

# PREVALENCE OF VIRAL HEPATITIS B AND C AMONG DENTISTRY PROFESSIONALS IN ANBAR PROVINCE.

Abbass Ibrahim Hussain, Hamid Hammad Anizy

College of Dentistry - Anbar University.



## ARTICLE INFO

Received: 12 / 12 /2007  
Accepted: 23 / 4 /2008  
Available online: 14/6/2012  
DOI:10.37652/juaps.2008.15299:

### Keywords:

Prevalence ,  
hepatitis .  
dentistry professionals ,  
Anbar.

## ABSTRACT

A total of 450 dental providers participated in this study from different parts of the AL-Anbar province, Iraq. The main aim was to cast light on the spread of hepatitis infection among workers in dentistry. The overall percentages of infection was found to 13%. Dental clinicians were significant more exposed to the risk of contracting the disease than technicians.

## Introduction

Dentists are being put at risk of infection from blood diseases such as hepatitis because of poor standards of hygiene. Since dentists have numerous patients and are exposed to blood, they are likely to have the maximum risk of contracting many transmitted diseases [1].

Anti-HCV was found in 4 (9.3%) of 43 oral surgeons compared with 4 (0.97%) of 413 other dentists (OR 10.5, 95% CI 1.9 to 58). Our findings show that dentists are at increased risk for hepatitis C infection [1]. All health-care workers should regard patients as potentially infected with a communicable bloodborne agent [2].

Transmitted by exposure to infected blood or other body fluids containing blood, hepatitis C virus (HCV) may be the most serious of the viral hepatitis infections because of its ability to produce chronic infections and severe disease [3].

HCV has been detected in the saliva of patients with chronic hepatitis who are undergoing dental treatment, and there is a report of HCV being transmitted via a human bite [3]. Most studies assessing the prevalence of HCV infection among dentists suggest that it is similar to the 1.8% prevalence among the general population [3].

In the absence of a vaccine or effective postexposure prophylaxis, prevention of occupational transmission of HCV in healthcare settings, including dental practices, relies on the use of standard precautions. The same precautions that protect against hepatitis B virus (HBV) and HIV offer protection against HCV [3].

### Such precautions include:

appropriate use of barrier precautions (e.g., gloves, masks, protective eyewear) and actions that promote safe handling and use of instruments and other sharps, including: safe work practices, safer instrumentation (i.e., use of devices with engineered

\* Corresponding author at: College of Dentistry - Anbar University, Iraq.E-mail address:

sharps safety features), and continued education of dental workers.

The OSAP 2002 Position Paper on Percutaneous Injuries lists a number of examples of injury prevention strategies.

HCV is susceptible to the same disinfection and sterilization procedures as HBV and HCV.

When treating an HCV-positive patient, no special precautions are required with regard to surface management (barriers and/or disinfection) or instrument sterilization [3].

Many published reports have warned dental health care workers about the potential risk of infection with bloodborne pathogens (including the hepatitis C virus [HCV]) during patient treatment. HCV is a major cause of chronic liver disease in the United States resulting in 8,000 to 10,000 deaths annually. The most efficient mode of HCV transmission is through percutaneous exposure. Most studies suggest the prevalence of HCV infection in dentistry is about 1 to 2 percent, indicating that the occupational risk is very low. There is no effective vaccine for hepatitis C due to the virus' ability to escape the immune system through mutations. The CDC does not recommend immune globulin for postexposure prophylaxis at this time. Prevention of occupational transmission of HCV in dentistry continues to rely on the use of universal precautions, including the appropriate use of barrier precautions and the safe handling of sharp instruments. Currently no recommendations exist regarding practice restrictions for health providers with hepatitis C [4].

Percutaneous injuries have the potential to transmit bloodborne pathogens in the dental health care environment. The risk of bloodborne transmission is dependent upon the type of injury, amount of blood,

virus titer, resistance of health care worker, response to environment, virulence of pathogen, and procedure during which the injury occurred. Prevention still remains the best method of reducing occupational transmission. There are limited reports on percutaneous injuries in dentistry, with no prospective studies involving the entire dental team in a variety of private practice settings. The purpose of this study was to determine whether a difference exists in the rate of percutaneous injuries among dentists, dental hygienists, and dental assistants in generalized and specialty private practices. Also this study compared the number of extraoral and intraoral percutaneous injuries among dental health care workers as a whole, and within each occupational group [5].

Hepatitis B virus (HBV) infection is the major cause of mortality and morbidity [6,7]. Hepatitis B carrier rate varies widely worldwide [8]. Annually from 0.01% to 20% through the world up to 1 million of this population die due to the consequences of this infection such as cirrhosis [9].

Thousands of people infected with the life threatening hepatitis C virus may have caught it during routine dental treatment. Health campaigners warned that current practices in dental surgery, including the way tools are sterilized, may not be rigorous enough to remove the risk of transmission of the highly infectious virus between patients [10].

Although intravenous drug use is the most common method of transmission, health workers say dental practices could be the source of infection for a "substantial number" of the 38 percent of sufferers for whom the source of infection is not known [10]. In Scotland, 10,000 people are known to be infected with

the disease, which can cause liver disease and cancer and is 100 times more infectious than HIV [10].

But because sufferers can live for 20 years before showing any symptoms, experts believe that a further 25,000 Scots are unknowingly infected [10].

## Methods

For the period July 2003 – July 2007, a total of 450 dental providers were interviewed. All of them are from different districts belong to AL-Anbar Province, Iraq.

A questionnaire form containing information about age, gender, type of dental work, infection with HBV or HCV, average number of daily admitted cases, average standard of living for patients, and average educational level for the admitted cases.

The collected data were then subjected to statistical analysis using both descriptive and inferential statistics.

## Results

Figure 1 shows the frequency distribution of the subjects participated in this study.

The mean age for the total sample was found to be 41.92 years with a standard deviation of 10.05 years. Males mean age ( $2.19 \pm 9.91$  years) was found to be not significantly different from females mean age ( $40.9 \pm 10.6$  years) ( $p > 0.05$ ).

Table 1 shows the distribution of infected cases according to age and gender groups.

Most of the infected cases fall in the age group 20-29 years. The male dentists were encountered for remarkably higher percentage than females. Providers of dentist care age 50-69 are found to show low percentage of contracting the disease.

The use of the two-sample t-test revealed that there is no significant differences between means of males and females percentages of infection.

Figure 2 shows the distribution of infected percentages with respect of time. This figure indicates that percentages of infection increased with time.

Table 2 shows the distribution of infected cases with respect to the type of dental services and type of hepatitis virus.

The use of the two-sample t-test for the data in table 2 showed that technicians are significantly less exposed to the risk factor of contracting hepatitis virus than clinicians.

The distribution of infected cases on the type of hepatitis virus and gender groups emphasized the fact that gender groups have equally likely chance to contract the disease according to the two-sample t-test result stated just below the table.

## Discussion

The overall percentage of infection with HBV and HCV is 14% among both clinicians and technicians that are dental providers. Of course this percentage indicates a high lack of dental hygiene in addition the deterioration in the overall health status of the country due to the unusual circumstances that still taking place.

The overall percentage of this study is not remarkably different from that found by Bongomin, 2005 ( 11%) among dental students [11]. It is also lower than that found among Danish dentists (22%) [12].

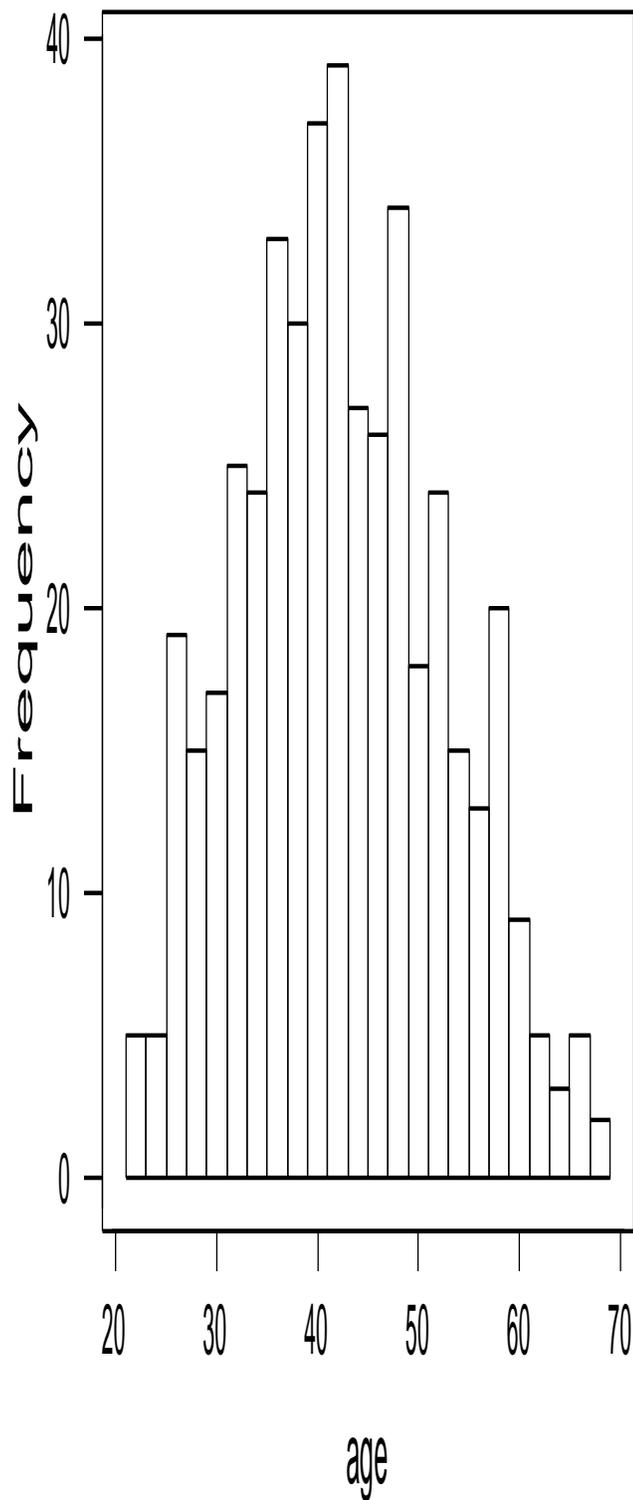
With regard to the significant difference between percentages of infection of clinicians and technicians, this is maybe attributed to several possible reasons. One of the most common reasons, is the unprotected exposure to patients' body fluids and

needlestick injuries. Other reasons of being infected with hepatitis virus maybe related to family history and dental procedures [13,14].

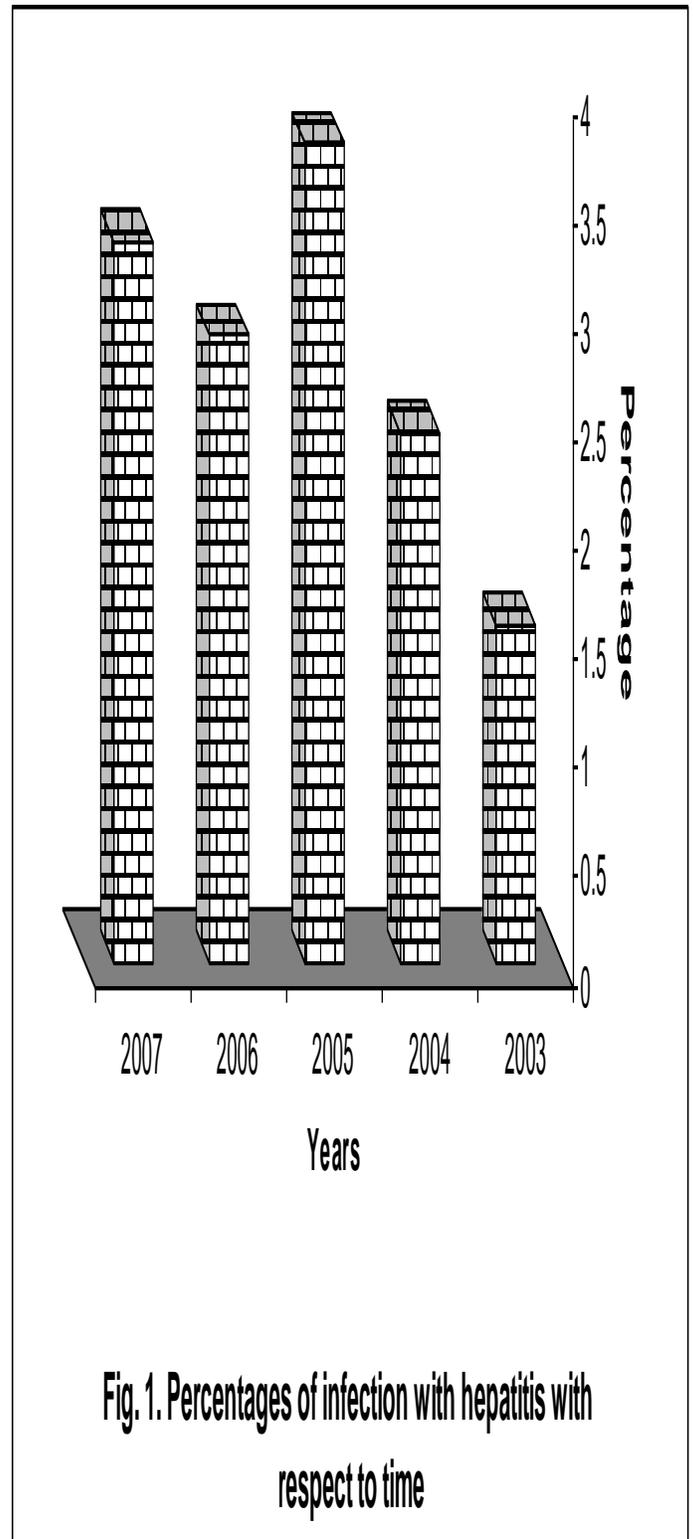
The mean females percentage of infection that found in this study significantly lower than that of males dental providers, maybe attributed to the fact that females are less exposed to the risk factors of transmitted diseases since they very likely to work with limited number of patients.

### References

1. Klein RS, Freeman K, Taylor PE, Stevens CE. Occupational risk for hepatitis C virus infection among New York City dentists. *Lancet* 1991 Dec 21-28;338(8782-8783):1539-42.
2. Comments: in: *Lancet* 1992 Feb 1;339(8788):304  
Comment in: *Lancet* 1992 May 9;339(8802):1178-9  
PMID: 1683969, UI: 92079638.
3. A Global Dental Safety Organization. Focus Issue: Hepatitis C virus and dentistry.html
4. Cleveland JL, Gooch BF, Shearer BG. Risk and prevention of hepatitis C virus infection: implications for dentistry. *J Am Dent Assoc* 1999;130:641-647.
5. Kerr SP, Blank LW. Percutaneous injuries among dental health care workers. *Gen Dent* 1999;47:146-151.
6. 1. Lin KW, Kirchner JT. Hepatitis B. *Am Fam Physician*. 2004; 69: 1863.
7. 2. Jahani MR, Motevalian SA, Mahmoodi M. Hepatitis B Carriers in Large Vehicle Drivers of Iran. *Vaccine* 2003; 21: 1948-51
8. 3. Alter MJ, Mast EE. The Epidemiology of Viral Hepatitis in the United States. *Gastroenterol Clin North Am* 1994; 23: 437-55
9. 4. Mast EE, Alter MJ, Margolis HS. Strategies to Prevent and Control Hepatitis B and C Virus Infections: a Global Perspective. *Vaccine* 1999; 17: 1730-3.
10. Kate Foster. Hepatitis C Infections May Come From Routine Dentistry. *The Scotsman* July 25, 2001.
11. Bongomin P and Magid K. Prevalence of hepatitis B virus (HBV) infection among Makerere University medical students. *Afr Health Sci*. 2005 June; 5(2): 93–98.
12. Scheutz F., Melbye M., Esteban J. I, et al. Hepatitis B virus infection in Danish dentists. *American Journal of Epidemiology* (1988) Vol. 128, No. 1: 190-196.
13. Stroffolini T, Mele A, Tosti ME, Gallo G, Balocchini E, Ragni P, Santonastasi F, Marzolini A, Ciccozzi M, Moiraghi A. The Impact of the Hepatitis B Mass Immunisation Campaign on the Incidence and Risk Factors of Acute Hepatitis B in Italy. *J Hepatol*. 2000; 33:980-5.
14. Miranda LV, Passos AD, Figueiredo JF, Gaspar AM, Yoshida CF. Serological Markers of Hepatitis B in People Submitted to Blood Testing in Health Care Clinics. *Rev Saude Publica* 2000; 34:286-91.



**Fig.1. The frequency distribution of the age for the total sample.**



**Fig. 1. Percentages of infection with hepatitis with respect to time**

**Table 1: Number of infected cases with HBV and HCV according to age and gender groups.**

Total	Age groups			Total	Male	Female	Total	Infected	%						
	20 – 29									30 – 39			40 – 49		
	50 – 59									60 – 69			Total		
356	36	114	127	63	1	3	16	14	26.92						
53	13	15	21	3	6	19	1	17	11.80						
14.89	36.11	13.16	16.54	4.76	23.08	5.26	6.25	6.67	11.80						
94	30	30	26	19	6	1	16	14	26.92						
10	2	2	6	1	6	1	1	1	1.00						
10.64	6.25	6.67	23.08	5.26	23.08	5.26	6.25	6.67	11.80						
63	14	17	27	4	27	4	14	14	26.92						
14.00	26.92	11.80	17.64	4.88	17.64	4.88	26.92	14	26.92						

t=1.044, p>0.05

**Table 2: Number of infected cases with HBV and HCV according to year of infection type of dental providers.**

Year	Total		Clinicians				Technicians			
	No.	%	HBV		HCV		HBV		HCV	
			No.	%	No.	%	No.	%	No.	%
2003	7	1.56	2	0.80	2	0.80	2	0.80	1	0.40

Total	2004			2005			2006			2007		
	2004			2005			2006			2007		
	2004			2005			2006			2007		
11	17	3.78	2.44	3	3	3	4	4	4	4	4	
3.33	3.78	2.89	2.44	3	3	3	4	4	4	4	4	
2	3	1.60	1.20	2	2	2	4	4	4	4	4	
0.80	1.20	1.60	1.20	2	2	2	4	4	4	4	4	
9	8	3.20	2.40	1	1	1	4	4	4	4	4	
3.60	3.20	1.60	2.40	1	1	1	4	4	4	4	4	
1	1	0.80	0.80	3	3	3	4	4	4	4	4	
1.20	2.00	1.20	2.40	3	3	3	4	4	4	4	4	
1.20	2.00	1.20	2.40	3	3	3	4	4	4	4	4	

HBV: t=2.68, P<0.03; HCV: t=2.19, p>0.05

**Table 3: Number of infected cases with HBV and HCV according to year of infection and gender groups.**

Year	Total		Male				Females			
	No.	%	HBV		HCV		HBV		HCV	
			No.	%	No.	%	No.	%	No.	%
2003	7	1.56	4	1.12	2	0.56	0	0.00	1	1.06
2004	11	2.44	4	1.12	4	1.12	1	1.06	2	2.13
2005	17	3.78	4	1.12	11	3.09	0	0.00	2	2.13
2006	13	2.89	6	1.69	7	1.97	0	0.00	0	0.00
2007	15	3.33	1	0.28	10	2.81	2	2.13	2	2.13

HBV: t=0.89, P>0.05; HCV: t=0.65, p>0.05

## انتشار التهاب الكبد الفيروسي نوعي B وC عند العاملين في مجال طب الاسنان بمحافظة الانبار - العراق

حامد حماد عنزي

عباس ابراهيم حسين

### الخلاصة:

شارك في هذه الدراسة 450 ممن يؤدون خدمات مختلفة في مجال طب الاسنان ومن مختلف المناطق التابعة لمحافظة الانبار، العراق. لقد كان الهدف الرئيسي وراء اجراء هذا البحث هو تسليط الضوء على مدى انتشار الاصابة بهذا المرض عند العاملين بهذا المجال. لقد وجد ان نسبة الاصابة الكلية هي 13%. وان اطباء الاسنان هم أكثر عرضة للاصابة بهذا المرض من الفنيين العاملين في مختبرات الاسنان.