

Knowledge, Attitudes and Practice of Hepatitis B vaccination among Iranian dentists

Jalaleddin Hamissi ^{1*}, Zahra Alizadeh Tabari ², Kimia Najafi ³, Hesameddin Hamissi ⁴, Zahra Hamissi ⁵

¹Associate Professor, Department of Periodontics, School of Dentistry, Qazvin University of Medical Sciences, Qazvin, Iran

²Assistant Professor, Department of Periodontics, School of Dentistry, Qazvin University of Medical Sciences, Qazvin, Iran.

³Postgraduate student, Department of Periodontics, School of Dentistry, Qazvin University of Medical Sciences, Qazvin, Iran

⁴Dental student, School of Dentistry, Qazvin University of Medical Sciences, Qazvin, Ira.

⁵Dental student, School of Dentistry, Shahid Behashti University of Medical Sciences, Teheran, Iran

* **Corresponding Author:** Jalaleddin H Hamissi

Associate Professor, Department of Periodontics and Preventive Dentistry,
College of Dentistry, Qazvin University of Medical Sciences, Qazvin, Iran
Email: jhamissi@qums.ac.ir, jhamissi@gmail.com

Abstract

Background: Hepatitis B infection is a serious blood-borne disease caused by the hepatitis B virus (HBV) which attacks the liver. It is the most common serious liver infection in the world and the virus is considered the major public health problem globally.

Objective: The aim of this study was to clarify the current situation regarding hepatitis B virus vaccination, and to evaluate the attitude and preventive measures against HBV such as related vaccination and use of barrier techniques among Iranian dentists.

Material and Methods: A confidential, self-administered questionnaire was distributed among two regional congresses including three hundred fifty dentists. The obtained data was entered to the personal computer using the Epi Info computer program after which it was transferred to the SPSS, version 15, and the program for analysis right after. Univariate analyses were performed using Chi-Square test. T-test was also used wherever appropriate.

Result: One hundred sixty eight of the respondents had their complete vaccination series, giving an immunization rate of 48.1%. 11 (3.1%) respondents had incomplete vaccination and 171(48.8%) had absolutely no vaccination at all (Fig. 1). Reasons for none-vaccinated group included: high cost (7.2%), insensitivity and ignorance to the risks (45.8), non-availability of vaccines (19.5%), inertia (22%), pregnancy (1.2%) and fear of complication (2.4%). 97.5% of the dentists reported routine use of gloves and 70.6% routine use of masks. 61.3% of the respondents also reported using protective garment constantly and 44.4% of dentists reported routine use of eye wear.

Conclusion: It is essential to improve rate of hepatitis B vaccination among Iranian dentists and to encourage regular use of barrier techniques.

Key words: Questionnaire, attitudes, Dentist, Hepatitis B vaccination, Barrier techniques

Introduction

Hepatitis B virus has known to be an occupational hazard for dentists in several decades.¹⁻³ Serious infections can be transmitted in the dental practice when percutaneous injuries occur. Hepatitis B Virus (HBV), Hepatitis C Virus (HCV), and Human Immunodeficiency Virus (HIV) infections are considered as professional hazards for dentists and other health care.^{4,5} It is a very serious public health problem with an estimated of 2 billion individuals being infected worldwide and 350 million persons reporting having chronic HBV infection. The World Health Organization (WHO) estimates approximately 500,000 to 1.2 million deaths each year due to HBV-related chronic liver disease. This is the 10th most important cause of death.⁶⁻⁸ The epidemiology and transmission of HBV is complex. It can occur in all age groups. The greatest concentrations of HBV occur in blood and serous fluids, and infection most frequently appears through direct inoculation of the virus through unsafe injections or contaminated medical equipment. Other transmission includes sexual contact with infected individuals and births from HBV-infected mothers.⁹⁻¹¹

Currently, viral hepatitis occupies a very important place among health problems. Hepatitis B virus is an even more common serious disease in Iran and around the world¹²⁻¹⁶. In the world's carriers of HBV, 75% are from Asia¹⁷, and Iran represents a low-to-moderate category¹⁸, with 1.3 to 8.69% of the population are chronic carriers.¹⁹ The epidemiology of infection is also changing from a vertical to a horizontal route. This may be due to an improvement of people's knowledge as risk factors, since the national vaccination program started in 1993 for all neonates, and the vaccination of all high risk groups.¹⁸

Limited studies are available in Iran so the purpose of this study was to assess the knowledge and attitude and the current situation regarding hepatitis B virus vaccination, and evaluation of the preventive of incidence of HBV vaccination and use of barrier techniques among dentists.

Methods and Material

The study was a questionnaire-based cross-sectional study of dentist, which was conducted in Jun 2010. The questionnaire elicited information on demography, occupational risk rating of contracting hepatitis-B infection, hepatitis-B vaccination status, barriers to uptake of hepatitis vaccine, and suggestions on how to improve hepatitis-B vaccination rates among dentists.

Questionnaire

We used a Ghesemi & Kabir questionnaire that designed a 29-item self-administered assessing risk of transmission, Serocon version rates, the actual prevalence of HBV among them,

vaccination against HBV, use of double gloves, and protective eyewear, rate of needle stick injury and regarding reports, checking the status of viral hepatitis, using disposable syringes and discarding them, and post-exposure prophylaxis.²⁰

At first designed section of demographic data such as age, gender, specialty, work time per week. Some of the responds in questionnaire were based on lickert scale, some of them were yes/No and a few consist the open-ended questions.

For validating the questionnaire, some physicians and epidemiologist, expert in standardizing questionnaires, confirmed the face and content validity of the primary questionnaire, and some questions were omitted according to their comments.

Sample

We distributed the questionnaires among participants in two dental congresses in Tehran (capital of Iran, a national congress) and in Qazvin (in western Iran, a regional congress). Participants returned 370 (82%) of the 450 distributed questionnaires.

Statistical Analysis

Data was entered using the Epi Info computer program after which it was transferred to the SPSS, version 15, and a program for analysis. Univariate analyses were performed by use of Chi-Square test and T-test was also used wherever appropriate.

Results

A questionnaire was distributed to four hundred dentists. Three hundred and fifty dentists returned it fully completed (response rate of 87.5%). Eighty five (53%) were male while seventy five (46.9%) were females. Their ages ranged from 26 to 60 years with mean value of 34.6 to 7.17 years (Table 1). Table 2 shows years of professional experience. One hundred and forty five (70%) of the respondents perceived hepatitis B virus infection as greatest hazard in dental environment. 98 (28.1%) others perceived HIV as the greatest hazard while 7 (1.9%) were concerned about other infections. 168 of the respondents had complete vaccination, giving an immunization rate of 48.1%. 11 (3.1%) had incomplete vaccination and 171(48.8%) no vaccination at all (Fig. 1). Reasons for none-vaccination group include: high cost (7.2%), insensitivity to risk (45.8), non-availability of vaccines(19.5%), inertia(22%), pregnancy(1.2%) and fear of complication(2.4%). 97.5% of the dentists indicated routine use of gloves and 70.6% routine use of masks. 61.3% constant use of protective garment and 44.4% of dentists responded routine use of eye wear respectively (Fig 2).

Discussion

To the best of the authors' knowledge, this is the first study to be conducted on gender differences in the characteristics, occupational exposure, and infection control practices, among dental professionals in Qazvin.

Prevention is ultimately the most efficient humane means toward improved health²¹. Immunization programs are highly effective, clearly protect populations and individuals at risk and are leading to the elimination of hepatitis B.²² Although hepatitis B is a preventable disease but it is one of the major causes of morbidity and mortality throughout the world including Iran. There are several serious infections which can be transmitted in the dental practice when percutaneous injuries occur. Dentists appear particularly prone to blood-borne infections, as their routine practice includes the use of sharp instruments in an environment contaminated with saliva and blood. Although virus transmission via saliva may be possible but the major occupational risk is accidental needle stick injuries.²³

Viral hepatitis caused by HBV is a disease that has no oral symptom but it has enormous concern to the dental profession due to the simplicity of transmission of the virus from patients with so called condition.²⁴ And dentists are at the top of high risk population of HBV infection.¹ Since 1982, when the hepatitis B vaccine became available and have proven safe to both adults and children^{25,2}, attempts have been made in different parts of the world to encourage vaccination among dental professionals.^{11,3,27}

This is important because perceptions about susceptibility to the virus have been reported to be low among oral health workers, and perceptions about the cost of the hepatitis B vaccine have been documented as a significant barrier to the uptake of the vaccine among these professionals.²⁸ This is supported by the positive association between levels of vaccination against hepatitis B, and the knowledge about hepatitis infection and its contagion; reported in a study among clinicians.²⁹ Occupational exposures and cross-infection are prevented by the use of appropriate barriers, such as gloves, eye and face protection, and protective gowns. Hand-hygiene practices and sterilization also help in preventing cross-infection in dental practice.

In this study, the percentage of the respondents who had received three doses (complete dose) of the hepatitis-B vaccine is lower than 86% reported among health workers in tertiary care hospital, Karachi³⁰, 85.7% reported among dental professionals of the Military Hospital, Riyadh³⁰, 73.8%³² and 74.9% among Brazilian dentists³³, 60% reported among healthcare worker in Lahore³⁴, 56.2% reported among Italian dentists³⁵, and 35.9% reported among Lithuanian general dental practitioners.³⁶

This study suggests that vaccination should be considered as a requirement for annual practicing license renewal. Moreover, employing dentists implies that vaccination should be mandatory. This mandatory recommendation has also been suggested in several studies.^{34,37,38} The recommendation was significantly associated with gender, with female dental surgeons recommended for mandatory vaccination more than males. The better preventive health practices among females may have inclined them for recommending mandatory vaccination in this study

Conclusion

This study indicates that our medical specialists are not alert enough to HBV and HCV. They must be sufficiently well informed to be able to improve knowledge, attitudes and behavior of other HCWs and patients. It also seems evident that additional research on HCV is needed in this regard.

Recommendation

Hepatitis B is an important health hazard to both health care workers and patients. It is very important to achieve 100% immunization coverage not only by providing free immunization facilities by the Government in the public sector, but it is also to be made obligatory / necessary for the health care workers legally. All the health care workers should be motivated for behavior change and ensured for immunization to enhance their occupational safety.

Conflict of interest and funding: The authors have not received any funding or benefits from industry in order to conduct this study.

Acknowledgements: We would like to express our appreciation to all participants and to those of our colleagues who helped us to carry out this study.

References

- 1-Cottone JA. The global challenge of hepatitis B: Implications for dentistry. *Int Dent J* 1991; 41:131-141.
 2. Leggat PA, Kedjarune U, Smith DR. Occupational Health Problems in Dentistry: A Review. *Industrial Health* 2007; 45: 611-621.
 3. Mahboobi N, Agha-Hosseini F, Mahboobi N, Safari S, Lavanchy D, Alavian SM. Hepatitis B virus infection in dentistry: a forgotten topic. *J Viral Hepat* 2010; 17:307-16.
 4. Klein RS et al. Occupational risk for hepatitis C virus infection among New York City dentists. *Lancet*, 1991, 338:1539-42.
 5. Mast EE, Alter MJ. Prevention of hepatitis B virus infection among health care workers. In: Ellis RW, ed. *Hepatitis B vaccines in clinical practice*. New York, Marcel Dekker, 1993:295-307.
 6. Hepatitis B. Geneva, World Health Organization, 2008 (WHO Fact sheet, No. 204) (<http://www.who.int/media centre/factsheets/fs204/en/index.html>, accessed 18 May 2009).
 7. Lavanchy DJ. Hepatitis B virus epidemiology, disease burden, treatment, and current and emerging prevention and control measures. *Viral Hepatitis*, 2004, 11:97-107.
 8. Hamissi J, Hamissi H. Occurrence of hepatitis B and C infection among hemodialyzed patients with chronic renal failure in Qazvin, Iran: A preliminary study. *International Journal of Collaborative Research on Internal Medicine & Public Health*. 2011; 3:89-96.
 9. Mahoney FJ. Update on diagnosis, management, and prevention of hepatitis B virus infection. *Clinical Microbiology Reviews*, 1999:351-66.
 10. Qirbi N, Hall AJ. Epidemiology of hepatitis B virus infection in the Middle East. *Eastern Mediterranean Health Journal*, 2001, 7:1034-45.
-

11. Poland GA, Jacobson RM. Clinical practice: Prevention of hepatitis B with the hepatitis B vaccine. *N Engl J Med*. 2004; 351:2832–8.
12. Askarian M, Assadian O. Infection Control Practices among Dental Professionals in Shiraz Dentistry School, Iran. *Arch Iran Med* 2009; 12: 48-51.
13. Erasmus S, Luiters S, Brijlal P. Oral Hygiene and dental student's knowledge, attitude and behavior in managing HIV/AIDS patients. *Int J Dent Hygiene* 2005; 3: 213-217.
14. Gershon RR, Karkashian C, Vlahov D, Grimes M, Spannhake E. Correlates of infection control practices in dentistry. *Am J Infect Control* 1998; 26: 29–34.
15. Kanjirath PP, Peters MC, Inglehart MR. Treating Patients with Herpes Simplex Virus Infections: Dental and Dental Hygiene Students' Knowledge, Attitudes, and Professional Behavior. *J Dent Educ* 2007; 71: 1133-1144.
16. Di Giuseppe G, Nobile CG, Marinelli P, Angelillo IF. A survey of knowledge, attitudes, and behavior of Italian dentists toward immunization. *Vaccine*. 2007; 25:1669–75.
17. Alavian SM. Hepatitis C infection in Iran; A review article. *Iran J Clin Infect Dis*. 2009; 4(1):47-59.
18. Alavian SM, Hajarizadeh B, Ahmadzad-Asl M, Kabir A, Bagheri-Lankarani K. Hepatitis B Virus Infection in Iran: A Systematic Review. *Hepat Mon*. 2008; 8(4):281-94.
19. Ghorbani GA, Alavian SM, Ghadimi HR. Long term effects of one or two doses of hepatitis B vaccine in adults after five years. *Pak J Biol Sci*. 2008; 11(4):660-3.
20. Ghasemi Sh, Kabir A, Ansari Jafari M, Jalali M, Amini A, Faghihi-Kashani AH, et al. Psychometric Properties of A Standardized Questionnaire of Knowledge, Attitude, and Practice of Iranian Medical Specialists about Viral Hepatitis. *Hepat Mon*. 2012;12(12):e7650.
21. Ehreth J: The value of vaccination: a global perspective. *Vaccine* 2003, 21:4105-17.
22. Mast EE, Margolis HS, Fiore AE, Brink EW, Goldstein ST, Wang SA, Moyer LA, Bell BP, Alter MJ, Advisory Committee on Immunization Practices (ACIP): A Comprehensive immunization strategy to eliminate transmission of hepatitis B virus infection in the United States: recommendations of the Advisory Committee on Immunization Practices (ACIP) part 1: immunization of infants, children, and adolescents. *MMWR Recomm Rep* 2005, 54:1-31.
23. Leggat PA, Smith DR. Prevalence of percutaneous exposure incidents amongst dentists in Queensland. *Aust Dent J* 2006; 51:158-61.
24. Ilgüy D, Ilgüy M, Semanur D, Bayirh G. Prevalence of the patients with history of hepatitis in a dental faculty. *Med Oral Patol Oral Cir Bucal* 2006; 11:E29-E32.
25. Van Damme P, Van Herck K: A review of the long-term protection after hepatitis A and B vaccination. *Travel Med Infect Dis* 2007, 5:79-84.
26. WHO: World Health Organization Hepatitis C. Fact Sheets 2000 [<http://www.who.int/mediacentre/factsheets/en/>]. Accessed December 18 h, 2009
27. Scully c, Pantlin L, Samaranayake LP, Dowel TB. Increasing acceptance of hepatitis B vaccine by dental personnel but reluctance to accept hepatitis B carrier patients. *Oral Surg Oral Med Oral Path* 1990; 69; 45-47.
28. Jacobson JJ, Lang WP, Ybanez MS, et al. Acceptance of hepatitis B vaccine among dental health care workers. *J Public Health Dent*. 1989; 49(2):67-72.
29. Breda-Albuquerque F, De Farias AB, Do Prado MG, Orestes-Cardoso S. Influence of clinicians' socio-demographic, professional and educational variables on their compliance with preventive measures against hepatitis B and C. *Oral Health Prev Dent*. 2008; 6(4):349-354.
30. Ali NS, Jamal K, Qureshi R. Hepatitis B vaccination status and identification of risk factors for hepatitis B in health care workers. *J Coll Physicians Surg Pak*. 2005; 15:257–60.

31. Paul T. Self-reported needle stick injuries in dental health care workers at armed forces hospital Riyadh, Saudi Arabia. *Mil Med.* 2000; 165:208–10.
32. Resende VL, Abreu MH, Paiva SM, Teixeira R, Pordeus IA. Concerns regarding hepatitis B vaccination and post-vaccination test among Brazilian dentists. *Viol J.* 2010; 7:154.
33. Martins AM, Barreto SM. Hepatitis B vaccination among dentist's surgeons. *Rev Saude Publica.* 2003; 37:333–8.
34. Sheikh NM, Hasnain S, Majrooh A, Tariq M, Maqbool H. Status of hepatitis B vaccination among the health care workers of a tertiary hospital, Lahore. *Biomedica.* 2007; 23:17–20.
35. Di Giuseppe G, Nobile CG, Marinelli P, Angelillo IF. A survey of knowledge, attitudes, and behavior of Italian dentists toward immunization. *Vaccine.* 2007; 25:1669–75.
36. Rimkuvienė J, Puriene A, Peciuliene V, Zaleckas L. Percutaneous injuries and hepatitis B vaccination among Lithuanian dentists. *Stomatologija.* 2011; 13:2–7.
37. Sofola OO, Uti OG. Hepatitis B virus infection and prevention in the dental clinic: Knowledge and factors determining vaccine uptake in a Nigerian dental teaching hospital. *Nig Q J Hosp Med.* 2008; 18:145–8.
38. Chaudhari CN, Bhagat MR, Ashturkar A, Misra RN. Hepatitis B vaccination status among health care workers. *Medical J Armed Forces India.* 2009; 65:13–7.

Table 1: Distribution of respondent by age

<i>Age</i>	<i>Frequency</i>	<i>Percent</i>
26-30	129	36.9%
31-35	116	33.1%
36-40	31	8.8%
41-45	41	11.8%
46-60	33	9.4%
Total	350	100%

Table 2: Distribution of respondent by years of practice

<i>Years of practice</i>	<i>Frequency</i>	<i>Percent</i>
1-5	160	45.7%
6-10	90	25.7%
11-15	28	8%
Over 16	72	20.57%
Total	350	100%

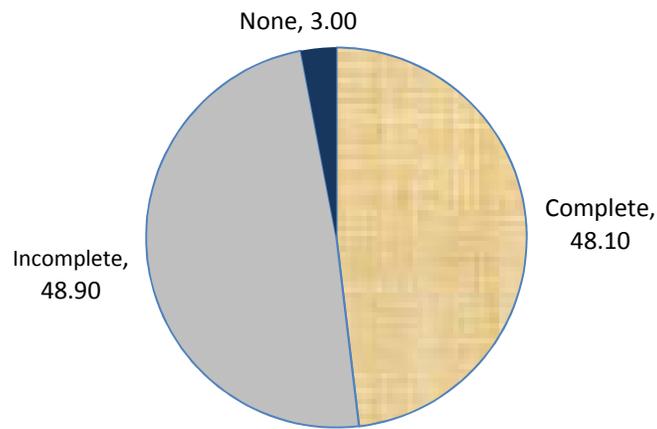


Fig. 1 Hepatitis B vaccination

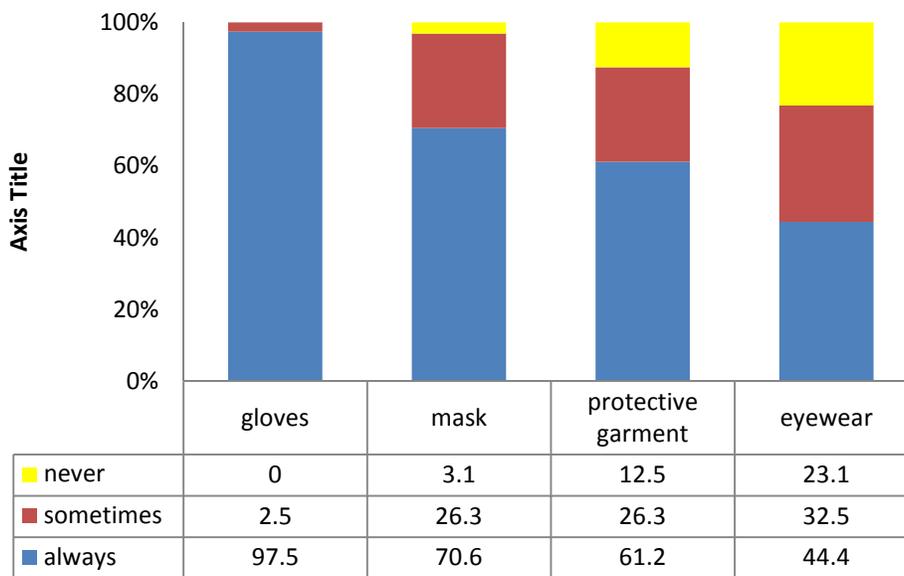


Fig. 2: Use of protective covers