

# Hepatitis B and C knowledge among Saudi dental patients

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## ABSTRACT

**الأهداف:** لمعرفة مدى وعي مرضى الأسنان فيما يخص التهاب الكبد الوبائي (B)-(C) HBV-HCV وطريقة الإصابة بهم عن طريق العدوى.

**الطريقة:** تم توزيع استبيان من صفحة واحدة مقسم إلى ثلاثة أجزاء بشكل عشوائي على مرضى الأسنان في قاعات الانتظار في بعض عيادات الأسنان الحكومية والخاصة. أحتوى الاستبيان على 32 بياناً مختلفاً ويتعلق بالمعلومات الأساسية عن التهاب الكبد الوبائي (B) و (C)، بما فيها طرق العدوى، الوقاية، العلاج، والتلقيح ضد الالتهاب. أجريت هذه الدراسة في كلية طب الأسنان - الرياض - المملكة العربية السعودية، خلال الفترة مابين عام 2006م و عام 2007م.

**النتائج:** ستمائة وسبعاً وسبعون مشاركاً قاموا بتعبئة الاستبيان. أوضحت النتائج أن أكثر من 60% من المشاركين لديهم بعض العلم والمعرفة عن التهاب الكبد الوبائي HBV-HCB 50%، منهم يدركون أن التهاب الكبد الوبائي (HBV-HCB) يمكن أن يؤثر على وظائف الكبد وقد يؤدي إلى الوفاة. كما تبين أيضاً أن المشاركين من الإناث 69% لديهم معرفة أكثر من الذكور 31% ( $p=0.00$ ) بوجود لقاح لالتهاب الكبد الوبائي (HBV). كما كان هناك زيادة طردية في نسبة الوعي والمعرفة عن التهاب الكبد الوبائي (HBV-HCB) مع الزيادة في مستوى التعليم والدخل لدى المشاركين.

**خاتمة:** يجب وضع برامج توعوية للعامة لنشر الوعي والتثقيف فيما يخص التهاب الكبد الوبائي (B) و (C)، وأن تشمل هذه البرامج كلا من الذكور والإناث لتوسعة المدراك حول هذا الالتهاب.

**Objectives:** To explore Saudi dental patients' awareness of hepatitis B virus (HBV) and hepatitis C virus (HCV) infections and its knowledge of transmission; and to compare the HBV and HCV knowledge and practices of men and women.

**Methods:** A pre-tested anonymous self-administered one-page questionnaire consisting of 3 parts with 32 different statements concerning basic knowledge of HBV and HCV, their mode of transmission, risk behaviors, prevention, treatment and immunization

were randomly distributed to dental patients at clinics and waiting areas of different governmental and private dental clinics. The study was conducted between 2006 and 2007, in Riyadh, Kingdom of Saudi Arabia.

**Results:** Six hundred and seventy-seven participants responded to the questionnaire. More than 60% of the participants were aware of both HBV and HCV and approximately 50% were aware that it could affect the liver function and lead to death. Availability of vaccine for HBV was a fact appreciated more by females (69%) than by males (31%) ( $p=0.00$ ). It was also found that there is an increase in the awareness and knowledge of HBV and HCV with the increase in the level of education and with higher income.

**Conclusion:** Efforts should be made to develop and implement hepatitis B and C educational campaigns for Saudi community. These efforts might be suitable for male and female audiences. Targeted community-wide awareness-raising campaigns and health care worker education is required to improve knowledge of HBV and HCV.

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Infections such as viral hepatitis caused by hepatitis B virus (HBV) and hepatitis C virus (HCV) are a serious public health problem.<sup>1</sup> They are responsible for significant morbidity and mortality in developed and underdeveloped countries.<sup>1</sup> Hepatitis B is a potentially life-threatening liver infection caused by the HBV.<sup>2</sup> Among persons with chronic HBV infection, the risk for premature death from cirrhosis is 15% or hepatocellular carcinoma is 25%.<sup>2</sup> Approximately 2

billion people worldwide have been infected with the virus and approximately 350 million lives with chronic infection.<sup>3</sup> Hepatitis B virus is efficiently transmitted by percutaneous or mucous membrane exposure to infectious blood or body fluids that contain blood and not through casual contacts.<sup>4</sup> A vaccine against hepatitis B has been available since 1982. Hepatitis B is endemic in China and other parts of Asia. Most people in the region become infected with HBV during childhood. In these regions, 8-10% of the adult populations are chronically infected.<sup>4</sup> In the Middle East and Indian sub-continent, an estimated 2-5% of the general population is chronically infected. Less than 1% of the population in Western Europe and North American is chronically infected.<sup>3</sup> Hepatitis C is a contagious liver disease that results from infection with the HCV.<sup>2</sup> Cirrhosis develops in approximately 10-20% of persons with chronic infection, and liver cancer develops in 1-5% of persons with chronic infection over a period of 20-30 years.<sup>5</sup> Hepatitis C virus spreads primarily by direct contact with human blood. However, transmission through blood transfusions and use of unsterilized needles or syringes, or through needle sharing is efficiently acknowledged.<sup>6</sup> Other modes of transmission such as social, cultural, and behavioral practices using percutaneous procedures (namely ear and body piercing, circumcision, tattooing) can occur if inadequately sterilized equipment is used. Sneezing, hugging, coughing, food or water, sharing eating utensils, or casual contact does not spread HCV.<sup>2,5,6</sup> World Health Organization estimates that approximately 170 million people, 3% of the world's population, are infected with HCV.<sup>5</sup> The prevalence of HCV infection in some countries such as Africa, Eastern Mediterranean, South-East Asia and Western Pacific (when prevalence data are available) is high compared to some countries in North America and Europe.<sup>5</sup> The risk for HCV infection from a needle-stick exposure to HCV/HBV-contaminated blood between health care providers is approximately 1.8% (range: 0-10%). Although a few cases of HCV transmission via blood splash to the eye have been reported, the risk for such transmission is expected to be very low.<sup>7</sup> The prevalence of HCV in Saudi Arabia is 2-6%.<sup>8</sup> Most patients with chronic hepatitis C show no sign or symptoms of liver disease and are diagnosed by abnormal transaminases on routine testing or after blood donation.<sup>9,10</sup> In Kingdom of Saudi Arabia (KSA), the prevalence of HBV surface antigen (HBsAg) is approximately 2-5%.<sup>11</sup> Sub-clinical cases of hepatitis, which are cases, that has neither previous history of hepatitis nor clinical signs or symptoms, have been reported to be up to 50% of cases.<sup>11,12</sup> Al-Faleh et al<sup>13</sup> in a screening profile test of HCV in Gizan area in KSA, found that 1.9% of the subjects tested were anti-HCV positive.<sup>13</sup> Al-Sohaibani et al<sup>14</sup> reported that

in Riyadh, the evidence of exposure to HCV was 2.6% in the medical students, 1.9% in the medical staff and 1.7% in the controls.<sup>14</sup> The sub-clinical cases of hepatitis are of a main concern to the health care workers due to the absence of precaution measures when treating them, which eventually would lead to transmission of infection to persons in direct contact and subsequently to other patients.<sup>15</sup> Therefore, public should be aware of this root of transmission and have knowledge regarding consequences, outcome, treatment and precaution through health promotion programs and community service education. Health promotion programs for public need to be targeted and based on a thorough understanding of their knowledge, belief and cultural practices regarding HBV and HCV infections. Proper education for people, especially young individuals, will be an effective tool in reducing the spread of HBV and HCV within the country. An important starting point for designing a proper prevention tool is to assess the people's knowledge of viral hepatitis especially among dental patients as most dental treatment requires the use of sharp objects that cause some sort of bleeding and would facilitate cross infection. We are not aware of any national data addressing HBV and HCV knowledge and behavior among dental patients in KSA. The objective of this survey is to explore the knowledge level, awareness and attitude of Saudi dental patients towards HBV and HCB infections and to compare the level of awareness between male and female.

**Methods.** A pre-tested anonymous self-administered one-page questionnaire (in English) were used in this study. A statistician from King Saudi University (KSU), Riyadh, KSA reviewed the questionnaire for content validity; the questionnaire was then translated into Arabic and was pilot tested in 40 dental patients attending the Dental College, KSU. Accordingly, it was modified and corrected for wording and clarity. The questionnaire consisted of yes/no answers for 32 different statements concerning basic knowledge of HBV and HCV. The questionnaire was divided into 3 sections; the first section consisted of sample demographics such as age, gender, education level, marital status, and income. The second part included items that were related to participant knowledge and awareness of HBV, the mode of transmission such as food from infected person, blood, contaminated needle, and from mother to child. Other statements were on the availability of immunization, and sequels of the infection. The third section consisted of questions similar to part 2, but related to HCV, in addition to the final question on the source of information regarding their knowledge of both HBV and HCV. The questionnaire was distributed in

the clinics and waiting areas of male and female dental patients attending the College of Dentistry, KSU, King Fahad Medical City, Military Hospital, King Abdulaziz University Hospital, King Khalid University Hospital, and some private clinics. Patients were requested to respond to questions according to their own awareness of the subjects. The questionnaire was distributed between September 2006 and June 2007. A written informed consent was obtained from all study participants, and all data were collected and analyzed without personal information identification. The survey was approved by the Research Ethics Board at King Saud University.

Descriptive analysis was reported for demographic variable, knowledge of the disease (mode of transmission, immunization, liver cirrhosis), and attitude concerning HBV and HCV using SPSS version 15. Pearson's chi-square was used to test the significance, which was set at 5%, it was conducted for the relationship between the demographic variable and the knowledge and attitude toward HBV and HCV. In addition, differences in awareness between males and females was compared.

**Results.** One thousand questionnaires were distributed and 677 were collected with a response rate of 67.7%. Females constituted 69% of the respondents and 31% were males. The majority of the respondents were in the age group >25 years of age, of those 70.9% were females and 29.1% were males. Most respondents were single (52.5%), of them 66.3% were females and 33.7% were males. Approximately 45.2% were married (71.2% female and 28.8% males) and 2.3% were divorced of those 87.5% females and 12.5% males. Thirty-nine percent of respondents have university qualification (61.4% females and 38.6% males), while 32.9% had a high school education (72% females and 28% males). Respondents who earned monthly income of >SR 12500 were 49.1% (27.3% earned >SR 2000 and 23.5% earned <SR 15000). There was significant differences when gender was specified. Regarding the level of education, females were statistically highly significant more educated compared to males in all education level from primary to university level ( $p=0.000$ ), (Table 1). Similarly, married females were statistically higher than married males ( $p=0.000$ ).

Sixty-three percent of all respondents have knowledge of HBV (65% females and 58.5% males). Approximately 46% of respondents' believes that HBV causes jaundice, out of that 48.5% were females and 39.2% were males. Participants were asked if they think that HBV can be transmitted by food prepared by an infected person, 28.4% believes that it could be transmitted with a significant difference of females (31.8%) than males (20.8%)  $p=0.00$ . In the other hand, 21.3% of all

respondents' believes that HBV is transmitted by direct contact with infected person, 51.2% believes that it was transmitted by blood transfusion or injury by infected needle, 35% reported transmission by gender or body fluids, 49.6% believes it was transmitted in the dental clinics during surgeries or hygiene care, and 38.3% reported that it was transmitted by parental root, with no significant difference between males and females (Table 2). Approximately 52.2% of the respondents reported that HBV can affect liver function and can lead to death and 38.6% with no significant difference between male and female. Conversely, there was a significant difference between males (31%) and females (69%) ( $p=0.00$ ) with regards to their opinion of the existence of a vaccinations for HBV as females were more aware of the presence of vaccination for hepatitis B. When respondents were asked if they are aware of HCV, more than 60% of all respondents had no knowledge of HCV. Twenty-six percent of respondents who have some knowledge on

**Table 1** - Level of education of participant by gender.

Gender	Level of education (%)					P-value
	Illiterate	Primary	Intermediate	High	University	
Male	1.4	9.9	10.4	29.7	31	0.02
Female	3.8	10.6	16.5	34.7	69	0.000

**Table 2** - Participant opinion on mode of transmission of hepatitis B virus by gender.

Mode of transmission	Gender (%)		P-value
	Male	Female	
Food prepared by infected person	20.8	31.8	0.222
Physical contact	17.9	22.9	0.678
Blood transfusion	49.5	51.9	0.768
Surgical dental procedures	38.2	43.9	0.455
Sex and body fluids	31.6	37.7	0.461
From mother to fetus	33	40.7	0.323

**Table 3** - Participant opinion on mode of transmission of hepatitis C virus by gender.

Mode of transmission	Gender (%)		P-value
	Male	Female	
Transmitted between family members	20.3	17.6	0.898
Transfer by air	12.6	14.4	0.910
Using infected person utensils	34	31	0.671
Surgical dental procedures	25.5	26.9	0.991

HCV believes that it causes jaundice, can be transmitted from family members (18.4%), can be transmitted by air (14%), cross infection can occur when using personal utensils of an infected person (31.3%), can transfer in the dental clinic when surgery or hygiene care is carried out by infected instruments (26.5%), in addition, 22.5% reported that HCV has vaccination, can cause cancer (32.5%) and affect the children (26%) (Table 3). Thirty percent of all respondents reported that they would inform their dentist if they have HCV or any member of the family, with no significant difference between males and females. There was a significant difference in knowledge of HCV infection by level of education ( $p=0.000$ ) and income ( $p=0.000$ ); as the level of education increased there is increase in the income and more knowledge of HBV and HCV infections with no significant difference between males and females. When respondent were asked concerning the source of their information for both HBV and HCV; 18% reported getting their knowledge through newspapers, 17.5% through schools and universities, 14.5% from media, 5.6% from dental clinics, and 5.6% from the internet with no significant difference between males and females.

**Discussion.** Hepatitis B virus and HCV spread primarily by direct contact with human blood. Transmission through blood transfusions that are not screened for HBV and HCV infections, through the reuse of inadequately sterilized needles, syringes or other medical equipment, or through needle-sharing among drug-users, is well documented.<sup>2,16,17</sup> Sexual and prenatal transmission may also occur.<sup>2,8,16</sup> In 1988, HCV was initially identified.<sup>18</sup> Ever since it has become a major health hazard worldwide.<sup>5,16,19</sup> Chronic active hepatitis, cirrhosis or hepatocellular carcinoma develops in approximately 10% of patients with chronic infection of HCV.<sup>19,20</sup> Lack of awareness regarding hepatitis B and C among the general public would be responsible for the rapid spread of HBV and HCV. This could be one of the reasons of the high prevalence rate in developing and underdeveloped countries in contrast to developed countries.<sup>1</sup> The response rate (67.7%) for a questionnaire survey of this type was comparable to other similar studies.<sup>21,22</sup> The findings of the present study showed that more than 60% of the participants reported that they were aware of HBV and only 26% of participants were aware of HCV. Only third the participant knew that there was a screening and vaccination for both infections types of hepatitis infection Sixty-three percent of respondents stating that they were aware of HBV, approximately 40% were not aware that it could be chronic and the

majority (over 60%) were not aware of the possible severe health consequences of both infections, including cirrhosis and liver cancer. This suggests that although many people may have heard of HBV and HCV, but the community is largely unaware of the serious risks of the infections. These findings support previous studies these among other populations.<sup>22-24</sup> It was also found in the present study that knowledge on specific HBV and HCV transmission routes (blood transfusion, injury by infected needles, sexual) were generally higher than those found in other studies.<sup>23,25,26</sup> Knowledge of specific HBV transmission routes did not differ between Saudi males and females in the present study. Females were more likely than males to identify close household contact through sharing food, toothbrushes and razors as routes for HBV transmission and more aware of the availability hepatitis B vaccination. The same was stated in other studies in different population.<sup>26,27</sup> The level of HBV awareness and knowledge were higher among female participant than male participant in the present study. These results are in agreement with other studies in different population,<sup>27</sup> where in they reported that females were more aware of HBV and accredited that to the obstetric care the female obtain when they are pregnant in addition to the required hepatitis B vaccination for children before school admission which could be the case also in the present study. It was reported in the present study that greater knowledge of HBV and HCV was associated with higher income and increasing level of education. The same was reported in other studies where they concluded that the socio-economic level of their participants and level of education had a marked effect on the level of awareness.<sup>23,25,28,29</sup> Education may improve health system simply of its results in greater resources, including access to health care. More highly educated individuals may have "improved" jobs that pay higher incomes. This is perhaps the most obvious economic explanation. This also could be explained by the level of education that can also provide individuals with better access to information and improved critical thinking skills. Education might matter for health not just because of the specific knowledge one obtained in school, but rather because education improves general skills, including critical thinking skills and decision-making abilities.<sup>30</sup> The survey has several strengths, although the questionnaire was developed based on many other surveys of the same type,<sup>22,26,27,31</sup> however, our statistician studied it for validity and it was translated into Arabic, and was pilot tested to correct the wording and increase clarity, and finally it was a self-administrated to reduce the bias of the presence of a mediator who could have some influence on the participant. However, the study has several limitation as well, the sample used is a convenient sample, which does not represent Saudi

population. In addition, respondents to survey may had a higher and/or lower levels of knowledge than those who chose not to participate. Therefore, caution should be exercised in interpreting the reported results.

In conclusion, these findings emphasize the need to improve the public health efforts to educate the physicians and medical students, followed by the community regarding the importance of HBV and HCV screening and increase their knowledge of the hazard of possessing the infections. It is extremely important to educate the community regarding the different ways of hepatitis infection transmission. Public should avoid tattooing, ear and other body piercing from the market, in addition to circumcisions and shaving from untrusted sources. Health educators are required to prevent this disease by creating awareness among the general public. This task should effectively be carried out with the involvement of different obtainable education and communication tools such as electronic and print media, and local body health educator's volunteers. Awareness programs regarding hepatitis B and C at school level should be started to save our future generation. All healthcare personnel should adhere to the standard precautions in treating all patients. Depending on the medical procedure involved, standard precautions may include the appropriate use of personal protective equipment (namely, gloves, masks, and protective eye wear).

Further studies at individual and district levels may be helpful to identify the areas where prevalence of hepatitis B and C is higher. It will help to look for the risk factor responsible for transmission of disease and will help to prevent chronic HBV and HCV infection and their squeals.

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#### Related topics

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