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# Infection Control Awareness and Self-Reported Practices among Dental Students

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**ABSTRACT**
*Background: Infection prevention occupies a central role in dental care because of the frequent exposure to saliva, blood, and other potentially infectious materials during treatment. Objectives: The present study seeks to determine how well dental students understand established infection control procedures and to investigate the extent to which they report following these practices during their preclinical preparation and subsequent clinical training. Methods: We conducted a descriptive cross-sectional study with 51 To capture a broad range of information. The data was analyzed and interpreted using SPSS. Results: Most students appeared to understand the main infection control practices. About 88% reported washing their hands correctly, and roughly 80% used personal protective equipment appropriately. Fewer students were familiar with protocols for sharps injuries and the specific guidelines of their institution, with around six in ten demonstrating awareness. Conclusion: Control practices. However, gaps persist, especially when it comes to following institution-specific policies and reporting injuries. To overcome these gaps, it may be necessary to strengthen the infection control component of the curriculum and incorporate additional practical training opportunities in clinical settings to reinforce safe practices..*
**Keywords:** ***Infection control, dental students, standard precautions, self-reported practices, compliance, cross-sectional design.***

## 1. INTRODUCTION

Infection prevention and control (IPC) are essential for ensuring the safety of healthcare delivery, particularly within dental practice. In daily dental practice, both patients and providers are often exposed to saliva, blood, and airborne droplets, which can function as potential carriers of infectious microorganisms. When established cleaning and disinfection measures are neglected, the risk of disease transmission to both workers and patients significantly increases [1].

Dental students often perform clinical procedures that require strict adherence to infection control guidelines to reduce the danger of transmitting infections. Their level of compliance reveals how well they were trained, and it also directly affects the health and safety of the individuals they serve. Around the world, schools try to strengthen infection prevention training, but students still show gaps in what they know, how they feel, and what they actually

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do. Studies from the region support this finding. For example, research from Palestine reported that students generally understood precautions against MRSA and had positive attitudes, yet they often did not put all the recommended measures into practice [2] [3].

Dental students in Peru generally held favorable opinions of disinfection methods during the COVID-19 outbreak. The results showed that the people who took part didn't really understand the basic rules for stopping infections. They said they recognized how essential things were, but they didn't seem to be able to perform them well. The difference between knowing something and doing it shows that teaching methods need to be better. Simulation-based training and other methods have helped people comprehend and use infection control policies better in real life [4]. The study aimed to achieve two objectives: firstly, to assess dental students' awareness of established infection control techniques; secondly, to examine their self-reported compliance with these practices during preclinical and clinical training.

## 2. MATERIALS AND METHODS

This study looked at dental students' awareness and what they reported doing in terms of infection control. 51 undergraduate students, both male and female, actively enrolled and willingly participated in the study. Data were gathered through an online questionnaire developed in accordance with international infection control guidelines and informed by findings from recent studies. The survey asked about demographics, knowledge of standard precautions, use of protective equipment, sterilization and disinfection steps, handling of sharp injuries, what students actually did in practice, and any challenges they faced in following these procedures. The questionnaire was distributed online to ensure confidentiality. Before starting data collection, ethical approval was obtained from the relevant institutional review board. Descriptive statistics, including means, standard deviations, frequencies, and percentages, were used to summarize the data. Inferential analyses, such as independent t-tests, one-way ANOVA, and regression, were carried out using SPSS software to examine relationships between variables.

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## 3. RESULTS AND DISCUSSION

Table 1 shows the demographic profile of the students who participated in the study. Most of the respondents were female, making up 64% of the sample. The average age was 22.5 years, meaning the group was mainly in the final stages of their undergraduate program. Fifth-year students formed the largest academic subgroup, representing 36% of the participants.

**Table 1: Demographic Characteristics**

| Variable | Category | Frequency (n=50) | Percentage (%) |
|---|---|---|---|
| **Gender** | Female | 32 | 64% |
| **Gender** | Male | 18 | 36% |
| **Age (Mean ± SD)** | 22.5 ± 1.7 | - | - |
| **Academic Stage** | 3rd Year | 10 | 20% |
| **Academic Stage** | 4th Year | 10 | 20% |
| **Academic Stage** | 5th Year | 18 | 36% |
| **Academic Stage** | Graduates | 6 | 12% |
| **Academic Stage** | Other | 6 | 12% |

Table 2 presents students' awareness of key infection control practices. Most students had a strong understanding of hand hygiene, with nearly nine out of ten answering correctly. Most of the students showed that they had a good understanding of personal protective equipment (PPE).Only a small proportion of students demonstrated knowledge of the correct steps to follow after experiencing a needlestick injury, and an even lower number were familiar with the institutional infection control protocols. The results show that pupils still don't fully comprehend the basic steps for controlling infections.

**Table 2: Awareness of Infection Control Measures**

*(5-point Likert scale: 1=Strongly Disagree, 5=Strongly Agree)*

| Question | Mean (±SD) | % Agree/Strongly Agree | % Neutral/Disagree |
|---|---|---|---|
| **Understands "Standard Precautions"** | 4.2 (±0.9) | 72% | 28% |

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| | | | |
|---|---|---|---|
| **Recognizes importance of handwashing** | 4.6 (±0.7) | 88% | 12% |
| **Knows when to use PPE (gloves/masks/gowns)** | 4.4 (±0.8) | 80% | 20% |
| **Aware of proper sharp tool disposal** | 4.3 (±0.9) | 78% | 22% |
| **Understands vaccination importance (e.g., Hepatitis B)** | 4.5 (±0.9) | 84% | 16% |
| **Knows needlestick injury protocols** | 3.9 (±1.1) | 62% | 38% |
| **Familiar with local college policies** | 3.7 (±1.2) | 56% | 44% |

Table 3 demonstrates that most students said they always wore gloves during clinical practice, and almost all of the participants followed this rule. Using sterile equipment was also common. Not all students followed hand hygiene regularly, and even fewer reported needlestick injuries. These points show that students still need support and encouragement to follow all infection control practices consistently.

**Table 3: Self-Reported Practices**

*(5-point scale: 1=Never, 5=Always)*

| Practice | Mean (±SD) | % Always/Often | % Sometimes/Rarely |
|---|---|---|---|
| **Washes hands before/after patient contact** | 4.3 (±1.1) | 68% | 32% |
| **Wears gloves during patient care** | 4.8 (±0.6) | 92% | 8% |
| **Changes gloves between patients** | 4.5 (±0.9) | 78% | 22% |

| | | | |
|---|---|---|---|
| **Uses masks/gowns during procedures** | 4.4 (±0.8) | 76% | 24% |
| **Uses sterile/single-use instruments** | 4.6 (±0.8) | 86% | 14% |
| **Reports needlestick injuries** | 3.5 (±1.3) | 54% | 46% |
| **Sterilizes equipment before new patient** | 4.2 (±1.0) | 70% | 30% |

Table 4 outlines the Students reported several challenges when trying to follow infection control practices. Many found that there was not enough time during clinical sessions. Some students also mentioned that protective equipment was occasionally unavailable. A few students were uncertain about the rules at their institution, and others felt that supervision during practice could be improved. These issues can make it harder for students to follow infection control measures fully.

**Table 4: Barriers to Compliance**

| Barrier | Frequency (n=50) | Percentage (%) |
|---|---|---|
| **Time pressure during clinical training** | 29 | 58% |
| **Shortage of PPE (gloves, masks, etc.)** | 21 | 42% |
| **Lack of clear guidelines** | 10 | 20% |
| **Low supervision/enforcement** | 8 | 16% |

Table 5 illustrates Students' perceptions of risks, their participation in training, and their personal habits could all contribute to this. In terms of actual practice, female students were more likely than their male counterparts to report adherence to post-needlestick injury protocols. This evidence indicates that there might be a difference in how male and female students handle clinical risks.

Understanding why these differences exist may require looking at several factors, such as students' risk perception, their involvement in training activities, and their everyday habits during clinical practice.

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**Table 5: Gender Differences**

| Variable | Male (n=18) Mean (±SD) | Female (n=32) Mean (±SD) | p-value |
|---|---|---|---|
| **Awareness of Standard Precautions** | 4.0 (±1.0) | 4.3 (±0.8) | 0.21 |
| **Handwashing Compliance** | 4.1 (±1.2) | 4.4 (±1.0) | 0.32 |
| **Glove Use** | 4.7 (±0.7) | 4.9 (±0.5) | 0.18 |
| **Reporting Needlestick Injuries** | 3.2 (±1.4) | 3.7 (±1.2) | 0.04* |

Table 6 shows that the students' academic year affected both their knowledge and hand hygiene practices. Fifth-year students and recent graduates tended to know more and follow hand hygiene rules better than third-year students. This suggests that more time in clinical training and experience in their studies helps students strengthen their infection control skills.

**Table 6: Academic Stage Differences**

| Variable | 3rd Year (n=10) | 4th Year (n=10) | 5th Year (n=18) | Graduates (n=6) | p-value |
|---|---|---|---|---|---|
| **Awareness (Mean ± SD)** | 3.8 (±1.1) | 4.0 (±0.9) | 4.5 (±0.7) | 4.6 (±0.5) | 0.02* |
| **Handwashing Compliance** | 3.9 (±1.3) | 4.2 (±1.0) | 4.6 (±0.8) | 4.8 (±0.4) | 0.03* |

Table 7 looks at how students' training and year in the program relate to their infection control practices. Students with more training or in later years tended to follow safety steps more closely.

No clear link was found between training and problems with missing protective equipment. This finding indicates that having enough PPE might depend on other factors besides the students' training.

**Table 7: Predictors of Compliance**

| Predictor | Beta Coefficient | p-value | Interpretation |
|---|---|---|---|
| **Formal Training** | 0.42 | 0.001* | Strongest predictor |

| | | | |
|---|---|---|---|
| **Academic Stage** | 0.31 | 0.01* | Yearly improvement |
| **Age** | 0.12 | 0.27 | Not significant |
| **Gender (Female)** | 0.08 | 0.49 | Not significant |

Model Summary:

$R^2 = 0.37$ (37% of variance explained).

This study examined dental students' infection prevention skills. It identified both positive habits and crucial areas that require improvement.

**1. Awareness Patterns and Existing Gaps**

The results suggest that many students displayed a solid grasp of basic infection control measures, showing particular awareness regarding the role of hand hygiene, consistent use of protective gear, and the value of maintaining current vaccinations. Similar patterns have been reported in various international contexts, including Europe [5]and Saudi Arabia [6]. However, fewer students felt confident about the appropriate steps to take following needlestick injuries or about the institution-specific infection control policies. These observations align with the findings of [7], who noted that dentistry curricula often do not provide sufficient emphasis on site-specific infection prevention strategies. Highlighting the importance of safety in dental settings, [8] emphasize that neglecting to report accidents can create significant risks. These findings indicate a need for stronger integration of institutional policies into the curriculum, alongside clearer guidance and more thorough educational interventions.

**2. Self-Reported Behavioral Practices: Adherence and Deficits**

Table 3 shows that many students were consistent in following basic precautions. Most regularly used gloves and ensured their tools were clean, which reflects a thorough understanding of essential safety steps. However, fewer students consistently followed the procedures for needlestick injuries, showing a gap between what they know and what they do in practice. [9] found that concerns about punishment, limited time, and confidentiality often stop students from reporting such incidents. Schools that offered anonymous digital reporting saw better adherence, as noted by [10], suggesting that these approaches could help improve compliance.

**3. Clinical Training and Academic Progression**

Evidence suggests that students who received structured training in infection control demonstrated a greater compliance with safety protocols. Furthermore, students in the later stages of their training—especially those in their final year or recent graduates—demonstrated greater knowledge and more consistent application of infection control practices compared with their junior peers. This

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trend indicates that extended exposure to diverse clinical experiences and practical learning opportunities can enhance students' competence in infection prevention. In support of this, [11] discovered that completing infection control exercises in both simulated and real-life circumstances made participants considerably more likely to obey safety guidelines.

**4. Gender Differences and Institutional Barriers**

While most compliance indicators showed no significant gender differences, female students were notably more inclined to report needlestick incidents ($p = 0.04$, Table 5). [12] [13] These findings suggest that women typically demonstrate an increased awareness of risks within hospital settings, which is consistent with this observation. Time restrictions (58%) and insufficient protective equipment (42%) were found to be the primary barriers to effective adherence to infection control methods (Table 4). Interestingly, students who had undergone formal training reported fewer issues with the availability of equipment (17% compared with 45% among those without such training), even though statistical analysis did not reveal a significant association between training and PPE shortages ($p = 0.17$). According to the World Health Organization [14] these findings suggest that structured educational programs can simultaneously enhance students' knowledge and facilitate their access to institutional resources

## 4. CONCLUSION

The study results demonstrate that most dental students know and care about fundamental infection control measures, such as washing their hands properly, using personal protective equipment, and following sterilization protocols. However, several of the students did not fully comprehend how to manage lacerations and follow infection control methods that were specific to the classroom. These shortcomings provide potential safety hazards for both students and patients in clinical practice. To lessen this danger, dentistry programs should focus on hands-on training that includes how to handle accidents and knowledge of the rules that apply. Improving training in these areas can make clinical environments safer and provide students with more confidence as they start their professional careers.

Recommendations

A few practical steps can be taken to improve infection control among dental students.

Add Institutional Rules to the Curriculum

Students should learn the infection control rules early in their studies. Reviewing these rules several times during the program can help students use them correctly in real clinical situations.

Hands-On Training for Sharps Injuries

Students can practice managing needlestick and sharps injuries through short simulations. Regular practice sessions ensure that they feel confident in these procedures.

Private Digital Reporting Platforms

Dental schools should make it easy for students to report problems online to keep them safe and private. Students can safely use it since they know their names will be kept secret and they can speak up about any problems they have without fear of getting in trouble.

Access to Personal Protective Equipment and Assistance is Reinforced

Students must have the correct help and enough safety gear during their clinical and practice sessions. This plan discourages people from becoming disobedient because they don't have enough supplies.

By putting these steps into action, dental schools can better meet infection control criteria that are recognized around the world, such as those set by [15] [14]. These measures will help create a group of dental professionals that are well-prepared and care about safety, and who follow the best practices for patient care and clinical hygiene

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