KNOWLEDGE, CONCEPTION AND ATTITUDE TOWARDS HBV AND HCV AMONG DENTISTS IN DUHOK PROVINCE; KURDISTAN REGION OF IRAQ

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Submitted 22 November 2023; accepted 18 February 2024

ABSTRACT

Background: Healthcare workers including physicians, dentists, nurses and laboratory workers are considered to be among the groups at the risk of blood-borne pathogen transmission. This study aimed to assess the knowledge and conception of Duhok province dentists toward bloodborne viruses HBV and HCV regarding transmission, treatment, and prevention; furthermore, to know their attitude in dealing with HCV or HBV positive patients

Method: It's a cross sectional that had performed by asking dentists from Duhok province to fulfill a standardized online based questionnaire. There were four main parts in the questionnaire; demographic data collection, general HBV and HCV information, attitude questions and prevention questions.

Result: One hundred eighty-seven dentists had participated in the study, 54% were males. The mean age of the participants was 28.48 ± SD 7.53. The mean experience years of study population was 5.87 ± SD 6.39. Eighty-one (43.3%), 122 (65.2%), and 101 (54%) dentists out of 187 had good knowledge, favorable attitude, and good preventive practices toward HBV & HCV, respectively. Good knowledge frequency was more common among dentists whose ages were above 40 years, and among those with MSc or PhD degree, p=0.016 and 0.03, respectively. Whilst good preventive practices against HBV & HCV was more common among more experience dentists p= 0.001, 0.008 respectively. HBV vaccine coverage is 98.8%

Conclusion: Duhok dentists at under and post- graduate levels necessitates improving educational programs and regular dental auditing. The HBV vaccine coverage is highly satisfactory.

Duhok Med J 2024; 18 (2): 11-23.

Keywords: bloodborne viruses, HBV, HCV, dentists, Duhok province, Kurdistan Region of Iraq.

The World Health Organization (WHO) identifies hepatitis B virus (HBV) and hepatitis C virus (HCV) infections as extremely serious health problems globally, in which the most common causes of liver diseases where all society members are naturally susceptible to[1]. Worldwide, there are 71 million people with acute HCV infection, 55–85% of them are likely to become chronic and lead to liver cirrhosis, liver failure and hepatocellular carcinoma (HCC)[2]. In 2019, approximately 290,000 people died from HCV[3]. On the other hand, there were 257

https://doi.org/10.31386/dmj.2024.18.2.2

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million individuals living with chronic HBV in 2015[4], and it is the second most common human carcinogen after tobacco[5]. Furthermore, 15–40% of HBV-infected patients may develop complications leading to death[6].

There are several modes of HCV and HBV transmission occurring through administration of blood and blood products, vertical transmission, sexual transmission, drug abuse injections, medical interventions, tattooing, acupuncture, accidental needlestick, and household contact[1]. A number of risk factors associated with a higher transmission of HBV and HCV include low level of education, living in rural areas, history of blood transfusion, surgery, sexually transmitted infections, abortions, higher mean parity, engaging in early sexual activities, and being male[7,8]

The WHO estimated that two million injuries cause about 66,000 HBV and 16,000 HCV infections among a range of 35 million healthcare workers (HCWs) each year 9. The HCWs are at a higher risk of contracting HBV infection than the general population. The WHO reported the annual prevalence of injuries by sharp instruments and needle stick to be 4 per each HCW in Asia[10,11] Approximately, 14.4% and 1.4% of HBV and HCV infections have been reported in HCWs, respectively[12].

Dentists, particularly, are four times at a higher risk of acquiring HBV and HCV infections than other HCWs, because of the direct blood and body fluid contact with their patients[13]. In a study by Merza et al. about risk factors associated with HBV infection among tuberculosis patients, history of dental intervention was a recognized risk factor for acquiring HBV[14]. Hence, dentists should have a good knowledge about HBV and HCV transmission and methods of protection and prevention after exposure to the virus Accordingly adhering to HBV vaccine series and HBV pre and post exposure prophylaxis is a crucial step in preventing the incidence of HBV infection[15].

The lack of survey study regarding knowledge, attitude, and preventive practices of dentists towards HCV and HBV had initiated the spark of performing this study. Thus, this study aimed to assess the knowledge and conception of Duhok province dentists toward these bloodborne viruses (BBVs) regarding transmission, treatment, and prevention; furthermore, to know their attitude in dealing with HCV or HBV positive patients.

MATERIALS AND METHODS

2.1. Study design and population

This cross sectional online based study had enrolled 187 dentists from Duhok province, Kurdistan Region of Iraq. Data had been collected throughout January 2023. The dentists included stagers in dentistry college of Duhok university, dentists with bachelor, master (MSc), and PhD degrees who work either in health sectors, university teaching staff, or both.

2.2. Sampling and data collection

The study was performed by asking dentists to fill in a standardized online based questionnaire platform. Verbal consents were taken from each one of the participants before filling the questionnaire and they were informed that it would be filled out without personal identification. The questionnaire form was structured into four main parts, the first of which consisted of demographic data: age, gender, years of working experience, working place, and scientific degree. The second part included eight questions related to general information about HCV and HBV, for example, whether it is symptomatic, curable, identifying their routes of transmission, availability of HCV vaccine and the availability of post exposure to HCV and HBV. The third part contained six questions regarding dentist's attitude toward HCV and HBV, i.e; "Have you ever treated HBV &/or HCV positive patients knowingly? Are you ethically/morally responsible for treating HBV &/or HCV

patients? Do you think regular HBV & HCV tests for dentists are necessary? Do you think that the dentists have the right to reject treating an HBV &/or HCV patient?" Last but not least was the prevention related questionnaire, where questions like: "Are you vaccinated against HBV? Do you know your titer? Which prevention criteria should be followed when performing a dental procedure for an HBV &/or HCV patient?" were asked.

2.3. Scoring System

Participants who answered 70 % or higher on the knowledge questions were considered good knowledge, while those who answered less were considered to have poor knowledge. Participants who answered 70 % or higher on the attitude questions were considered to have favorable attitudes, while those who answered less were considered to have unfavorable attitudes[16].

2.4. Ethical Approval

The study was reviewed and approved by the scientific and the Ethics Committee of the College of Dentistry at the University of Duhok on (Reference No 101). Practitioners had submitted their informed consent before participation.

2.5 Statistical Analysis

All data were analyzed by Statistical Package for the Social Sciences software version 22. Descriptive statistics were carried out for the demographic variables, knowledge, attitude and prevention questions using frequencies, percentages and mean ± standard was presented in the form of text, figures, and tables. χ 2 tests were used to find the associated factors with knowledge, attitude and prevention practices.

RESULTS

3.1 Demographic characteristics

A total number of one hundred eighty-seven (187) dentists from Duhok province had participated in the study, more than half of whom (54%) were males. The age were ranged between (22-60) with main age 28.48 ± SD 7.53. The experience years of study population were ranged between (10-30) the main age of experience was 5.87 ± SD 6.39. The majority (84%) were working in clinical fields, either governmental sectors, private clinics, or both; only (6.4%) were academic staff in college of dentistry not working in clinical fields. The other (9.6%) were working as academicians as well as in private clinics. Most of the participating dentists were stagers or had bachelor degree (76.5%). The other (17.1%), and (6.4%) were those with MSc and PhD degrees, as refer in table 1.

Table 1: Demographic characteristics of study population

Variables	Number	Percentage
Gender		
Male	101	54
Female	86	46
Working place		
Clinics	157	84
Academic	12	6.4
Both	18	9.6
Scientific degree		
Stager or bachelor	143	76.5
MSc	32	17.1
PhD	12	6.4

Age: range, mean ± SD= (22-60), 28.48 ± 7.53

Years of experience: range, mean ± SD= (2-30), 5.87 ± 6.39

3.2 General knowledge data

The frequency of dentists with good knowledge among the study population is 43.3%. One hundred thirty-seven (73.3%) participants responded that HBV is usually asymptomatic, and one hundred thirty-six (72.7%) said that HCV is asymptomatic. Sixty-three (33.7%) admitted that HBV is curable. On the other hand, 87 (46.5%) participants said that HCV is not curable. Regarding the availability of HBV and HCV post exposure prophylaxis, 53 (28.3%) dentists assumed that there is no prophylaxis after HBV exposure and 82 (43.9%) admitted the availability of HCV post exposure prophylaxis. Regarding the common routes of HBV transmission, most

dentists responded that it transmitted by blood (84%), followed by blood contaminated materials (79.7%) and sexual transmission (73.3%). While the responses toward the common routes of HCV transmission were almost the same as HBV responses; all details are shown in table 2.

Table 2: General HBV and HCV knowledge data (N=187)

Questions	Correct answer	Percentage
Most chronic HBV patients are asymptomatic?	137	73.3
Most chronic HCV patients are asymptomatic?	136	72.7
HBV is curable?	124	66.3
HCV is curable?	100	53.5
Post exposure prophylaxis is available for HBV	134	71.7
Post exposure prophylaxis is available for HCV	105	56.1
Is a vaccine for HCV available?	138	73.7
Common routes of HBV transmission		
Blood	158	84.5
Blood contaminated materials	149	79.7
Sexual transmission	137	73.3
Vertical transmission	65	34.8
Saliva	118	63.1
Common routes of HCV transmission		
Blood	152	81.3
Blood contaminated materials	139	74.3
Sexual transmission	74	39.6
Vertical transmission	56	29.9
Saliva	125	66.8

3.3 Attitude responses

The frequency of favorable attitude among the study population is 65.2%. Less than half of participating dentists had already treated HBV or HCV patients in their clinics (47.6%), and (58.3%) are willing to treat patients with high risk of HBV & HCV. Most of the participants (82.4%) think that they are responsible for treating HBV & HCV patients. The majority (92%) had stated that regular HBV & HCV testing is crucial. Other attitude responses are shown in table 3.

Table 3: Dentists' attitude toward HBV & HCV patients (N=187)

Questions	Correct answer	percentage
Have you ever treated HBV &/or HCV positive patients knowingly?	89	47.6
Would you treat patients who are at high risk of HBV &/or HCV?	109	58.3
Are you ethically/morally responsible for treating HBV &/or HCV patients?	154	82.4
Do you think that all the patients who attend the clinic are true in disclosing their HBV or HCV status?	135	72.8
Do you think regular HBV & HCV testing of the dentists is necessary?	172	92
Do you think that the dentist has the right to reject treating an HBV &/or HCV patient?	77	41.2

3.4 Preventive practices

The frequency of good preventive practices among the study population was 54%. Regarding the preventive measures, this study found that the majority of the participants were vaccinated against HBV (98.9%), but only 8% follow up with their HBV vaccine titer.

3.5 Frequency of good knowledge, favorable attitude and good preventive practices and their related factors

Eighty-one, 122, and 101 dentists out of 187 had good knowledge, favorable attitude, and good preventive practices toward HBV & HCV, respectively. Details are shown in figure 1.

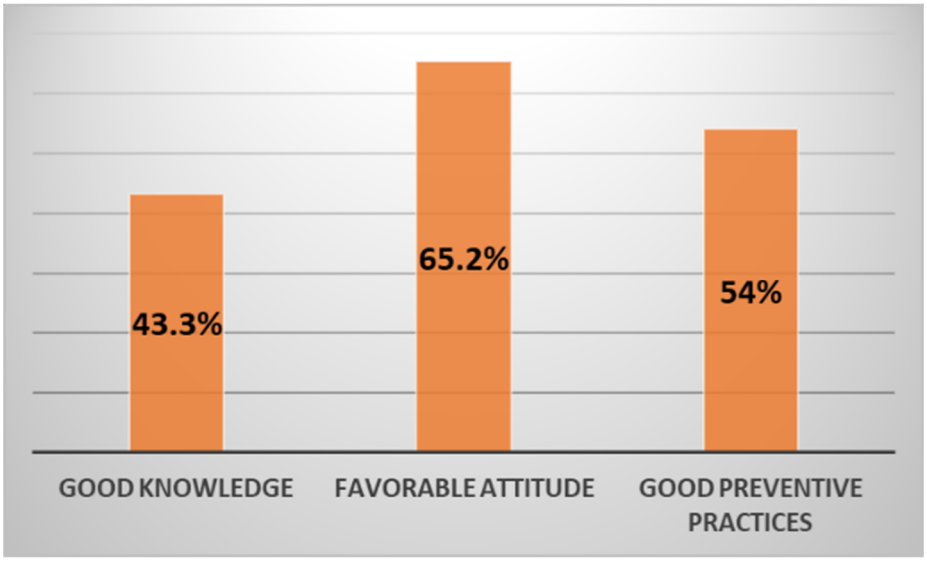

Figure 1: Frequencies of good knowledge, favorable attitude and good preventive practices against HBV& HCV among study population N=187.

Good knowledge frequency was more common among dentists whose ages were above 40 years, and among those with MSc or PhD, p=0.016 and 0.03, respectively. Alternatively, favorable attitude toward HBV and HCV were not statistically significant among gender, age groups, years of experience, work place, and scientific degree, as shown in table 4. Whilst good preventive practices against HBV & HCV was more common among equal and greater forty years age dentists and among more experienced dentists p= 0.001, 0.008 respectively. All details are shown in table 5.

Table 4: Dentists' preventive practices against HBV & HCV (N=187)

Questions	Correct answer	Percentage
Are you vaccinated against HBV?	168	98.9
Do you follow up with your vaccine titer?	15	8
Prevention practices when treating an HBV or HCV positive patient:		
wearing barrier precautions (masks, gloves, gowns and protective earwear)	167	89.3
washing and sterilizing hands before wearing the gloves and after taking them off	128	68.4
disposable items shall be used, eg; suction tips, saliva ejector etc.	158	84.5
needles and scalpels should be discarded in biohazard labeled red bags	136	72.7
instruments used should be cleaned, packed and sterilized after dental procedures directly.	146	78.1

Table 5: Comparison of knowledge, attitudes and prevention regarding HBV and HCV infections among dentists in terms of age, sex, work experience, scientific degree and workplace

Variables	Knowledge NO. (%)		*P* value	Attitude NO. (%)		*P* value	Preventive practices NO. (%)		*P* value
	Good knowledge	Poor knowledge		Favorable attitude	Unfavorable attitude		Good practice	Poor practice	
Gender									
Male	56(55.4)	45(44.6)	0.711	70 (69.3)	31 (30.7)	0.20	55(54.5)	46(45.5)	0.895
Female	50(58.1)	36(41.9)		52 (60.5)	34 (39.5)		46(53.5)	40(46.5)	
Age									
Less than 40	91(54.5)	76(45.5)		107 (64.1)	60 (35.9)		83(49.7)	84(50.3)	
40 and above	17 (85)	3 (15)	**0.016**	15 (75)	5 (25)	0.33	18 (90)	2 (10)	**0.001**
Years of experience									
Less than 10	83 (56.5)	64 (43.5)		95 (64.6)	52 (35.4)		72(49)	75(51)	
10 and above	23 (57.5)	17(42.5)	0.907	27 (67.5)	13 (32.5)	0.73	29(72.5)	11(27.5)	**0.008**
Work place									
Clinic only	88(56.1)	69 (43.9)		102 (65)	55 (35)	0.28	82(52.2)	75(47.8)	0.512
Academic teaching	6 (50)	6 (50)	0.614	10 (83.3)	2 (16.7)		8(66.7)	4(33.3)	
Both	12 (66.7)	6(33.3)		10 (55.6)	8 (44.4)		11(61.1)	7(38.9)	
Scientific degree									
Stager or bachelor	85(59.4)	58(40.9)		89 (62.2)	54 (37.8)		74(51.7)	69(48.3)	
M.Sc. or PhD	34 (77.2)	10 (22.8)	**0.03**	33 (75)	11 (25)	0.12	27(61.3)	17(38.7)	0.26

DISCUSSION

Hepatitis B and C viruses are significant BBVs that may be transmitted in dental care settings because of frequent exposures to blood, contaminated body fluids e.g. saliva from patients infected with these viruses. Accordingly, adhering to standard preventive measures is crucial to prevent such accidents.

The objectives of this study were to assess the knowledge, attitude, and preventive parctices concerning hepatitis B and C viruses among dentists in Duhok province.

In this study, the frequency of good knowledge among dentists was 43.3%, which was comparable to a study from Georgia conducted on dental HCWs[17]. In general, our rate was lower than studies from Iran (65%)[18]. Another study from a surrounding city to Duhok, named Mosul, noted that the knowledge toward HBV and HCV was low[19]. In our study, the level of knowledge about HBV was higher than HCV, which might be explained by the higher prevalence rate of HBV (1.79%) compared to HCV (0.14) in our locality 20. Hence, frequent exposure to HBV patients is linked to their better knowledge. Most of the dentists have good knowledge about the role of blood and blood contaminated materials in transmitting HBV and HCV infection, meanwhile having insufficient knowledge about the importance of vertical transmissions. In an Italian study, most dentists showed good knowledge about the pattern of HBV and HCV transmissions 21

In our study, 26.3% participants believed HCV vaccine exists. In a similar study by

Kochlamazashvili et al. reported that 20% of dental HCWs believed that there is HCV vaccine[17]. Therefore, it is highly recommended to continuously promote education programs in respect to HBV and HCV in Duhok healthcare settings.

In the current study, the frequency of good knowledge was signifcantly linked with dentists aged 40 and older (p=0.016) and those with a higher academic degree (p=0.008). In agreement, Ghahramani et al. reported improved knowledge among students of medical sciences university with increasing age and educational level 22. Another study by Rostamzadeh et al. found that work experience ≥10 year and graduation year after 2006 are associated with good knowledge 23. However, we did not find a significant difference between gender, year of experience, and work place with knowledge of HBV and HCV. General knowledge of dentists concerning transmission and prevention of BBVs is crucial to avoid occupational infection in dental care settings.

In the present study, the favorable attitude among dentists was 65.2%, which was higher than studies from Iran (36%) 18. The majority of dentists in our study were ready to treat patients with HBV and HCV. They find it ethical and a moral responsibility. Another study from Iran by Kadeh et al. showed a 73% refusal rate among dentists to treat patients with BBVs 18. In agreement with our study, 77.7% of dentists were ready to treat these patients in Mexico City[24]. Concerning dentist professionalism, dentists should follow altruism roles to establish a favorable attitude.

In this study, we did not find significant correlation between dentist's attitudes and dentist's gender, age, years of experience, work place, and scientific title. Habitually, increasing the level of knowledge may improve positive attitude toward BBVs patients[25].

In this study 54% of dentists showed good preventive practices, 98.9% were vaccinated against HBV but only 8% reported a vaccine titer follow up. In parallel, a study form Iran on 1612 dental HCWs, stated that 95.4% received HBV vaccine 26. Whereas other studies from Saudi Arabia published in 2017 and 2019 reported 85% and 90.6% vaccine coverage, respectively 27,28. Low vaccine coverage (36%) was recorded from North Jordan among dentists in private sectors 29. Therefore, the HBV vaccine coverage in our study is highly satisfactory. In the present study the majority of dentists used proper preventive practices when treating such patients. Our finding was consistent with studies from Mexico[24], Saudi Arabia[27], and Iran[30]. In the current study, 89.3% of dentists adhered into wearing barrier precautions. This rate was much higher than a similar study from Mosul (2.38%)[19]. The use of personal protective equipment is an essential element of infection control in dental care settings to prevent BBV transmissions[31].

In the present study, good preventive practices were significantly correlated with dentists less than forty years (p=0.016) and more experienced dentists (p=0.03). In agreement, Dagher et al, found that dentists with more than 20 year experience have improved preventive practices[32]. Another study from Saudi Arabia found that specialist dentists had significantly higher HBV vaccine coverage[28]. Traditionally, the WHO encourages enhancing infection prevention and control in healthcare settings by consistent implementations of infection control practices to reduce viral hepatitis approximately 90% by 2030[1].

Although the sample size of the dentists was representive of Duhok province, the study is not without limitation. It is a self reported questionnaire study and hence could not be validated. Furthermore, it is noteworthy to mention that the high proportion of participating stagers and bachlor degree dentists could underestimate the real knowledge level in this study.

CONCLUSION

In conclusion, Duhok dentists at under and post- graduate levels necessiates improving educational programs and regular dental auditing. The HBV vaccine coverage is highly satisfactory. Further prospective studies with a large sample size are warranted to understand the reasons behind the defective gap in knowledge, attitude, and preventive practices among Duhok dentists.

ACKNOWLEDGMENTS:

The authors would like to thank all participated dentists in Duhok for their cooperation, their contribution is highly appreciated.

CONFLICT OF INTEREST

The authors declare no conflict of interest.

FINANCIAL SUPPORT: N.A

AUTHOR CONTRIBUTIONS

Conceptualization: Muayad A. Merza and Hind B. Almufty. Methodology: Hind B. Almufty,Bahar J. Selivany, Suzan M. Salih. Formal analysis: Hind B. Almufty. Writing: Hind B. Almufty and Muayad A. Merza. Reviewing and editing Muayad A. Merza.

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پوختە

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پێشەکی و ئارمانج: .....

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الخلاصة

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الخلفية والأهداف: .....

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