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Knowledge, Attitude and Vaccination status of Health Care Workers against hepatitis B virus infection in Kabul

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Abstract

Background: Hepatitis B virus (HBV) infection is a well-recognized public health problem across the globe. Health care workers (HCWs) are high-risk groups to obtain HBV infection due to direct interaction with HBV-infected blood and body fluids in their workplace. Improving health education, following standard precautions, vaccination of high-risk groups and post-exposure prophylaxis are the most actual methods for prevention and control of this infection. Finding the level of knowledge, attitude, and practices (KAP) among HCWs will be helpful in implementing measures for prevention and control of this infection.

Objective: The purpose of this research was to assess KAP of Health care workers towards Hepatitis B infection in Kabul.

Methods: This cross-sectional study was conducted from November 2018 to January 2019. Five hundred and two health care workers were included using a simple random sampling method. The tool for data collection was a self-administered structured questionnaire. The collected data were statistically analyzed with SPSS 16.00.

Results: The overall knowledge, attitude and practice scores of HCWs were 86.58%, 34.73%, and 61.22% respectively. HCWs who were well educated, showed better knowledge than those with low educational level ($p < 0.0001$) and women showed a better level of knowledge compared to men ($p < 0.05$). Majority of the participants had poor attitude towards HBV prevention (53.98%). Only 77.45% of participants had been screened for HBV. Only 56.37% of participants had got vaccinated against HBV, out of them only 5.17% had completed three doses of vaccine.

Conclusion: The results of this study show that HCWs in Kabul are at higher risk of acquiring HBV infection due to low vaccination coverage and poor preventive practice, requiring provision of free and compulsory vaccination and awareness and educational programs.

Keywords: *hepatitis, Hepatitis B virus, Kabul, health care worker*

Introduction

Hepatitis B virus (HBV) infection is a well-recognized public health problem across the globe, which causes significant mortality and morbidity [1]. Approximately 2 billion people are reported to be infected with HBV worldwide, of whom 257 million have chronic infection [2]. HBV infection can cause a wide range of manifestations including acute or chronic hepatitis, liver cirrhosis and hepatocellular carcinoma (HCC) [3- 5].

Health care workers (HCW) have been recognized as a high-risk group for acquiring HBV infection due to job-related exposure and direct contact with HBV-infected blood and body fluids in their workplace. The incidence of this infection among HCWs have been reported 4 times higher than the ordinary people [6- 12]

According to estimations by the World Health Organization (WHO), from 35 million HCWs worldwide, nearly 2 million are infected with HBV in their workplace with accidental injuries [9-**11**]. This HCWs occupational exposure risk to HBV infection is more prevalent in developing countries due to the high incidence of HBV among the general population and poor hygienic state of health care settings [13-15].

The most efficient approaches for prevention and control of hepatitis B virus infection are health education for both infected and uninfected high-risk groups, implementation of standard precautions such as regular personal hygiene; use of protective barriers like gloves, proper sterilization of medical equipment and proper disposal of sharps, body fluids, and other clinical wastes in health care institutions [9] and pre-exposure vaccination. Additionally, Post-exposure prophylaxis with HBV vaccine and hepatitis B immunoglobulin (HBIG) or both can be used within 24 hours of exposure [6, 16].

Administration of Hepatitis B vaccine is the mainstay of HBV prevention and has been reported very effective and safe which can provide lifetime protection [17]. Therefore, as part of work-related protection measures, it has been suggested that all HCWs should receive the vaccination against HBV infection. HCWs who are HBV negative after screening should take hepatitis B vaccination, while those who are HBV positive should be treated. In spite of this recommendation, vaccination coverage among HCWs, particularly in developing countries has been very poor and remains a challenge for them. According to reports by WHO, HBV vaccination coverage is only 18–39 % in low–and middle–income countries (LMIC) while it has been reported 67–79 % in high-income countries [17, 18]

HCWs play a vital role in the prevention and control of HBV infection. HCWs have the chances to deliver information to patients and society and can help foster the behavior changes needed to prevent the spread of infectious diseases. In some studies, lack of knowledge and negative attitudes among HCWs have been suggested as obstacles for providing health education and management of HBV infections [19]. By

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evaluating the knowledge, attitude and practices (KAP) of HCWs we can determine the required actions to be taken in order to prevent and control HBV infection among HCWs. Moreover, if health care workers are well trained and have good knowledge of HBV infection, they can play a significant role in the implementation of HBV control and prevention programs. This study aimed to assess the level of knowledge, attitude, and practice of HCWs toward hepatitis B infection.

Method

Study site and population

This Institutional based cross-sectional study was conducted from November, 2018 to January 2019 to evaluate the knowledge, attitude, and practice of health care workers towards hepatitis B infection. The study was carried out in 12 public and private hospitals located in four different parts of the Kabul city (south, north, east, and west). HCWs were consisting of doctors, Nurses, Midwives, Pharmacists, Medical Laboratory Technologists, dentists and Anesthetists working in the public and private hospitals. Patients and non-professional workers of hospitals were excluded from the study. 502 participants were selected using simple random sampling technique to select eligible study participants.

Data collection

The tool for data collection was a self-administered structured questionnaire. The questionnaire contained 22 questions aiming to assess awareness, attitudes, and practice of health care workers towards HBV infection. The questionnaire had four parts; the first part questions sought information about socio-demographic characteristics of HCWs (age, sex, profession, qualification). The second part questions (11 questions) aimed to assess knowledge of HCWs regarding transmission and prevention of HBV infection. The third part (6 questions) dealt with assessing attitudes towards the disease and prevention; the fourth part questions (5 questions) were related to the practice of HBV prevention.

Statistical analysis

Data were entered and analyzed in SPSS version 16.0 software. Percentages and mean ± standard deviation for variables were used to analyze the findings of the study. Those participants who answered 70% of knowledge questions correctly were considered to have good knowledge; those with less than 70% of correct answer were said to have poor knowledge. Participants with 70% of correct responses to attitude questions were regarded to have a positive attitude and those with less than 70% of correct answers in attitude items were stated to have a negative attitude. Participants scored at least 70% in practice questions presumed to have good practice and

participants with less than 70% score in practice questions were recognized to have malpractice.

Result

600 questionnaires were distributed, out of which 502 (response rate: 83.6%) were returned and evaluated. Table 1 shows the overall characteristics of the study participants. The total of HCWs 257 (51.19%) were females, and 245 (48.8%) were male. Mean ± SD age was 38.5 ± 19.5 years (range 19 to 58 years).

Out of the HCWs, 109 (21.71%) were Medical Doctors (MD), 107 (21.31%) were Midwives, 103 (20.51%) were Nurses, 82 (16.33%) were Pharmacist, 51 (10.15%) were Medical Laboratory Technologists, 37 (7.37%) were Dentists and 13 (2.58) were Anesthetists.

The majority of the participants 247 (49.20%) were in the age group of 18-24 year and 152 (30.27%) participants were between 25-29 years of age. 223 (44.42%) of participants had a bachelor's degree and higher qualification.

Table 1: Characteristics of the study participants

Variables	N (%)
Gender	
Male	245 (48.8)
Female	257 (51.19)
Age	
18-24	247 (49.20)
25-29	152 (30.27)
30-34	40 (7.96)
35-39	36 (7.17)
> 40	27 (5.37)
Professions	
Medical Doctors (MD)	109 (21.71)
Midwives	107 (21.31)
Nurses	103 (20.51)
Pharmacists	82 (16.33)
Lab Technologists	51 (10.15)
Dentists	37 (7.37)
Anesthetists	13 (2.58)

Level of knowledge about HBV

The overall knowledge of HCWs was 86.58%, and 92.23% of participants had good knowledge of HBV. Most of participants correctly identified that HBV could be transmitted by unsterilized syringe, needles and surgical instruments (92.43%), contaminated blood and body fluids (94.42%), contact with open wound/cut (94.22%) and unsafe sex (89.64%). 90.80% of participants knew the existence of HBV vaccine and that HVB can be prevented by vaccine. Up to 96.26% of Midwives, 94.11% of Medical Laboratory Technologists (MLTs), 91.74% of Medical Doctors correctly identified unsafe sex as the route of HBV transmission while this knowledge was in the lowest level among Anesthetists (76.92%), Nurses (82.52, and Dentists (83.78%). Only 69.23% of Anesthetists, 86.48% of Dentists selected infected syringes, needles, and surgical instruments as a method of HBV transmission. Up to 76.92% of Anesthetists, 86.48% of Dentists correctly responded that HBV can be transmitted by contaminated blood and body fluids. The knowledge of HCWs is summarized in table 2.

Only 56.77% of the total participants were aware of post-exposure prophylaxis for HBV, this knowledge was in the highest level among Pharmacists (65.85%) and the lowest level among MLTS (31.37%). Up to 82.86% of participants stated that HBV could be treated. This knowledge was at the highest level among Dentists (94.59%) and the lowest among Midwives (73%). Only 79.88% of the participants responded that HBV couldn't spread by casual contact such as handshaking. This knowledge was at the highest level among Dentists and the lowest level among Pharmacists (68.29%). Up to 88.24% of participants responded that HBV could cause liver cancer, 85.65% stated that HBV carriers could transmit the infection as it is shown in table 2.

Out of the 11 questions regarding knowledge level, MDs answered the most questions correctly on average (87.23%), followed by Midwives (86.32%), Nurses (85.87%), Anesthetists (85.31%), Dentists (85.01%), Pharmacists (84.58%), and Medical Laboratory Technologists (83.77%). While 15.38% of Anesthetists; 12.2% of Pharmacists, 9.18% of Medical Doctors and 9.8% of MLTs showed poor knowledge of HBV as shown in table 2.

Health care workers, who were well educated, showed good knowledge than those with low educational level ($p < 0.0001$). the females showed a good level of knowledge compared to male as shown in Table 5 in multivariable analysis ($p = 0.022$).

The level of knowledge was also different according to age, 97.5% of participants in the age group of 30-34, compared to 92.76% in the age group of 25-29 and 92.30% in the age group of 18-24 year showed good knowledge of HBV as shown in table 3 in multivariable analysis.

Table 2: Percentage of Health care workers who responded correctly to the knowledge questions

Knowledge questions	MD (n=109) % of correct answer	Midwives (n=107) % of correct answer	Nurses (n=103) % of correct answer	Pharmacist (n=82) % of correct answer	MLT (n=51) % of correct answer	Dentists (n=37) % of correct answer	Anesthetists (n-13) % of correct answer	total (n=502) % of correct answer
HBV causes liver cancer	92 (84.40)	96 (89.71)	95 (92.23)	76 (92.68)	42 (82.35)	30 (81.08)	12 (92.30)	443 (88.24)
HBV carriers can transmit the infection	92 (84.40)	97 (90.65)	85 (82.52)	67 (81.70)	45 (88.23)	33 (89.18)	11 (84.61)	430 (85.65)
HBV spread by casual contact such as hand shacking	90 (82.56)	83 (77.57)	82 (79.61)	56 (68.29)	45 (88.23)	34 (91.89)	11 (84.61)	401 (79.88)
HBV spread by contact with open wounds/cut?	100 (91.74)	104 (97.19)	100 (97.08)	75 (91.46)	47 (92.15)	35 (94.59)	12 (92.30)	473 (94.22)
HBV can be transmitted by contaminated blood and body fluids	105 (96.33)	104 (97.19)	100 (97.08)	77 (93.90)	46 (90.19)	32 (86.48)	10 (76.92)	474 (94.42)
HBV can be transmitted by unsterilized syringes, needles and surgical instruments	104 (95.41)	100 (93.45)	97 (94.17)	76 (92.68)	46 (90.19)	32 (86.48)	9 (69.23)	464 (92.43)
Hepatitis B transmitted by unsafe sex	100 (91.74)	103 (96.26)	85 (82.52)	73 (89.02)	48 (94.11)	31 (83.78)	10 (76.92)	450 (89.64)
Vaccine can prevent hepatitis B infection	104 (95.41)	100 (93.45)	96 (93.20)	74 (90.24)	49 (96.07)	30 (81.08)	8 (61.53)	454 (90.43)
Do you think HBV has laboratory test?	99 (90.82)	92 (85.98)	92 (89.32)	62 (75.60)	44 (86.27)	29 (78.37)	11 (84.61)	491 (97.80)
HBV has post exposure prophylaxis	63 (57.79)	58 (54.20)	61 (59.22)	54 (65.85)	16 (31.37)	25 (67.56)	8 (61.53)	285 (56.77)
Hepatitis B can be cured/treated	97 (88.99)	79 (73)	80 (77.66)	73 (89.02)	42 (82.35)	35 (94.59)	10 (76.92)	416 (82.86)

Table 3: Multivariable analysis of poor knowledge and attitudes towards hepatitis B prevention among HCWs						
variables	knowledge		P value	Attitude		P value
profession	GOOD	POOR		Favorable	Not	
MEDICAL	99 (90.83)	10 (9.18)	0.008726	42 (38.53)	67 (61.46)	0.3619
MLT	46 (90.20)	5 (9.8)		25 (49.01)	26 (50.98)	
PHARMACIST	72 (87.80)	10 (12.2)		44 (53.65)	38 (46.34)	
MIDWIVES	104 (97.20)	3 (2.80)		50 (46.72)	57 (53.27)	
NURSES	99 (96.12)	4 (3.88)		43 (41.74)	60 (58.25)	
DENTISTS	32 (86.48))	5 (13.51)		19 (51.35)	18 (48.64)	
ANESTHESIA	11 (84.61)	2 (15.38)		8 (61.53)	5 (38.46)	
OVERALL	463 (92.23)	39 (7.76)		231 (46.01)	271 (53.98)	
Sex						
MALE	223 (91.02)	22 (8.97)	0.022069	121 (49.38)	124 (50.61)	0.1838
FEMALE	244 (94.94)	13 (5.05)		121 (47.08)	136 (52.91)	
Age						
18-24	228 (92.30)	19 (7.69)	0.035495	107 (43.31)	140 (56.68)	0.1684
25-29	139 (91.44)	13 (8.55)		72 (47.36)	80 (52.63)	
30-34	39 (97.5)	1 (2.5)		21 (52.5)	19 (47.5)	
35-39	36 (100)	0		24 (66.66)	12 (33.33)	
>40	26 (96.29)	1 (3.70)		18 (66.66)	9 (33.33)	

Attitudes towards HBV infection and risk perception:

The overall attitude toward HBV prevention was 34.73% and the majority of the participants had poor attitudes towards HBV prevention (53.98%). According to professions, Medical Doctors had the lowest favorable attitude (38.53%), followed by Nurses (41.74%), Midwives (46.72%) and Medical Laboratory Technologists (49.01%), while Anesthetists showed the highest level of favorable attitude (61.53%). The attitudes of HCWs towards HBV infection are summarized in Table 4.

The concerns of HCWs, while working with HBV, 56.37% of HCWs were concerned about being infected with HBV. Among them, Pharmacists showed the highest level of concerns (71.95%), followed by Dentists (67.54%) and Anesthetists (61.53%) while MLTs (35.29%) followed by Medical Doctors (45.87%) showed the lowest level of concerns in this regard.

Up to 69.23% of HCWs acknowledged that the HBV vaccine is safe and effective. This was the highest among Medical Laboratory Technologists (88.23%), followed by Midwives (83.17%) and the lowest among Nurses (34.95%).

Up to 37.36% of participants considered it as a waste of time to change gloves during tests and blood collection, this belief was very common among Dentists (81.08%) followed by Anesthetists (46.15%) and Nurses (37.86%) and was the lowest among Medical Laboratory Technologists (17.65%).

Only 73.38% of HCWs agreed that before providing health care to patients, they should be tested for HBV infection. This belief was in the highest level among Medical Laboratory Technologists (88.23%), followed by Midwives (86.91%) and in the lowest level among Anesthetists (53.84%).

66.38 of the participants stated that they are not contented to look after HBV patients. Among HCWs, Pharmacist had the highest discomfort (73.17%) to take care of HBV infected people, followed by MLTs (68.62%), while this was in lowest among Anesthetists (38.46%) followed by Midwives (42.99%). Up to 67.36% of HCWs believed that considering the guidelines for infection control, will keep them safe from HBV infection at work. This belief was most common among Midwives (84.11%) and least common among Anesthetists (30.76%).

Health care workers, who were well educated, showed favorable attitude than those with low educational level ($p < 0.0001$). The level of attitude between both sex was different such that men had a more positive attitude than women ($p = 0.18$). The level of attitude was also different according to age, 66.66% of participants in the age group of 35-39, compared to 52.5% in the age group of 30-39 and 47.36% in the age group of 25-29 and 43.31% in the age group of 18-24 year showed favorable attitude towards HBV prevention, as shown in table 3 in multivariable analysis.

Table 4: Percentage of Health care workers who responded correctly to the attitude questions

Knowledge questions	MD (n=109) % of correct answer	Midwives (n=107) % of correct answer	Nurses (n=103) % of correct answer	Pharmacist (n=82) % of correct answer	MLT (n=51) % of correct answer	Dentists (n=37) % of correct answer	Anesthetists (n-13) % of correct answer	total (n=502) % of correct answer
I have no concern of being infected with HBV	50 (45.87)	65 (60.74)	58 (56.31)	59 (71.95)	18 (35.29)	25 (67.56)	8 (61.53)	283 (56.37)
Hepatitis B vaccine is safe and effective	87 (79.81)	89 (83.17)	36 (34.95)	61 (74.39)	45 (88.23)	23 (62.16)	7 (53.84)	348 (69.23)
Changing of gloves during blood collection and tests is waste of time	38 (34.86)	35 (32.71)	39 (37.86)	31 (37.80)	9 (17.64)	30 (81.08)	6 (46.15)	188 (37.36)
All patients should be tested for HBV before they receive health care	91 (83.48)	93 (86.91)	76 (73.78)	63 (76.82)	45 (88.23)	29 (78.37)	7 (53.84)	404 (73.38)
I do not feel comfortable to take care of people with HBV	74 (67.88)	46 (42.99)	69 (66.99)	60 (73.17)	35 (68.62)	22 (59.45)	5 (38.46)	311 (66.38)
Following infection control guidelines will protect from being infected with HBV at work?	90 (82.56)	90 (84.11)	70 (67.96)	64 (78.04)	42 (82.35)	24 (64.86)	4 (30.76)	384 (67.36)

Practices of HCWs towards HBV prevention

The overall practice score toward HBV prevention was 61.22%. From the total participant of this study, 77.45%, had been screened for HBV. Among them, only 30.37% of Anesthetists were screened for HBV, while this was at the highest level among Nurses (90.29%). Table 5 shows the summary of the health care worker's practice towards HBV prevention.

Only 56.37% of participants were vaccinated against HBV, out of them only 5.17% had completed three doses of vaccine, while 45.61% had received two doses of HBV vaccine. According to the profession, 10.28% of Midwives, 8.1% of Dentists, and 7.69% of Anesthetists had completed the three doses of HBV vaccine, while no Pharmacist had completed this and 0.97% of Nurses had received the three doses of HBV vaccine.

Up to 79.08% of participants stated that they always changed their gloves for each patient during blood taking. This practice was the highest among MLTs (86.27%) followed by Nurses (82.52%) and in the lowest level among Anesthetists (53.84%).

Regarding the history of accidental exposure, 80.7 % of participants reported needle prick injury in the past; this was at the highest rate among Midwives (85.98%) and in the lowest level among Dentists (51.35%). Only 69.12% of participants stated that they report needle stick injury.

Table 5: Percentage of Health care workers who responded correctly to the practice questions

Practice questions	Profession							
	MD (n=109) % of correct answer	Midwives (n=107) % of correct answer	Nurses (n=103) % of correct answer	Pharmacist (n=82) % of correct answer	MLT (n=51) % of correct answer	Dentists (n=37) % of correct answer	Anesthetists (n-13) % of correct answer	total (n=502) % of correct answer
Have you ever screened for hepatitis B?	82 (75.22)	88 (82.24)	93 (90.29)	70 (85.36)	39 (76.47)	13 (35.13)	4 (30.76)	389 (77.49)
Have you got vaccinated against HBV?	74 (67.88)	67 (62.61)	51 (49.51)	59 (71.95)	13 (25.49)	15 (40.54)	4 (30.76)	283 (56.37)
How many doses of HBV vaccine did you receive?								
Three doses	7 (6.422)	11 (10.28)	1 (0.970)		3 (5.882)	3 (8.108)	1 (7.692)	26 (5.179)
I always change gloves for each patient during blood taking	89 (81.65)	88 (82.24)	85 (82.52)	58 (70.73)	44 (86.27)	26 (70.27)	7 (53.84)	397 (79.08)
Have you ever had a needle prick injury?	87 (79.81)	92 (85.98)	88 (85.43)	62 (75.60)	35 (68.62)	29 (78.37)	9 (69.23)	402 (80.07)
I always report for needle stick injury	75 (68.80)	76 (71.02)	76 (73.78)	52 (63.41)	39 (76.47)	19 (51.35)	10 (76.92)	347 (69.12)

Discussion

HBV infection is one of the major public health problems worldwide [1] with approximately 2 billion infections, of whom 257 million have chronic infection [2]. HBV infection can cause a wide range of manifestations including acute or chronic hepatitis, liver cirrhosis and hepatocellular carcinoma (HCC) [3- 5]. The purpose of this study was to assess knowledge, attitude, and practice of HCWs towards HBV infection, HBV vaccine perception and intake in Kabul, Afghanistan.

The results of this study showed that the overall knowledge of HCWs about HBV was 86.58%, which is almost similar to studies in Nigeria (86.3%) [20], and higher than studies in Ethiopia (73.1%) [21].

Regarding mode of transmissions for HBV, most of the participants correctly selected infected syringe, needles and surgical instruments (92.43%), contaminated blood and body fluids (94.42%), contact with open wound/cut (94.22%) and unsafe sex (89.64%) as methods of HBV transmission. This is almost similar to a Study in Ethiopia [21] in which, the majority of the HCWs (92.9%) selected infected blood and approximately 88% selected vaginal and amniotic fluids as means of virus transmission. While in Nigeria, more than 80% of participants stated a percutaneous injury, mucous membrane contact with blood and contact of abraded skin with potentially infected tissue as routes of HBV transmission [22].

Regarding the awareness about HBV vaccine, 69.23% of HCWs acknowledged that the HBV vaccine is safe and effective, which is much lower than results from other similar studies. 86.3% of participants in Kuwait and 93 % in Cameron, 94% in Nigeria and 94% in Ethiopia felt that HBV vaccination is necessary and it should be compulsory [21, 23, 24].

The majority of the participants had a poor attitude towards HBV prevention (53.98%), and only 56.37% of HCWs were concerned about being infected with HBV. This is different from other similar studies. 91.3% of participants in Ethiopia [21], 80.5% of respondents in Kuwait [23], Ninety-six percent of participants in Cameroon [24], believed that their job put them at risk of HBV infection and 92.7% of respondents in Nigeria perceived themselves to be more at risk of HBV infection as compared to the general population [20].

Only 73.38% of HCWs agreed that all patients should be tested for HBV before health care provision. This belief was in the highest level among Medical Laboratory Technologists (88.23%), followed by Midwives (86.91%) and in the lowest level among Anesthetists (53.84%). Up to 79.08% of participants stated that they always changed their gloves for each patient during blood taking. This practice was the highest among MLTs (86.27%) and in the lowest level among Anesthetists (53.84%).

Regarding the history of accidental exposure, 80.7 % of participants reported needle prick injury in the past, which is in much higher level than similar studies. In

Ethiopia, [21] 49.2% of study participants have been exposed to risky conditions for HBV infection.

In this study, we found that only 56.37% of participants were vaccinated against HBV Which is higher than the study results from Japan (48.2%?) [25] and Nigeria (40.3**%)[**20**].** Among those health care workers who were vaccinated, only 5.17% had completed three doses of vaccine. This is a much lower level of complete vaccination when compared with other studies. However, Nigeria, 56.0% of respondents that have been vaccinated against HBV infection had gone through the recommended three doses of the vaccine **[**20**]**

Conclusions

The results of this study revealed that overall knowledge regarding HBV was good. Participants with higher educational levels, Medical Doctors and women compared to men showed a better level of knowledge. While the majority of HCWs had a poor attitude towards HBV prevention with Medical Doctors had the lowest favorable attitude followed by Nurses and Midwives. The study also revealed that practical measures towards hepatitis B prevention among HCWs were inadequate, the coverage of vaccination was very low and only 5.17% of participants had completed the three doses of vaccine. It can be concluded that HCWs are at higher risk of acquiring HBV infection due to low vaccination coverage and poor preventive practice. They require provision of free and compulsory vaccination, awareness, encouragement, educational and preventive programs.

Author contributions:

RR conceived and designed the study and wrote the manuscript. SM, MAA, MHH, EH, BA, FS, NE, MN collected the data and performed the statistical analysis.

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Ethical approval Ethical

Ethics approval and consent to participate in this study was approved by the Medical Ethics Committee of Research Center of Kateb University. Privacy and confidentiality were maintained throughout the study period; each questionnaire was filled out without any personal identification.

Competing Interests

None declared.

References

1. Ryder S, Beckingham I. ABC of diseases of liver, pancreas, and biliary system: acute hepatitis. Br Med J. 2001;322:151–153. doi: 10.1136/bmj.322.7279.151. [PMC free article] [PubMed] [CrossRef] [Google Scholar]
2. Ott JJ, Stevens GA, Groeger J, Wiersma ST. Global epidemiology of hepatitis B virus infection: new estimates of age-specific HBsAg seroprevalence and endemicity. Vaccine. 2012;30:2212–2219. [PubMed] [Google Scholar]
3. Glebe D, Bremer CM. The molecular virology of hepatitis B virus. Semin Liver Dis. 2013;33:103–112.[PubMed] [Google Scholar]
4. Bernal W, Auzinger G, Dhawan A, Wendon J. Acute liver failure. Lancet. 2010;376:190–201. [PubMed] [Google Scholar]

World Health Organization. Global Hepatitis Report. 2017. [Google Scholar], https://www.who.int/hepatitis/publications/global-hepatitis-report2017/en/

6. West DJ. The risk of hepatitis B infection among health professionals' in the United States: a review. Am J Med Sci. 1984;287(2):26–33.
7. Hadler SC. Hepatitis B virus infection and health care workers. Vaccine, Volume 8, Supplement 1, March 1990, Pages S24-S28. https://doi.org/10.1016/0264-410X(90)90211-4
8. West DJ. The risk of hepatitis B infection among health professionals in the United States: a review. Am J Med Sci. 1984;287(2):26–33.
9. Molinari J. Infection control: Its evolution to the current standard precautions. J Am Dent Assoc. 2003;134(5):569–74.
10. Sondlane TH, Mawela L, Razwiedani LL, Selabe SG, Lebelo RL, Nare Rakgole J, et al. High prevalence of active and occult hepatitis B virus infections in healthcare workers from two provinces of South Africa. Vaccine. 2016;34(33):3835–3839. doi: 10.1016/j.vaccine.2016.05.040. [PubMed] [CrossRef] [Google Scholar]
11. Alese OO, Alese MO, Ohunakin A, Oluyide PO. Seroprevalence of hepatitis B surface antigen and occupational risk factors among health care workers in Ekiti state. Nigeria J Clin Diagn Res. 2016;10(2):LC16–LC18. [PMC free article] [PubMed] [Google Scholar]
12. Mueller A, Stoetter L, Kalluvya S, Stich A, Majinge C, Weissbrich B, Kasang C. Prevalence of hepatitis B virus infection among health care workers in a tertiary hospital in Tanzania. BMC Infect Dis. 2015;15:386. doi: 10.1186/s12879-015-1129-z. [PMC free article] [PubMed] [CrossRef] [Google Scholar]
13. Wondimeneh Y, Alem M, Asfaw F, Belyhun Y. HBV and HCV seroprevalence and their correlation with CD4 cells and liver enzymes among HIV positive individuals at University of Gondar Teaching Hospital, Northwest Ethiopia. Virol J. 2013;10:171. doi:10.1186/1743-422X-10-171.
14. Geberemicheal A, Gelaw A, Moges F, Dagnew M. Seroprevalence of hepatitis B virus infections among health care workers at the Bulle Hora Woreda Governmental Health Institutions, Southern Oromia, Ethiopia. J Environ Occup Sci. 2013;2(1):9–14.
15. Anagaw B, Shiferaw Y, Anagaw B, Belyhun Y, Erku W, Fantahun F, et al. Seroprevalence of hepatitis B and C viruses among medical waste handlers at Gondar town Health institutions, Northwest Ethiopia. BMC Res Notes. 2012;5:55.

16. Molinari J. Infection control. Its evolution to the current standard precautions. J Am Dent Assoc. 2003;134(5):569–74.
17. Bridget M, Saad BO, Beatrice M, Trish A. Protecting health workers from nosocomial hepatitis B infections: a review of strategies and challenges for implementation of hepatitis B vaccination among health workrers in sub-Saharan Africa. J Epidemiol Glob Health. 2017;6:229–241. [PubMed] [Google Scholar]
18. Prüss-Üstün A, Rapiti E, Hutin Y. Estimation of the global burden of disease attributable to contaminated sharps injuries among health-care workers. Am J Ind Med. 2005;48(6):482–90.
19. Birhanu Z, Abdissa A, Belachew T, Deribew A, Segni H,Tsu V, et al. Health seeking behavior for cervical cancer in Ethiopia: A qualitative study. Int J Equity Health 2012;11:83.
20. Hassan, M., Awosan, K. J., Nasir, S., Tunau, K., Burodo, A., Yakubu, A., & Oche, M.O. (2016). Knowledge, risk perception and hepatitis B vaccination status of healthcare workers in Usmanu Danfodiyo University Teaching Hospital, Sokoto, Nigeria. Journal of Public Health and Epidemiology, 8(4), 53-59.
21. Ayalew, M. B., Horssa, B. A., Getachew, N., Amare, S., & Getnet, A. (2016). Knowledge and attitude of health care professionals regarding hepatitis B virus infection and its vaccination, University of Gondar Hospital, Ethiopia. Hepatic medicine : evidence and research, 8, 135–142. doi:10.2147/HMER.S120477
22. Emeka B, Kenechi U, Eshiobo I, Dongo A, Bwala KJ, Alegbeleye BJ. Knowledge of hepatitis B vaccine among operating room personnel in Nigeria and their vaccination status. Hepat Res Treat. 2011;2011:157089. Article ID157089.
23. Soad A, Ghadeer A, Afaf EM, Ghizayel RA, Gamal M, Medhat KE. Knowledge, attitude and behavior of health care workers regarding hepatitis B infection in primary health care, Kuwait. GJMS. 2012;2(4):
24. Tatsilong HO, Noubiap JJ, Nansseu JR, Aminde LN, Bigna JJ, Ndze VN, Moyou RS. Hepatitis B infection awareness, vaccine perceptions and uptake, and serological profile of a group of health care workers in Yaoundé, Cameroon. BMC Public Health. 2016 Aug 3;15:706. doi: 10.1186/s12889-016-3388-z.
25. Y. Nagao, H. Matsuoka, T. Kawaguchi, T. Ide, and M. Sata, "HBV and HCV infection in Japanese dental care workers," International Journal of Molecular Medicine, vol. 21, no. 6, pp. 791–799, 2008. View at Google Scholar · View at Scopus.