Hepatitis B infection control knowledge and practice of undergraduate students at college of dentistry, Madinah, Saudi Arabia

Hasan Ahmad Taher and Samir Mansuri*

College of Dentistry, Taibah University, Madinah, KSA.

Accepted 4 April, 2015

The prevalence of Hepatitis B virus (HBV) infection is a worldwide concern including Saudi Arabia. This study was performed to evaluate dental students’ awareness and practice regarding HBV. A cross-sectional survey of 170 students with response rate of 91% was performed at TUCoD (Taibah University College of Dentistry) in Madinah, Saudi Arabia. The anonymous questionnaire which consisted of three main sections was divided amongst the students. The result showed that females had more knowledge compared to males but in practice, they were similar. Students in higher academic years had more knowledge of HBV infection compared to the junior years.

Key words: Hepatitis B, knowledge, dental students, Saudi Arabia.

INTRODUCTION

Hepatitis B is a disease that causes the inflammation of the liver and results from infection with the Hepatitis B virus (Chandra S, 2007). Many carriers of the hepatitis virus remain asymptomatic then progress to a mild illness lasting for a few weeks, to a serious, lifelong illness (Chandra, 2007).

The prevalence of Hepatitis B virus (HBV) infection is a serious concern in Saudi Arabia and in the entire world (Chandra, 2007). It was once considered hyper-endemic in the Kingdom of Saudi Arabia (KSA), where infection was acquired mainly through horizontal transmission early in life and less commonly by vertical transmission. The average overall prevalence was estimated to be 8.3% (Saleh Abdulla, 2012; Te HS et al., 2010). Earlier reports suggested that around more than two billion people are affected from chronic infection (Te HS et al., 2010). Dental procedure can result in risks for dentist and patients, so role of dentist is very important in preventing HBV transmission in dental settings (Te HS et al., 2010). These students are a group of health care workers (HCWs) who are at a high risk to getting and spreading HBV because their activities involve contact with patients or blood or other body fluids in healthcare, laboratories or public-safety settings (Al-Haz, 2015).

Transcutaneous injuries has been claimed to be an important means by which HBV infection is transmitted in the dental setting to both patients and dental staff. Gingival crevicular fluid and saliva are the most common routes of transmission of HBV and this has been confirmed in previous studies (Alavian et al., 2008; Mahboobi, 2010). It can create variety of health hazards including jaundice and liver failure.

The HBV can be transmitted by insufficient sterilization techniques of instruments, contaminated needles, needle stick injuries or accidental inoculation of blood during dental procedures (Chandra, 2007). The most common route of infection for health care professionals as reported by other studies is via needle stick injuries (Askarian et al., 2006; Gaballah et al., 2012).

Dental students being part of the dental team are exposed to such risks of HBV infection as they are often the first member who comes into contact with the patient for dental treatment. They are responsible for treating patient from signing up to the completion of the dental...
treatment. Due to their lack of experience and work load, studies have reported that students are more at risk of having needle stick injuries compared to qualified health professionals (Askarian et al., 2006; Gaballah et al., 2012). Therefore they are at a much greater risk of acquiring blood borne diseases including HBV. It is important for them to have adequate knowledge regarding the prevention, treatment and transmission of this disease. As a result, the study was conducted to determine the students’ knowledge and practice of HBV infection in a dental setting.

This study was conducted at the Taibah University, College of Dentistry (TUCoD) which is located in Madinah, Saudi Arabia. The TUCoD is a relatively new dental college and the curriculum is undergoing changes. It is essential to make sure that all students are aware of HBV and its prevention. The results will assist in the future planning of the curriculum and in the teaching guidelines for HBV. No similar study has been done before in a teaching institute in Madinah and these results could assist future teaching institutes when planning their curriculum.

**METHODOLOGY**

This study was a cross-sectional survey performed at TUCoD in Madinah, Saudi Arabia. It was completed over a period of 3 months at the end of 2013. The inclusion criteria were all dental students registered in 2013 from first to final year of study. The anonymous questionnaire, based on a previously published study (Seyed Moayed Alavian et al., 2011) was modified for this study.

The questionnaire consisted of three main sections. The first section consisted of questions about participants’ socio-demographic status including age, gender and the academic year. The second section consisted of ten close-ended questions on students’ knowledge about HBV infection. Students were asked to choose either “yes”, “no” or “I don’t know”.

The third section consisted of five close-ended questions regarding students’ infection control practices. In this section, students were asked about previous needle stick injuries, preventive methods used and treatment options regarding HBV-infected patient. Students were asked to choose either “yes”, “no” or “I don’t know”.

The scores were divided into three categories; poor knowledge (1 - 11), average knowledge (12 - 15) and good knowledge (16-20).

Each question was scored as either correct or incorrect and given a score of either 2 or 1 respectively. The scores were added to give each participant a total score. Higher scores indicated increased levels of knowledge and practice and the maximum score was twenty for knowledge and ten for practice. The total score was thirty. The scores for the practice were divided into three categories; poor practice (1 - 4), average practice (5 - 7) and good practice (8 - 10)

The total combined score was also divided into three categories; poor total (1 - 20), average total (21 - 25), Good total (26 - 30).

Statistical analysis was performed using frequency, chi-square. The software used was Statistical Package for Social Sciences (SPSS, Chicago, IL, USA), version 15. The level of statistical significance was defined as p < 0.05.

Ethical clearance was obtained from the Taibah Ethical Committee. All data was confidential as no names were recorded. Students were told about the study objectives before handling out the questionnaires and all those who refused to participate were excluded.

**RESULTS**

There were 170 students registered and 155 of them participated (response rate of 91%). There were 74 male (47.7%) and 81 females (52.3%).

The mean knowledge score was 14.79 (±2.48) and 7.42 (±1.83) for practice. The overall mean score was 22.21(±3.43). There was a statistically significant difference between the years of study and their knowledge (p < 0.05). The senior students had significantly more knowledge than the junior students did with the clinical years having the highest scores (Figure 1). There were also statistical differences between the males and females with females having higher knowledge scores in second (p = 0.00) and third (p = 0.17) year compared to males. There were no significant differences in the genders for first and fourth year.

The third year students had significantly higher scores for practice (p=0.08) compared to the other years. Females in second (p = 0.06) and third (p = 0.03) year had significantly higher scores compared to males. There were no significant differences in the practice scores between the genders for first and fourth year (Figure 2).

When both male and female staff compares for combined knowledge and practice for Hepatitis B infection (Figure 3). It was noticed that the female students’ performances were better for total score of knowledge and practice. There were 24 female students who were having good scores for knowledge and practice of hepatitis B in comparison to only 8 male students in good score. The 3rd year and 4th year students’ answers were better in comparison to the other academic year students. Female student’s performances were better conclusively, which is clinically and statistically significant (P ≤ 0.05) (Figure 3).

The third year students had significantly higher combined scores (p = 0.00) compared to the other years. Females in second (p = 0.00) and third (p = 0.04) year had significantly higher scores compared to males. There were no significant differences in the combined scores.
Figure 1. Distribution of knowledge according to gender and year of study (N = 155).

Figure 2. Distribution of practice scores according to gender and year of study (N=155).
between the genders for first and fourth year. In comparison of male and female students about the knowledge of infection control practice, female students performance were much more better in comparison to male students.

By considering the importance of the first 3 questioner of practical part was analysed individually for 155 students. It showed that more than 76% of the students reported having received the three recommended doses of HBV vaccine, and 90% of those had completed the vaccination according to the recommended schedule (one and three months after the initial injection). While still 15.5% did not receive vaccination and 8.4% have no idea. Most of the students have knowledge about the fact that dentist have higher risk of needle stick injuries (80%). Also 51.60% students have idea about gloves as protective measure for prevention of infection of hepatitis B between patient and dentist. The 15.5% students say no and 8.4% student don’t know.

Discussion

HBV is amongst the most significant occupational infections that dental professionals might confront (Chandra, 2007). Previous studies have shown that dental students were more frequently involved in percutaneous injuries. The previous reports revealed that dental students have been ranked sixth of the high-risk occupations for HBV infection (van der Eijk et al., 2004; Alavian, 2011; Cottone, 1991).

The study achieved a response rate of 91%. Since the response rate was approximately the same for students of different academic year, it was plausible to compare the obtained results by year of education. As we expected, our students’ knowledge showed no statistically significant difference between males and females. Age was not considered as a variable for comparing knowledge since the characteristics was not notably different among different academic years and we believed that academic year was more reliable than age of the participants.

These dental students had an acceptable level of knowledge about HBV-related issues. In the overall comparison, third year students responses were the best compared to the other years and females had better scores compared to males. Furthermore, more than 80% answered the majority of the questions correctly. However, considering their answers to the practice questions, it can be assumed that a majority of participants might apply these methods without knowing the terms after infection control workshop.

In the current study, more than 76% of the students reported having received the three recommended doses of HBV vaccine and 90% of those had completed the vaccinations according to the recommended schedule. However, those who were vaccinated were not aware if they were protected against Hepatitis B infection. They did not know that their antibody titer status needed to be
checked regularly to ensure optimum level of immunity. Previous studies have shown that not all vaccinated individuals show immune system response (Duffy et al., 2004; Hu et al., 2004; Alavian, 2011).

Regarding personal protective measures, all students reported that they always wore gloves. Only 51.6% gave correct answers but in our study, a higher percentage of use of personal protective equipment especially gloves was seen among students of higher academic year. This gradually increased rate can be the result of an increase awareness and knowledge of infection control education. Indeed, gloves were said to be used more frequently than eyewear and gowns.

Limitations

As the study was based on information reported by the students, the results could be biased. The questionnaire had a limited number of questions and this may have not elicited all the necessary information. The number of questions was kept to a minimum to encourage willingness to respond and appeared to work well.

Conclusions

Females had more knowledge compared to males but in practice, they were similar. Students in higher academic year had more knowledge of HBV infection compared to the junior year. Additionally, it can be stated that although these dental students appear to have a fairly good level of knowledge regarding most HBV-related issues, more effort should be made to prepare them regarding the most efficient protective strategies.

Recommendations

These results indicate the needs of continuous infection control training and workshop but we are now proposing that providing training at the beginning of each academic year might be more effective in ensuring that their level of knowledge remains high.

Conflict of interest

The authors confirm that this article content has no conflicts of interest.

Acknowledgments

The authors would like to thank Dr. Ahmad Bahyat for statistic and Dr. Hadeel Ahmad Bafaqeeh for her invaluable assistance in the distribution and collection of the questionnaires from female side.

REFERENCES


