practice of HCWs regarding hepatitis B vaccination.

KEY WORDS

Attitude, Health care, Hepatitis B, Knowledge, Practice, Vaccination

INTRODUCTION

Hepatitis B virus (HBV) infection is a worldwide healthcare problem.[1] After infection with HBV, 10% of the patients develop chronic hepatitis and about 15-25% develop cirrhosis. Half of these individuals later develop hepatic decompensation or hepatocellular carcinoma.[2]

Healthcare workers (HCW) constitute one of the high-risk groups for this infection. The disease is mainly transmitted by percutaneous or mucosal exposure to infected blood or other bodily fluids.[3,4] World Health Organization (WHO) has recommended vaccination for all infants, children and adolescents younger than 18 years age and for all high-risk groups which include people with high-risk sexual behavior, partners and household contacts of infected ones, injecting drug users, people who frequently require blood products, recipients of solid organ transplantation, people at occupational risks of Hepatitis B virus infection.[5] Hepatitis B vaccine is the single most effective and safe strategy for the prevention of the disease. It provides more than 90% effective protection after all 3 doses.[6] Despite the knowledge and higher vulnerability among health professionals, the WHO estimate showed that HBV vaccination coverage among HCW is low.[5]

Studies are scanty in this region of the country about the prevailing knowledge, attitude and practice of hepatitis B vaccination among health care workers who are especially prone to occupational exposure and at risk.

This study aims to address the knowledge, attitude and practice of hepatitis B vaccination among health workers at Manipal Teaching Hospital at Pokhara, Gandaki Province in Nepal. This study will also explore various factors associated with vaccination.

METHODS

This observational, cross-sectional hospital based study involving pre-tested questionnaire was carried out under Medicine Department at Manipal Teaching Hospital, at Pokhara, Gandaki Province, Nepal in the month of May and first week of June 2020. The study was conducted after obtaining ethical clearance from Institutional Research Committee (MEMG/IRC/327-329/GA) and informed consent from study participants. This teaching hospital is a multi specialty 750 bedded tertiary care centre with more than 800 healthcare workers. It has a catchment population of about 2 million which is just about 9.06% of the total population of Nepal.[7]

The sample size was collected using the formula,

$n = (Z^2 \times p \times q)/e^2$

$= (1.96)^2 \times 0.6 \times 0.4/(0.05)^2$

$= 368.79 \sim 369$

Where, Z= 1.96 (At 95% confidence interval)

p= 60% (prevalence in a previous Nepalese study by Gurubacharya et al.[8])

q= 1-p and e= margin of error (0.05 i.e. 5%)

So, the minimum sample size adequate for the study was 369. All categories of health care workers including doctors, nurses, and diagnostic laboratory technicians working in different departments were included in the study. Subjects who filled the questionnaire incompletely were excluded from the study. The questionnaire was categorized into 3 sections: section 1- knowledge, section 2- attitude, section 3- practice of Hepatitis B Vaccination. Each correct response was scored as one mark and incorrect or non response was scored zero. Level of knowledge was graded as good or adequate for participants who scored ≥ 50% and poor when < 50%. Similarly, for attitudes and practices, participants achieving ≥ 50% were classified as having positive attitudes and safe practices, respectively and < 50% as having negative attitude and risky practices.

The data analysis was done using Statistical Packages for the Social Sciences 20. (IBM Corp. Released 2011. IBM SPSS Statistics for Windows, Version 20.0. Armonk, NY: IBM Corp.). All categorical data were expressed in percent and absolute number. All numerical continuous data were expressed in mean ± SD. Chi squared test was used to test for significant difference of proportions. All tests were analyzed with a 95% confidence interval and a p value of < 0.05 was considered significant.

RESULTS

The semi structured questionnaire was distributed to 440 health care workers at Manipal Teaching Hospital. However they were returned and answered by only 408 HCW. The response rate was thus 92.7%. The study participants comprised of 96 males and 312 females (M:F =1:3.1). The mean age of participants was 25.4 ± 5.6 with range of 19 - 56 years of age. The study participants comprised of 240 nurses, 108 intern doctors, 24 post graduate resident doctors, 24 laboratory technicians and 12 consultant doctors. Table 1 shows the demographic profile of participants.

Knowledge about Hepatitis B vaccination

Majority 384 (94.1%) of the respondents had good knowledge of hepatitis B infection and vaccination. The mean knowledge score of the study subjects was 69.12 ± 16.89. (Table 2)

All (100%) participants knew that hepatitis B virus can be acquired through needle stick injury. Majority of 324 (79.4%) knew that hepatitis B is not spread just by handshaking but only 146 (35.8%) knew that Hepatitis B was 50-100 times infectious than HIV. Majority of 354 (86.8 %) knew that an effective hepatitis B vaccine exists but only 316 (77.4%) knew its recommended complete dosing schedule. Majority of 252 (61.8%) knew that complete

Table 1. Demographic profile of study participants

Variables	Number (N)	Percentage (%)
Sex		
Male	96	23.5
Female	312	76.5
Age (years)		
< 30	322	78.9
30-50	83	20.35
> 50	3	0.75
Profession		
Nursing	240	58.8
Internship Doctors	108	26.5
Post Graduate resident Doctors	24	5.9
Consultant Doctors	12	2.9
Lab Technicians	24	5.9
Years of work experience		
< 5 years	228	55.9
≥ 5 years	180	44.1
History of professional exposure or needle injuries	56	13.7
Screening for Hepatitis B in the past		
Yes	336	82.4
No	72	17.6

Table 2. Grading of Knowledge, Attitude and Practice of Hepatitis B Vaccination

Grade	Knowledge Frequency (%)	Attitude Frequency (%)	Practice Frequency (%)
Good (score ≥50%)	384(94.1)	396(97.1%)	116(28.4)
Poor (score ≤50%)	24(5.9)	12(2.9)	292(71.6)
Total	408(100)	408(100)	408(100)
Mean score (%)	69.12±16.89	80.59±12.83	40.34±23.81

dose of hepatitis B vaccine was 95% effective but only 160 (39.2%) knew that it could provide protection for at least 20 years. The knowledge that post vaccination test is necessary to detect the immunization status and the value must be > 10 IU/ml was observed in 140 (34.3%) and 122 (29.9%) respectively. (Table 3)

Attitude towards Hepatitis B vaccination

Majority 396 (97.1%) of the respondents had positive attitude towards hepatitis B infection and vaccination. The mean attitude score of the study subjects was 80.59 ± 12.83. (Table 2)

Majority 326 (79.9%) showed a positive attitude that HCW are at risk and 372 (91.2%) felt that they need to be protected from hepatitis B. Majority 336 (82.4%) knew their hepatitis B status. Many 338 (82.8%) considered it was a safe vaccine and 276 (67.6%) trusted its efficacy. Three hundred and forty six (84.8%) viewed that vaccination must be compulsory to HCW, 364 (89.2%) felt that more

Table 3. Knowledge about Hepatitis B vaccination in study participants

Variables	Doctors N=144 correct response (%)	Nurses N= 240 correct response (%)	Lab. Tech. N= 24 correct response (%)	Total N=408 correct response (%)
Hepatitis B virus can be acquired through a needle stick injury	144 (100)	240(100)	24(100)	408(100)
Hepatitis B Virus is not spread by hand shaking	144(100)	160 (66.7)	20(83.3)	324(79.4)
Hepatitis B is 50–100 times more infectious than HIV	80(55.6)	60(25)	6(25)	146(35.8)
There is effective vaccine for hepatitis B	144(100)	188(78.3)	22(91.7)	354(86.8)
Hepatitis B vaccine dosing 0,1,6 months : 3 doses	136(94.4)	164(68.3)	16(66.7)	316(77.4)
Complete dose of hepatitis B vaccine is 95% effective	108(75)	132(55)	12(50)	252(61.8)
It provides protection for at least 20 years	74(51.4)	72(30)	14(58.3)	160(39.2)
A patient who has fully recovered cannot infect others	124(86.1)	164(68.3)	16(66.6)	304(74.5)
Post hepatitis B vaccination test is necessary	60(41.7)	72(30)	8(33.3)	140(34.3)
For protection against Hepatitis B, one needs antibody titer of > 10 IU/ml	72(50)	44(18.3)	6(25)	122(29.9)

HCW would be vaccinated if provided for free and 388 (95.1%) believed that regular vaccination campaigns must be conducted in the hospitals. 368 (90.2%) were willing to receive or complete their hepatitis B vaccination if non or incomplete vaccinated and 220 (53.9%) would recommend vaccination to their friends at work (Table 4).

Practices towards Hepatitis B vaccination

Majority 292 (71.6%) of the respondents had risky practice against hepatitis B infection and vaccination. The mean practices score of the study subjects was 40.34 ± 23.81 (Table 2).

Two hundred and ninety (71.1%) HCW had vaccinated at least once but complete vaccines were received by only 211 (51.7%). Among the respondents, only 46 (11.3%) participants had screened for their hepatitis status before vaccination and 48 (11.8%) checked their immune status post vaccination. The best complete vaccination practice was amongst the lab technicians 22 (91.7 %), followed by doctors 85 (59.1%) and the bad practice was amongst the nurses 104 (43.3%). The practice of screening for hepatitis was bad (below 25%) among all HCW.

Table 4. Attitude towards Hepatitis B Vaccination in study participants

Variables	Doctors N=144 positive response (%)	Nurses N= 240 positive response (%)	Lab. Tech. N= 24 positive response (%)	Total N=408 positive response (%)
Are you at occupational risk ?	126(87.5)	176(73.3)	24(100)	326(79.9)
Do you feel you need to be protected from HB infection	144(100)	204(85)	24(100)	372(91.2)
Do you know your hepatitis status	104(72.2)	208(86.7)	24(100)	336(82.4)
Is HB vaccine safe?	136(94.4)	180(75)	22(91.7)	338(82.8)
Trust efficacy of HBV vaccine	96(62.5)	164(68.3)	16(66.7)	276(67.6)
HB vaccination should be made compulsory for health workers	132(91.7)	190(79.2)	24(100)	346(84.8)
If vaccine provided by free from hospitals, more HCW will be vaccinated	124(86.1)	220(91.7)	20(83.3)	364(89.2)
Regular vaccination campaigns must be conducted in hospitals	144(100)	220(91.7)	24(100)	388(95.1)
Willing to receive or complete their Hepatitis B vaccination	136(94.4)	208(86.7)	24(100)	368(90.2)
Willing to recommend Hepatitis B Vaccination to friends	104(72.2)	96(40)	20(83.3)	220(53.9)

Factors associated with non vaccination against Hepatitis B

More than 1/3rd (28.8%) comprising of 118 HCW never received even a single dose of hepatitis B vaccine. The most common reason for non vaccination was negligence in 43 (36.4%) followed by never felt or realized in 14 (13%), afraid of injection in 12 (10.1%), no history of needle injuries or occupational exposure so far in 12 (10.1%) and 37 (9.1%) had no reasons.

Association between Characteristic of Respondents and Level of Knowledge for Hepatitis B Vaccination

All HCW including doctors, nurses and lab technicians showed a good knowledge overall. Among the nurses, those working in inpatients department had better knowledge than those working in OPDs. All HCW of at least 5 years of experience possessed a better knowledge. There was statistically significant association between workplace of HCW ($p < 0.001$) as well as duration of work of > 5 years ($p < 0.001$) and level of knowledge of hepatitis B virus vaccination (Table 5).

Table 5. Association between Characteristic of Respondents and Level of Knowledge

Variables	Good knowledge n (%)	Poor knowledge n (%)	Statistics
HCW/work station			
Dialysis Nurses	12 (100)	0 (0)	Chi sq. test =9.99 df = 2 p <0.001
ICU Nurses	24 (100)	0 (0)	
OPD Nurses	12 (50)	12 (50)	
Operation Theatre Nurses	12 (100)	0 (0)	
General Ward Nurses	156 (92.9)	12 (7.1)	
Lab Technician	24 (100)	0 (0)	
Doctors	144 (100)	0 (0)	
Work < 5 years	204 (89.5)	24 (10.5)	
Work ≥ 5 years	180 (100)	0 (0)	

Association between Characteristic of Respondents and Level of attitude for Hepatitis B Vaccination

All HCW including doctors, nurses and lab technicians showed a positive attitude overall. Among the nurses, those working in inpatients department had positive attitude than those working in OPDs. All HCW of at least 5 years of experience possessed better positive attitude. There was statistically significant association between workplace of HCW ($p < 0.001$) as well as duration of work of > 5 years ($p < 0.001$) and level of attitude towards hepatitis B virus vaccination (Table 6).

Table 6. Association between Characteristic of Respondents and Level of attitude

Variables	Positive attitude n (%)	Negative attitude n (%)	Statistics
HCW /work station			
Dialysis Nurses	12(100)	0	Chi sq. test = 8.65 df = 2 p < 0.001
ICU Nurses	24(100)	0	
OPD Nurses	12(50)	12	
Operation Theatre Nurses	12(100)	0	
General Ward Nurses	168(100)	0	
Lab Technician	24(100)	0	
Doctors	144(100)	0	
Work < 5 years	204(89.5)	24(10.5)	
Work ≥ 5 years	180	0	

Association between Characteristic of Respondents and practice for Hepatitis B Vaccination

All HCW including doctors, nurses and lab technicians showed a risky practice overall. The safest practice was elicited by ICU nurses followed by dialysis nurses and lab technicians. Very poor risky practice was seen among OPD and ward nurses. There was statistically significant association between workplace of HCW ($p < 0.001$) as

well as duration of work of < 5 years (p < 0.001) and risky practice towards hepatitis B virus infection and vaccination (Table 7)

Table 7. Association between Characteristic of Respondents and practice

Variables	Safe Practice n (%)	Risky Practice n (%)	Statistics
HCW/work station			
Dialysis Nurses	9(75)	3(25)	Chi sq. test =11.90 df = 2 p <0.001
ICU Nurses	21(87.5)	3(12.5)	
OPD Nurses	0(0)	24(100)	
Operation Theatre Nurses	7(58.3)	5(41.7)	
General Ward Nurses	24(14.3)	144(85.7)	
Lab Technician	18(75)	6(25)	
Doctors	40(27.8)	104(72.2)	
Work < 5 years	43(18.9)	185(81.1)	
Work ≥ 5 years	73(40.6)	107(59.4)	

DISCUSSION

The mean age of participants was 25.4 ± 5.6 in the current study. The mean age was higher (35.6 ± 7.9) in the Nigerian study by Abiola et al.[9] In the current study, majority (94.1%) of the respondents had good knowledge of hepatitis B infection and vaccination. The mean knowledge score of the study subjects was 69.12 ± 16.89. Whereas, in the Nigerian study, by Abiola et al. 70.2% had good knowledge and the mean knowledge score (%) was 61.2 ± 20.7.[9]

All participants in our study reported the knowledge of acquiring hepatitis B through a needle stick injury whereas it was (90.4%) and 90% in Nigeria by Abiola et al. and in Northern Nigeria by Fufore et al. respectively.[9,10] In the current study, 35.8% knew that Hepatitis B was 50-100 times infectious than HIV. It was almost similar (36.9%) in the Nigerian study by Abiola et al.[9] Majority (86.8%) were aware of the existence of an effective vaccine against hepatitis B infection in the current study whereas it was (67.9%) according to Abiola et al.[9] Majority (61.8%) in the study knew that complete dose of hepatitis B vaccine was 95% effective whereas it was 86.9% in the study by Abiola et al.[9] Minority of 29.9% in our study and 49.4% by Abiola et al. knew that it could provide protection for at least 20 years.[9] The knowledge that post vaccination test is necessary for immunization status was observed in 34.3% in the current study whereas it was 45.1% by Abiola et al.[9] Only 29.9% in our study knew that one needs anti-HBs titer level of > 10 mIU/ml in order to be protected against HBV, whereas it was 41.3% by Abiola et al.[9]

Attitude towards hepatitis B vaccination was good among 97.1% in the current study. Whereas, it was 100% in the Nigerian study by Abiola et al.[9] The mean attitude score were 80.59 ± 12.83 in our and it was 92.9 ± 14.3 in the Nigerian study. In this study, 79.9% considered themselves to be at risk of HBV infection; whereas 84.5%, 84% and 75.9% felt they were at risk in the studies by Abiola et al. Fufore et al. and Akibu et al. respectively.[9-11] About 95.2% recommended that hepatitis B vaccination should be made compulsory for HCW in this study, whereas, 84.3% 85.0% and 51.2% recommended for compulsory vaccination in the studies by Abiola et al., Fufore et al. and Akibu et al. respectively.[9-11] In the current study, 90.2% were willing to receive or complete the vaccine if provided. It was similar (90.4 %) in the study by Fufore et al.[10]

Majority (71.6%) in the current study and 84.5% in the Nigerian study by Abiola et al. had risky practice against hepatitis B infection and vaccination.[9] The mean practice score of the study subjects was 40.34 ± 23.81 in our study and it was 24.2 ± 25.0 by Abiola et al.[9] More than half (71.1%) of the HCW reported history of vaccination at least once in the current study whereas it was 57.7% in the Ethiopian study by Akibu et al.[11] Only 51.7% received the recommended three doses of the vaccine in the current study. In a previous Nepalese study by Gurubacharya et al. 60% were vaccinated against hepatitis B.[8] It was 44.5%, 30.0% and 16.5% in the studies by Akibu et al. Fufore et al. and Abiola et al. respectively.[9-11] Complete vaccination against hepatitis B was 58.4%, 60% and 49% in a Malaysian study by Hesham et al., Chinese study by Yuan et al. and in a Pakistan study by Nasir et al. respectively.[12-14] All these studies suggest that vaccination status among HCW in many countries including Nepal is still low.

Post vaccination antibody titer was tested by 11.8% in the current study. Only 36.8% in Nepal by Gurubacharya et al. and 9.9% in Nigeria by Abiola et al. tested for Anti HbS antibodies.[8,9] In our study, with work experience of ≥ 5 years, they had twice greater chance of receiving the vaccine. This was 3 times more in the study by Akibu et al.[11]

The most common reason for non vaccination in the current study was negligence in (36.4%) followed by never felt or realized in (13%), afraid of injection in (10.1%) and no history of needle injuries or occupational exposure so far in others (10.1%). Majority (67.6%) in the Nigerian study by Abiola et al. said the most common reason for non vaccination was non availability.[9] In an Indian study by Joshi et al. the commonest reason for not getting vaccinated was negligence in 43.1%.[15] Akibu et al. in Ethiopia reported that the common reasons for not vaccinated were high cost of the vaccine (41%) and unavailability of the vaccine (36%).[11] In a study in Pakistan by Jadoon et al. most common reasons for non-vaccination were forgetting dosage schedule, lack of awareness, laziness and negligence respectively.[16] These were the various reasons mentioned about the poor practice of hepatitis B vaccination in the various studies.

CONCLUSION

Despite the good knowledge and positive attitude towards Hepatitis B infection and vaccination, it is difficult to understand and explain the various reasons why HCW are not vaccinated and have risky practice towards it. Only about half (51.7%) of these participants had received the recommended three doses of the vaccine. The best complete vaccination practice was amongst the lab technicians (91.7%), followed by doctors (59.1%) and the bad practice was amongst the nurses (43.3%). The most common reason for non vaccination was negligence. Further studies are necessary to explore various occupational, behavioural, economical and psychological factors associated with it.

There must be easy availability of vaccines to health care workers at workplace. Regular hepatitis B vaccination educational programme and workshops must be conducted by hospitals and institutions. Government need to formulate practical guidelines to increase its acceptance and coverage among health care workers.

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