

# Evaluation of Knowledge, Practice and Preventive Measures of Hepatitis B Virus Among Dentists and Dental Auxiliaries Working at Private Clinics in Qassim Province Saudi Arabia

Ahmad Saud Almutairi<sup>1</sup>, Abdullah Alfaris<sup>1</sup>, Abdulaziz Sulaiman Alkhodair<sup>2</sup>, Abdalmajeed Alothaimeen<sup>1</sup>, Bader Abdulaziz Alzaben<sup>1</sup>

<sup>1</sup> Dentist, Faculty of Dentistry, Al-Qassim University, Al-Qassim, Saudi Arabia.

<sup>1</sup> Medical Intern, Faculty of Medicine, Al-Qassim University, Al-Qassim, Saudi Arabia.

## ABSTRACT

**Background:** Hepatitis B virus (HBV) is a member of the family of the hepadna viridae, which is infectious for humans and a few animal species. At the beginning of the third millennium, HBV remains a major public health problem globally with more than one third of worlds' population infected. Of these, 350–400 million suffer from chronic HBV infection. This infection has been identified as one of the most important causes of liver failure and hepatocellular carcinoma (HCC). According to the world health organization (WHO), more than 50 million cases of acute hepatitis B infection are reported annually with 5–10% of adults and up to 90% of infants becoming chronically infected. From the dangers that face the dentist and auxiliary dentist is infection transmission. This study was performed to search about the knowledge of viral hepatitis and ways to prevent transmission and protect the dentists from viral hepatitis.

**Methods:** We conducted a descriptive cross-sectional study on dentists and dental auxiliaries working in private dental clinics in Al-Qassim city, Saudi Arabia. The total sample obtained was 98 dentists and dental auxiliaries.

**Results:** Nearly (36.3%) aged from 25-30 years old, (31.6%) aged from 31-35 years old, (22.4%) aged from 20-24 years old, and (9.2%) above 35 years old. The majority were dental hygienists and dental graduates, (46.9%) and (40.8%), respectively. Almost the majority of participants (99%) had at least some knowledge about viral hepatitis. (52%) thought hepatitis B vaccine can be given as post-exposure prophylaxis.

**Conclusion:** In conclusion, we need to emphasize on the preventive measures of transmission of viral hepatitis among dentistry clinical field doctors.

**Keywords:** practice, knowledge, dentists, hepatitis.

## INTRODUCTION

Hepatitis B virus (HBV) is a member of the family of the hepadna viridae, which is infectious for humans and a few animal species<sup>(1)</sup>. At the beginning of the third millennium, HBV remains a major public health problem globally with more than one third of worlds' population infected<sup>(2,3)</sup>. Of these, 350–400 million suffer from chronic HBV infection<sup>(4,5)</sup>. This infection has been identified as one of the most important causes of liver failure and hepatocellular carcinoma (HCC)<sup>(4)</sup>. According to the world health organization (WHO), more than 50 million cases of acute hepatitis B infection are reported annually with 5–10% of adults and up to 90% of infants becoming chronically infected<sup>(6)</sup>. With 500 000 to 1.2 million deaths per year caused by chronic hepatitis, cirrhosis and HCC, the virus is the tenth cause of death globally<sup>(6)</sup>. Hepatitis B virus can be transmitted parentally, by percutaneous route and through mucous membrane exposed to infected blood, by sexual contact or by perinatal exposure. Needles and syringes may be contaminated by viruses. Accidental injuries with infected needles and syringes can transmit the virus to health care workers<sup>(7)</sup>. The symptoms of hepatitis B tend to occur two or three months after exposure

to the hepatitis B virus and include tiredness, fever, and general aches, loss of appetite, feeling of being sick, diarrhea, abdominal pain and jaundice<sup>(6)</sup>. Three doses of vaccine are generally required to complete the hepatitis B vaccine series, the first dose can be taken any time, the second dose at least one month after the first shot and third dose after six month from first shot<sup>(8)</sup>. Health care workers (HCWs) are at high risk of HBV infection in the health care settings. The prevalence rate of HBV in HCWs is about 2–10 times higher than the general populations in the world<sup>(9,10)</sup>. The present study was conducted to explore the knowledge and practices of dentists and dental auxiliaries who are working in private clinics in Qassim province Saudi Arabia about hepatitis B, as no such study has been previously reported in the literature.

## METHODS

We conducted a descriptive cross-sectional study on dentists and dental auxiliaries working in private dental clinics in Al-Qassim city, Saudi Arabia. The total sample obtained was 98 dentists and dental auxiliaries. The study was conducted

during the period from 2016-2017. An 11 dental clinics of seven major cities of Qassim out of a total of 15 clinics recruited to gain the desired sample. A self-administered questionnaire, about practice and knowledge of viral hepatitis was distributed to dentists and dental auxiliaries in private clinics in Al-Qassim city, Saudi Arabia. A letter that explains the objectives of the study and asks for participants consent was sent with the questionnaire.

The questionnaire responses were analyzed using the Statistical Package for the Social Science (SPSS Inc. Chicago, IL, USA) version 23. Categorical variables were described by frequencies and percentages. Descriptive analysis involving Chi-square test was used to test significance of association between categorical variables. The level of significance was set at  $P < 0.05$ .

The research was approved by the local Research Committee of the Faculty of Dentistry, Al-Qassim University.

## RESULTS

**Table 1** shows age, level of education, and the clinical experience of dentists and dental auxiliaries. Nearly (36.3%) aged from 25-30 years old, (31.6%) aged from 31-35 years old, (22.4%) aged from 20-24 years old, and (9.2%) above 35 years old. The majority were dental hygienists and dental graduates, (46.9%) and (40.8%), respectively. Nearly half of them have 1-5 years of clinical experience in dentistry field (51%), and one fourth from 6-10 years of clinical experience in dentistry field (25.5%).

**Table 2** shows knowledge of participants about viral hepatitis, almost the majority of participants (99%) had at least some knowledge about viral hepatitis. (81.6%) of them thought that symptoms of viral hepatitis appear immediately after getting infection, and the majority knew the organ affected by viral hepatitis (96.9%). (94.9%) knew the types of viral hepatitis viruses. (92.9%) knew that hepatitis viruses could be transmitted by contaminated blood. (91.8%) thought that precautions against viral hepatitis viruses should be taken while treating all patients, and (86.7%) knew that viral hepatitis viruses could be transmitted from an infected mother to her baby during pregnancy. Regarding the preventive measures of hepatitis B virus, (96.9%) had been vaccinated against hepatitis B, (71.4%) knew the number of doses of the hepatitis B vaccine, and (52%) thought hepatitis B vaccine can be given as post-exposure prophylaxis. From those who think hepatitis B vaccine can be given as post-exposure prophylaxis,

nearly half of them (51%) thought hepatitis B vaccine is highly effective in preventing hepatitis B virus infection if given within 24 hours after exposure. Participants who thought that wearing double gloves, proper instrument sterilization, and getting vaccination of hepatitis B virus will prevent transmission of hepatitis B virus, were (35.7%), (56.1%), and (54.1%) respectively.

**Table 3** shows relation between awareness of types of viral hepatitis viruses and who had vaccinated against hepatitis B virus among age groups. Nearly three fourths of those who aged from 20-24 years old knew the types of viral hepatitis viruses (77.3%), all the other age groups knew the different types of these viruses ( $p < 0.01$ ). From those having age from 20-24 years old, (86.4%) took the hepatitis B vaccines, while all the other groups took the hepatitis B vaccines ( $p < 0.05$ ).

**Table 4** shows the relation between education level and the knowledge of transmission of viral hepatitis from mother to her baby during pregnancy and measure for prevention of hepatitis B virus.

Those who knew that viral hepatitis could be transmitted from mother to her baby during pregnancy among the education levels were as follows: Dental hygienist (78.3%), Dental graduate (97.5%), Master/ Diploma (80%), and PhD (100%) ( $p = 0.055$ ). In the same context, among education levels, those who recognized wearing of double gloves to be taken to prevent transmission of hepatitis B in dental practice were as follows: Dental hygienist (41.3%), Dental graduate (22.5%), Master/ Diploma (70%), and PhD (0%) ( $p < 0.05$ ). Those who recognized proper instrument sterilization to be taken to prevent transmission of hepatitis B in dental practice were as follows: Dental hygienist (58.7%), Dental graduate (40%), Master/ Diploma (100%), and PhD (100%) ( $p < 0.01$ ). Those who recognized getting hepatitis B vaccine to prevent transmission of hepatitis B in dental practice were as follows: Dental hygienist (41.3%), Dental graduate (67.5%), Master/ diploma (70%), and PhD (0%) ( $p < 0.05$ ).

**Table 5** shows relation between thinking that hepatitis B vaccine can be given as post-exposure prophylaxis with the clinical experience ( $p < 0.01$ ). Those who knew that hepatitis B virus vaccine can be given as post-exposure prophylaxis had clinical experience as follows: less than one year of clinical experience (30.8%), from 1-5 years (54%), 6-10 years (76%), and those who have more than 10 years of clinical experience (10%).

**Table 1: General characteristics**

<b>Character</b>		
<b>Age</b>	From 20 to 24 years (n (%))	22 (22.45%)
	From 25-30 years (n (%))	36 (36.73%)
	From 31-35 years (n (%))	31 (31.63%)
	Above 35 years (n (%))	9 (9.18%)
<b>Level of education</b>	Dental hygienist (n (%))	46 (46.94%)
	Dental graduate (n (%))	40 (40.82%)
	Master/diploma (n (%))	10 (10.20%)
	PhD (n (%))	2 (2.04%)
<b>Years of experience in clinical practice</b>	Less than 1 year (n (%))	13 (13.3%)
	From 1 – 5 years	50 (51.0%)
	From 6 – 10 years (n (%))	25 (25.5%)
	More than 10 years	10 (10.2%)

**Table 2: Knowledge of viral hepatitis**

<b>Questions</b>		<b>Frequency</b>	<b>%</b>
<b>Do you have any knowledge about viral hepatitis?</b>	Yes	97	99%
	No	1	1%
<b>Do you think the symptoms of viral hepatitis appear immediately after getting infection?</b>	Yes	80	81.6%
	No	18	18.4%
<b>The organ of human body mainly effected by hepatitis is the liver?</b>	Yes	95	96.9%
	No	3	3.1%
<b>How many types of viral hepatitis are there?</b>	Yes	93	94.9%
	No	5	5.1%
<b>Viral hepatitis viruses could be transmitted through contaminated blood</b>	Yes	91	92.9%
	No	7	7.1%
<b>Do you think precautions against viral hepatitis viruses should be taken while treating all patients?</b>	Yes	90	91.8%
	No	8	7.2%
<b>Viral hepatitis viruses may be transmitted from an infected mother to her baby during pregnancy?</b>	Yes	85	86.7%
	No	13	13.3%
<b>Have you been vaccinated against hepatitis B?</b>	Yes	95	96.9%
	No	3	3.1%
<b>Participants who knew the doses of the hepatitis B vaccine</b>		70	71.4%
<b>Do you think hepatitis B vaccine can be given as post-exposure prophylaxis?</b>	Yes	51	52%
	No	47	48%
<b>Those who thought that hepatitis B vaccine can be given as post-exposure prophylaxis, and thought that hepatitis B vaccine is highly effective in preventing hepatitis B infection if given within 24 hours after exposure</b>	Yes	26	51%
	No	25	49%
<b>Which of the following measures can be taken to prevent transmission of hepatitis B infection in dental practice?</b>	-Wearing double Gloves	35	35.7%
	- Proper instrument sterilization	55	56.1%
	- Getting vaccination of Hepatitis B	53	54.1%

**Table-3: Awareness of types of viral hepatitis viruses and who was vaccinated against hepatitis B virus among age groups**

Character		Age groups (by years(y))				p-value
		20 – 24 y n=22	25 – 30 y n=36	31 – 35 y n=31	Above 35 y n=9	
Who knew the types of viral hepatitis viruses	No	22.7%	0%	0%	0%	<b>p&lt;0.01</b>
	Yes	77.3%	100%	100%	100%	
Who was vaccinated against hepatitis B virus	No	13.6%	0%	0%	0%	<b>p&lt;0.05</b>
	Yes	86.4%	100%	100%	100%	

**Table-4: Relation between education level and the knowledge of transmission of viral hepatitis from mother to her baby during pregnancy and measure for prevention of hepatitis B virus**

Information		Education level				p-value
		Dental hygienist n=46	Dental graduate n=40	Master/ diploma n=10	PhD n=2	
Viral hepatitis could be transmitted from mother to her baby during pregnancy	No	21.7%	2.5%	20%	0%	<b>p=0.055</b>
	Yes	78.3%	97.5%	80%	100%	
The following measures could be taken to prevent transmission of Hepatitis B in dental practice		Education level				
		Dental hygienist n=46	Dental graduate n=40	Master/ diploma n=10	PhD n=2	
Wear of double gloves		41.3%	22.5%	70%	0%	<b>p&lt;0.05</b>
Proper instrument sterilization		58.7%	40.0%	100%	100%	<b>p&lt;0.01</b>
Getting hepatitis B vaccine		41.3%	67.5%	70%	0%	<b>p&lt;0.05</b>

**Table-5: Relation between clinical experience and the concept that hepatitis B vaccine can be given as post-exposure prophylaxis**

Character		Clinical experience (by years)				p-value
		Less than 1 n=13	1 - 5 n=50	6 – 10 n=25	More than 10 n=10	
Who thought hepatitis B vaccine can be given as post-exposure prophylaxis	No	69.2%	46%	24%	90%	<b>p&lt;0.01</b>
	Yes	30.8%	54%	76%	10%	

## DISCUSSION

Serum hepatitis (hepatitis B) was thought to be parentally transmitted, with an incubation period of 50–100 days. It has been documented that HBV infection is the most important infectious occupational hazard in the dental profession. Despite the availability and recommendations on hepatitis B vaccination, the vaccination rate among dental professionals has remained consistently low in developing countries<sup>(11)</sup>. The current study reported that (96.9%) of participants were vaccinated against Hepatitis B. A study reported that only 20% of dental surgeons had received the doses of hepatitis B vaccine in Benin city, Nigeria<sup>(12)</sup>. In another study among Brazilian dentists, (73.8%) of dentists reported they were

vaccinated against hepatitis B vaccine<sup>(13)</sup>. This study reported that almost the majority of participants (99%) have at least some knowledge about viral hepatitis. Another study performed to evaluate the knowledge about hepatitis among dentists showed that the majority of them (70.2%) had good knowledge of hepatitis B infection and vaccination and the mean knowledge score was (61.2%)<sup>(14)</sup>. We reported also that, (92.9%) of the participants knew that hepatitis viruses could be transmitted by contaminated blood. The same previous study showed close result and it was that the majority of their sample (90.4%) knew that hepatitis B virus can be acquired through a needle stick injury<sup>(14)</sup>.

In conclusion, we need to emphasize on the preventive measures of viral hepatitis viruses transmission among dentistry clinical field doctors. We need to decrease the burden of viral hepatitis in dental health care workers, specialty dentists, it is recommended that the dental professionals should receive immunization against hepatitis virus and should use individual protective equipments such as gloves, head caps, masks and taking the vaccine.

#### REFERENCES

- 1- **Hatzakis A, Magiorkinis E, Haida C (2006):** HBV virological assessment. *Journal of hepatology*, **44**: 71-76.
- 2- **World health organization(2015):** Available from:  
[http://apps.who.int/iris/bitstream/10665/170250/1/9789240694439\\_eng.pdf](http://apps.who.int/iris/bitstream/10665/170250/1/9789240694439_eng.pdf)
- 3- **Thio C L (2009):** Hepatitis B and human immunodeficiency virus coinfection. *Hepatology*, **49**: 5.
- 4- **Lavanchy D (2005):** Worldwide epidemiology of HBV infection, disease burden, and vaccine prevention. *Journal of clinical virology*, **34**: 1-3
- 5- **van Zonneveld M, Honkoop P, Hansen B E, Niesters H G, Murad S D, de Man R A, & Janssen H L (2004):** Long-term follow-up of alpha-interferon treatment of patients with chronic hepatitis B. *Hepatology*, **39**(3): 804-810.
- 6- <http://www.who.int/ith/vaccines/hepatitisB/en/>
- 7- **Rizzetto M, Ciancio A (2008):** Chronic HBV-related liver disease. *Molecular aspects of medicine*, **29**(1-2): 72-84.
- 8- <https://www.nhs.uk/conditions/hepatitis-b/>
- 9- **West D J (1984):** The risk of hepatitis B infection among health professionals in the United States: a review. *The American journal of the medical sciences*, **287**(2): 26-33
- 10- **Hadler S C (1990):** Hepatitis B virus infection and health care workers. *Vaccine*, **8**: 24-28
- 11- **Dahiya P, Kamal R, Sharma V, Kaur S (2015):** "Hepatitis"-Prevention and management in dental practice. *Journal of education and health promotion*, **4**: 33.
- 12- **Azodo CC, Ehizele AO, Uche I, Erhabor P (2012):** Hepatitis B Vaccination Status Among Dental Surgeons in Nigeria. *Ann Med Health Sci Res.*, **2**: 24-8.
- 13- **Resende V L S, Abreu M H G, Paiva S M, Teixeira R, Pordeus I A (2010):** Concerns regarding hepatitis B vaccination and post-vaccination test among Brazilian dentists. *Virology journal*, **7**(1): 154.
- 14- **Abiola A O, Omoyeni O E, Akodu B A (2013):** Knowledge, attitude and practice of hepatitis B vaccination among health workers at the Lagos State accident and emergency centre, Toll-Gate, Alausa, Lagos State. *West African journal of medicine*, **32**(4): 257-262.