

## Hepatocellular carcinoma

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### ABSTRACT

*Background:* Dental health care providers are at risk of infection with hepatitis B virus (HBV). Dentists can occupationally become infected with HBV through needle sticks or exposure to blood and other body fluids.

*Objectives:* To evaluate anti-HBs antibody titer in students, professors, clinical assistants and non-clinical staff of Faculty of Dentistry, Tehran University of Medical Sciences (TUMS), and to investigate the probable correlation between the level of immunity and a number of associated factors.

*Patients and Methods:* 230 participants who had a history of previous HBV vaccination (receiving at least two doses of HBV vaccine) and a negative history of being infected with HBV were studied. Participants' data were recorded using a checklist, and the level of antibody was measured by enzyme-linked immunosorbent assay (ELISA).

*Results:* While there existed statistically significant correlations between age, occupation, smoking, complete and scheduled vaccination and time of the last vaccination with the level of anti-HBs antibody, the correlation between gender and level of the antibody was not significant. Multiple regression analysis revealed significant association between immune response and age and time of the last vaccination.

*Conclusions:* Due to the significant correlation between younger age and anti-HBs antibody titer in our study, it makes sense to establish a mandatory complete and scheduled vaccination program for all members of dental society younger than 40 years.

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#### ► *Implication for health policy/practice/research/medical education:*

The necessity of more attention towards hepatocellular carcinoma as one of the causes of mortality in patients with end stage liver failure should be considered by internists, infectious disease specialists, gastroenterologists and general practitioners.

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Hepatocellular carcinoma (HCC) is one of the most common malignant tumors worldwide. The annual incidence ranges from <10 cases per 100,000 persons in North America and western Europe to 50–150 cases per 100,000 persons in parts of Africa and Asia, where HCC is responsible for a large proportion of cancer-related deaths. However, a rise in the incidence of and mortality from HCC, most likely reflecting the increased prevalence of hepatitis C virus (HCV) infection, obesity, and diabetes mellitus, has been observed in most industrialized countries (1-4).

The major etiologies of HCC are well defined including:

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Chronic viral hepatitis B, C, and D; Toxins and drugs (e.g., alcohol, aflatoxins, anabolic steroids); Metabolic liver diseases (e.g., hereditary hemochromatosis, alpha-1-antitrypsin deficiency); Diabetes mellitus, obesity in men, nonalcoholic fatty liver disease (NAFLD). Some of the steps in the molecular pathogenesis of HCC have been elucidated in recent years. Little is known about the incidence and causes of HCC in Iran—particularly in the large province of Kerman, in south-east Iran, which has a population of approximately 2.6 million people.

In recently published article by Hepatitis Monthly, Dr. Sodaif Darvishmoghdam and colleagues, presented a detailed analysis of the epidemiology of HCC in this province and compare it with nationwide data from a report by the Iranian Cancer Registry Program, published in 2008 (5, 6). Between 1999 and 2006, 95 cases of confirmed HCC were reported in Kerman, corresponding to a crude annual inci-

dence of 0.522 cases per 100,000 persons. The standardized annual incidence was 0.7 per 100,000 persons. Nationwide, the crude and standardized annual HCC incidence was 0.199 and 0.2 per 100,000 persons, respectively. In males, it was 0.9 and 0.4 in females, indicating an approximately 2-fold higher risk for HCC in men compared with females. Further, the authors demonstrated that HCC patients in Kerman are significantly younger than in Iran in general. The incidence of HCC is significantly lower in Iran and its provinces compared with other parts of the world, including Africa, East Asia, North America, Western Europe, and the Middle East, presumably due to the low incidence of hepatitis B virus (HBV) and HCV infection as well as alcoholic liver disease. Notably, in Iran there are provinces that experience an extremely low number of HCC cases annually, such as Ardebil, Guilan, and Golestan, and provinces that have a low but significantly higher incidence, such as Kerman, Fars, Razavi Khorasan, and most notably Tehran, Kerman province showing the highest crude annual incidence. The reasons for these geographic differences in the mean number of annual HCC cases, the crude annual incidence, and the distribution of ages in patients with HCC in Iran have not been determined. Further studies should address these issues to reduce the incidence of HCC. In this context, in addition to risk factors, preventive compounds, such as coffee (6-8), should be considered. Such studies are particularly important for

provinces in Iran that have a higher incidence of HCC, where it remains a devastating malignant disease with very limited therapeutic options.

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