

## ORIGINAL RESEARCH

# Knowledge, Attitude, and Practice of Infection Control among Dental Students at Colleges of Dentistry, Al-Qassim Region in Saudi Arabia

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## ABSTRACT

**Objective:** The purpose of this study was to investigate the compliance, awareness, and practices of infection control procedures among dental students at colleges of dentistry, Al-Qassim Region in Saudi Arabia.

**Materials and Methods:** This study was conducted at the college of dentistry of 50 of dental students. The questionnaire was formed by the authors. It was a self-administered questionnaire consisted of 14 closed-ended questions related to barrier techniques, vaccination status, percutaneous, and mucous membrane exposures in addition to the dental treatment of infected patients, infection control practices, and awareness.

**Results:** The questionnaire was distributed among 113 senior dental students at the Al-Qassim Region of which only 50 students (44%) responded. Compliance with the use of protective barriers was high with the exception of protective eyewear, utilized by 20% of students. Regarding the treatment of patients with infectious diseases, 50% students did not mind treating patients with infectious diseases. Students suffered from non-sterile percutaneous and mucous membrane exposures compared with the maximum number of reported exposures was related to the use of local anesthesia needles.

**Conclusions:** Efforts are needed to improve attitudes, implement information and motivate students in the correct and routine use of infection control measures. With all infection control protocols already implemented in dental schools, the challenge remains on improving compliance with infection control recommendations.

**Keywords:** Dental students, Infection control, Oral health.

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## INTRODUCTION

Dental health care workers are at high risk of exposure to cross-infection with bloodborne pathogens such as hepatitis B virus (HBV) and hepatitis C virus, human immunodeficiency virus and *Mycobacterium tuberculosis*, *Streptococci*, and other viruses and bacteria that colonize the oral cavity and the respiratory tract.<sup>[1,2]</sup> During dental procedures, transmission of infections could occur through direct contact with blood, saliva or contaminated treatment water from dental units, injury with an anesthetic needle or splash exposure of the mucous membranes, droplets and aerosols as well as indirect contact with contaminated instruments and surfaces. Accidental exposure to infections in dental settings can be avoided using safety precautions at work and implementing infection control guidelines. However, since some exposures cannot be prevented, vaccination and proper post-exposure management are the main forms of protection.

The purpose of this study was to investigate awareness, knowledge, and compliance with recommended infection control procedures among dental students at colleges of dentistry, AL-Qassim Region in Saudi Arabia.

## MATERIALS AND METHODS

This study was conducted at the college of dentistry, AL-Qassim Region in Saudi Arabia from February to April of 2017. The questionnaire was distributed to 113 dental, of which only 50 of them responded (response rate = 44%). The questionnaire was formed by the authors. It was a self-administered questionnaire consisted of 14 closed-ended questions related to barrier techniques, vaccination status, percutaneous, and mucous membrane exposures in addition to the dental treatment of infected patients, infection control practices, and awareness.

The questionnaire was sent to all students to be filed electronically, the questionnaire was sent to all students by emails to be filled electronically, and informed

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consent was obtained from each student before commencing the questionnaire. It was pretested on a random sample of dental students to ensure practicability, validity, and interpretation of responses.

The data were tabulated and analyzed by the Chi-square test. All analyses were conducted using the Statistical Package for the Social Sciences 11.5 by IBM.

### Vaccination Status

Vaccinations for HBV were 70% shown in Table 1.

### Barrier Techniques

The uses of protective barrier techniques reported by dental students are shown in Table 2. Nearly, all of the students

**Table 1:** Have you been vaccinated for hepatitis B ?

Response	n (%)
I do not remember	2 (4)
No	13 (26)
Yes	35 (70)

mentioned wearing gloves and masks at all times, with the exception of 4% of students reportedly they do not wear. Only 20% of always used protective eyewear. There were a reported 18% of students who claimed to have never used protective eyewear. Overall, 74% of students stated wearing gowns always, 8% sometimes, and 18% never. Nearly, 10% of students reported not committed to correct order of wearing protective barrier. 8% of students mentioned not removing their jewelry while working in the clinic.

### Exposure to Infectious Diseases

Nearly, 87.1% thought that dental clinics were more prone to infectious contamination than other medical clinics. Among all students, 4% of them reported to have treated patients with HBV, 50% of them will not treat patient have HBV.

### Percutaneous and Mucous Membrane Exposures

Regarding the number of students who had occupational exposure to blood and other fluids while treating

**Table 2:** Use of protective barrier techniques reported by senior dental students

Questions	n (%)		
	3 <sup>rd</sup> year students	4 <sup>th</sup> -year students	5 <sup>th</sup> -year students
Do you wear gloves?			
Always	8 (16)	14 (28)	28 (56)
Do you wear a gown?			
Always	8 (16)	13 (26)	16 (32)
No	0 (0)	0 (0)	4 (8)
Sometime	0 (0)	1 (2)	8 (16)
Do you wear protective eyewear?			
Always	1 (2)	6 (12)	3 (6)
No	2 (4)	1 (2)	9 (18)
Sometime	5 (10)	7 (14)	16 (32)
Do you wear mask?			
Always	7 (14)	13 (26)	28 (56)
Sometime	1 (2)	1 (2)	0 (0)
Do you wear head cover?			
Always	3 (6)	11 (22)	18 (36)
No	2 (4)	0 (0)	0 (0)
Sometime	3 (6)	3 (6)	10 (20)
Do you wear head cover?			
Always	3 (6)	11 (22)	18 (36)
No	2 (4)	0 (0)	0 (0)
Sometime	3 (6)	3 (6)	10 (20)
Are you committed to in the correct order in wearing of gloves, mask, etc?			
Always	4 (8)	7 (14)	16 (32)
No	1 (2)	2 (4)	2 (4)
Sometime	3 (6)	5 (10)	10 (20)
Did you remove personal accessories as watches and rings before starting treatment the patient?			
Always	2 (4)	2 (4)	6 (12)
I do not wear	4 (8)	8 (16)	16 (32)
No	0 (0)	2 (4)	2 (4)
Sometime	2 (4)	2 (4)	4 (8)

patients, the maximum number of reported exposures was related to the use of local anesthesia needles.

## DISCUSSION

### Vaccination Status

The results of our study regarding HBV immunization of students stood at 100. This result proved similar to those carried out in other dental schools. de Souza *et al.*<sup>[3]</sup> reported that 90.8 of all senior students received vaccinations in 6 dental schools in Riode Janeiro, Brazil. McCarthy and Britton's study showed 100 immunizations among the final year undergraduate dental, medical, and nursing students at the University of Western Ontario, Canada.<sup>[4]</sup> He concluded a positive attitude but poor compliance of infection control practices among dental students.

### Barrier Techniques

The use of gloves among the dental students in our study was 98 studies assessing the use of PPE among dental students.<sup>[4,5]</sup> Compliance with the use of protective eyewear was quite low, only 20 with 59.7 eyewear reported in other studies. Students should be reminded that neglecting the use of protective eyewear puts them at risk of transmission of infectious diseases through exposed membranes. Research has shown that aerosol and splatter containing pathogens can contaminate clinical wear, targeting the chest and forearms and remain alive for several days.<sup>[6,7]</sup> The majority of subjects in our study mentioned changing their scrubs when it was visibly contaminated. It has been recommended that dental uniforms be worn only in dental clinics, changed daily and immediately after a blood splatter to prevent cross-contamination.<sup>[6]</sup> The limitation of our study was that responses were based on students' self-assessments rather than under the supervision by investigators

of the study in a clinical environment. Therefore, the responses may not accurately reflect the actual infection control practices of dental students.

## CONCLUSION

It is necessary to effectively communicate to students the associated risks and importance of transmission of infectious diseases and exposures during dental treatments. Efforts are needed to improve attitudes, to implement information and motivate students in the correct and routine use of infection control measures. With all infection control protocols already implemented in dental schools, the challenge remains on improving compliance with infection control recommendations.

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