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ORIGINAL ARTICLE

To what extent do dental students comply with infection control practices?

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Abstract *Aim:* This study was conducted to evaluate knowledge, attitudes, and practices regarding infection control measures among dental students at the College of Dentistry, King Saud University, Riyadh, Saudi Arabia.

Methods: A self-administrated English-language questionnaire with questions related to hepatitis B vaccination and serology, the use of personal protective equipment, infection control practices and awareness, percutaneous and mucous membrane exposure, and attitudes toward the dental treatment of infected patients was distributed to third-fifth-year dental students. Responses were analyzed using SPSS, with a significance level of $p < 0.05$.

Results: The response rate was 83.4% ($n = 303$). Most (95.4%) students had received hepatitis B virus vaccination, but only 61.4% had completed the three doses, with a significant difference among academic years ($p = 0.000$). Almost all students always used gloves (99.3%), masks (98.7%), and gowns (95%) while treating patients. Fewer students always used face shields (69.6%) and head caps (65%), with significant differences between males and females. About two-thirds (65%) of participants reported injury with a used instrument; such injury was significantly more common among fifth-year students ($p = 0.041$). The most frequently reported injuries were caused by needles and burs (21.1%). Male students were significantly more willing than female students to treat patients with infectious diseases.

Conclusion: The dental students surveyed in this study showed satisfactory knowledge and positive attitudes regarding infection control. More effort is needed to provide proper training in ideal infection control measures for undergraduate students.

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1. Introduction

Most infectious diseases that colonize the oral cavity and respiratory tract, such as hepatitis B virus (HBV), hepatitis C virus (HCV), human immunodeficiency virus (HIV), herpes simplex virus type 1, influenza, rubella, and other viruses and bacteria, can be transmitted in dental clinics. The high

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percentages of affected people worldwide increase the chance of their attendance at dental clinics,[1] and dental staff members, including dentists and dental students, are at high risk of exposure to and contraction of these diseases.[2,3] For example, professionals in dentistry and oral hygiene are three times more likely than the general population to contract HBV infection.[4,5]

In the clinical context, diseases can be transmitted through direct contact with blood, oral fluids, or other secretions, indirect contact with contaminated instruments, surgical equipment, or environmental surfaces, or contact with aerosols of oral and respiratory fluids of infected patients.[2,6,7] Exposure to infected blood can result in disease transmission from patient to dentist, from dentist to patient, and from one patient to another. The opportunity for transmission from patient to dentist is greatest, as dentists are frequently in contact with patients' blood and blood-contaminated saliva during dental procedures. As some patients visiting dental clinics appear to be healthy, with normal physical examination findings and medical histories, the application of standard precautions should not be based on patients' appearance.[8] By implementing infection control guidelines in addition to vaccinations and proper post-exposure management, exposure to infections in dental settings can be prevented. The guidelines for infection control in dental health care of the US Centers for Disease Control and Prevention recommend careful handling of sharp instruments, use of rubber dams to minimize blood spattering, hand washing, and use of protective barriers (e.g., gloves, masks, protective eyewear, and gowns).[5,9] Few dentists, however, adhere to these guidelines.[10]

As dental students have less experience than do regular dentists, the implementation of standard universal precautions in dental schools is the most effective way to control cross-infection.[11,12] Dental schools are responsible for applying appropriate infection control strategies and facilitating appropriate immunization to establish a healthy environment in which dental students and patients are protected.[13]

Dental education can play an important role in providing dentists with adequate knowledge and attitudes related to infection control measures. At the College of Dentistry of King Saud University, Riyadh, Saudi Arabia, students apply the concepts of infection control in clinical training sessions. The clinics provide disposable caps, gowns, gloves, and protective eyewear or face shields, and rubber dam use with all patients is mandatory. Students are required to be vaccinated against HBV before starting to treat patients. The purpose of this study was to investigate knowledge, attitudes, and practices regarding infection control measures among dental students at the College of Dentistry, King Saud University.

2. Methods

Approval for this study was obtained from the College of Dentistry Research Center at King Saud University. Dental students participated voluntarily and provided informed consent. Third-, fourth-, and fifth-year dental students, who attend clinics and treat patients, were invited to participate in this study. Training in infection control at the College of Dentistry is provided mainly in the first and second years.

A self-administrated English-language questionnaire consisting of 21 close-ended questions related to HBV vaccination and serology, the use of personal protective equipment, infection control practices and awareness, percutaneous and mucous membrane exposure, and attitudes toward the dental treatment of infected patients was created for this study. To evaluate the ease of reading, clarity of wording, and understanding of the questions, the questionnaire was administered to 20 students in a pilot study, and a few modifications were introduced. The students who participated in the pilot study were not included in the final sample.

A total of 363 dental students (third year, $n = 132$; fourth year, $n = 132$; fifth year, $n = 99$) were given the questionnaire in the classroom and asked to fill it out without discussing it with their friends. Completion of the questionnaire took about 5–10 min. Data from all returned questionnaires were entered and analyzed using SPSS 20.0 (IBM Corporation, Armonk, NY, USA). Frequencies and percentages were calculated, and the chi-squared test was used to assess associations between variables. The level of statistical significance was set to $p < 0.05$.

3. Results

The study sample comprised data from 303 third- ($n = 103$), fourth- ($n = 106$), and fifth-year ($n = 94$) students [156 (51.5%) male, 147 (48.5%) female] at the College of Dentistry, King Saud University (response rate, 83.4%; Table 1). Most (95.4%) students had received HBV vaccination, with no significant difference according to gender or academic year. Only 61.4% of them, however, had completed the three recommended doses of the HBV vaccine, with significant differences favoring males over females and fifth-year over third-year students (both $p < 0.05$ Table 2). In total, 45.8% of the students had undergone post-HBV immunization; significantly more males than females had taken this measure ($p < 0.05$; Table 2).

Almost all of the students always used gloves (99.3%), masks (98.7%), and gowns (95%) while treating patients. Fewer students always used face shields (69.6%) and head caps (65%), with significant differences according to academic level

Table 1 Distribution of the students based on gender and academic year.

Gender		*n*	%
Males		156	51.5
Females		147	48.5
Total		303	100
Academic year			
3rd year	Males	54	52.4
	Females	49	47.6
	Total	103	100
4th year	Males	51	48.1
	Females	55	51.9
	Total	106	100
5th year	Males	51	54.3
	Females	43	45.7
	Total	94	100

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