

Knowledge, Attitude and Practice of Infection Control Among Dental Students at College of Dentistry - Hawler Medical University.

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Background: Infections acquired in healthcare facilities have become an increasingly challenging issue worldwide. The prevention of infectious diseases is a critical issue since healthcare workers develop acquired infections while providing services to patients. However, infection prevention and control are challenging, especially in healthcare facilities.

Objective: To assess knowledge, attitude and practice of cross infection control among dental students at the College of Dentistry, Hawler Medical University.

Material and Method: A survey was conducted to obtain information regarding knowledge, attitude, and practice with recommended infection control guidelines. The questionnaire contained three parts (knowledge, attitude, and practice) and was distributed to the participants.

Result: Total number of participants was 135, (73) 5th year dental students, and (62) 4th year, the mean age of participants was (20-23) years, 96 % had correct knowledge about infection control, 93 % had a correct practice, but unfortunately 48 % had low attitude.

Conclusion: The majority of dental students had a good knowledge and correct practice, but less about their attitude in infection control. Therefore, regular training that contain educational program should be supported to maintain the highest level of attitude.

Keywords: Infection control, Cross infection, Dental students, Practice, Knowledge, Attitude.

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INTRODUCTION

A cross infection is the transfer of harmful microorganisms, usually bacteria and viruses. The spread of infections can occur between people, pieces of equipment, or within the body.¹⁻³ The dental staffs in these times are exposed to various risk factors that can lead to the spread of countless diseases that are transmissible through various types of fluid such as saliva and blood, especially hepatitis B and HIV that are considered major public health problems.⁴ There are several factors that will directly impact the level of knowledge, attitudes, and practices of dental personnel to care for the various patients with

infectious contagious diseases; therefore, it is essential that students handle good theoretical and practical concepts that improve the quality of care and reduce the prevalence of cross infections in the dental practice.⁵

Preventing infection exposure in dental care settings can also be achieved efficiently by immunization.

Therefore, many dental education institutions and dental care facilities have a comprehensive immunization policy for their students and dental care providers.

However, most patients are not similarly protected, which may increase the risk of transmission of infectious diseases between patients. PPE (personal protective equipment) such as gown, gloves, face mask and eye protection have been shown to be an effective means of preventing the transmission of pathogens. However, any failure to comply with implementing infection-control measures can harm both patients and health-care teams.⁶

The purpose of this study was to investigate knowledge, attitude, and practice with recommended infection control guidelines among 4th and 5th-year dental students at the College of Dentistry- Hawler Medical University.

MATERIALS AND METHODS

A survey was conducted on 4th and 5th year undergraduate students, College of Dentistry - Hawler Medical University during the first semester of 2022; the questionnaire was distributed among 4th and 5th year students, the questionnaire was adapted from several previous studies and modified with the help of experts in the field.

The questionnaire comprised 32 open and close ended questions related to hepatitis B and Covid 19 vaccination, the use of personal protective equipment, infection control, practices and awareness, percutaneous and mucous membrane exposure and attitudes toward dental treatment of infective patients.

There were five questions to assess knowledge, four questions to assess attitude, two question to assess the instructor’s guidance and role of college toward infection control, and twenty questions to judge infection control practices of the respondents. Dental students were asked to fill out the questionnaire in the lecture hall in 20 minutes.

Statistical analysis was performed using the Statistical Package for Social Sciences (SPSS) software for Windows version 13.

RESULTS

According to 4th and 5th stage we have done an evaluation of the association between knowledge, practice, and attitude regarding infection control measures among undergraduate dental students of college of

Table 1: Students’ attitudes regarding infection control measures, by number and percentage of total respondents to each item.

No.	QUESTIONS	CHOICES	4 TH STAGE ANS. (%)	5 TH STAGE ANS. (%)
1	Have you taken HBV vaccination? and when did you take it?	Never taken Less than 3 months 3-9 month More than 9 months	33.3 % 55.55 % 6.95 % 4.2 %	20.8 % 66.7 % 8.3 % 4.2 %
2	If yes, how many doses have you taken?	1st dose 2 nd dose 3 rd dose Don’t remember	50.8 % 11.1 % 3.2 % 4.8 %	61.1 % 11.1 % 1.4 % 19.4 %
3	Have you tested for post HBV immunization?	Yes No	18.25 % 81.75 %	2.8 % 97.2 %
4	Have you taken covid-19 vaccination?	Yes NO	57 % 43 %	52.8 % 47.2 %

dentistry (Table 1).

A total of 135 questionnaires were returned out of 150 distributed questionnaires (response rate was 90%).

66.7% dental students were vaccinated against HBV among 5th grade students in less than 3 months, while 55.5 % were among 4th stage.

Out of vaccinated students only 3.2 % of 4th grade and 1.4 % of 5th grade completed the required 3 doses of vaccination.

At the same time 57 % of 4th grade were vaccinated against covid-19 which is more than 5th grade (52.8 %) (Table 2).

Table 2: According to knowledge, summarizes modes of infection transmission, sterilization, disinfection.

No.	QUESTIONS	CHOICES	4TH STAGE ANS. (%)	5 TH STAGE ANS. (%)
1	Ineffective sterilization during clinical practice can transmit infection from one patient to another?	Yes No I don't know	93.6 % 4.8 % 1.6 %	98.6 % 1.4 % 0 %
2	Dentists are at higher risk of HBV infection than general population?	Yes No	96.8 % 3.2 %	97.2% 2.8 %
3	What are the modes of infection transmission in dental office?	Direct and indirect contact Blood transmission Air transmission All option	8 % 33.3 % 4.8 % 70 %	4.2 % 95.8 % 0 % 0 %
4	Which of the following has a highest rate of transmission?	Tuberculosis AIDS HBV I don't know	3.2 % 6.3 % 73 % 15.9 %	1.4 % 4.2 % 87.5 % 6.9 %
5	A part from instrument sterilization, disinfection of dental chair, clinic, dental office is required?	Yes No I don't know	98.4 % 1.6 % 0	95.8 % 1.4 % 2.8 %

The majority of 4th and 5th grade believed that dentists are at higher risks of HBV infection than general population, and the most common mode of infection transmission in dental office was through blood according to 5th grade (95.8%).

Also, majority of student believed that HBV has a higher rate of transmission than TB and AIDS.

There was no significant difference between 4th and 5th grade considering the requirement for the disinfection of dental chair, clinic, and dental office.

The majority (97.2 %) of students reported changing gloves between patients, and only (86.1%) of 5th grade reported that examiner changes gloves between patients, while the rate among 4th grade was (92.5%) (Table 3).

In general, a high percentage reported the use of face masks, saliva ejectors, and apron during dental procedures.

Surprisingly less than half (43%) of the

students reported wearing face shields while treating patients.

With regards to the use of autoclave for sterilization of handpieces and instruments (85.7%) of 4th grade and (81.9%) always used autoclave while minority of 5th grade (18.1%) and 4th grade (14.3%) used it occasionally. The vast majority of the students recap needles after their use (Table 4).

DISCUSSION

It is crucial for hospitals and dental clinics to implement measures that prevent transmission of infectious diseases. To achieve this, dental healthcare professionals must understand the risks and severity of infections. This survey was conducted to assess the level of knowledge, attitudes, and practices of dental students regarding infection control procedures at College of Dentistry, Hawler Medical University.

The study's most remarkable finding was the

Table 3: Represents the practice of use of personal protective equipment, sterilization, and management of sharp wastes.

No.	QUESTIONS	CHOICES	4TH STAGE ANS. (%)	5 TH STAGE ANS. (%)
1	Do you wear gloves for every dental procedure?	Yes No	93.7 % 6.3 %	95.8 % 4.2 %
2	Do you change gloves from patient to patient?	Yes No	100 % 0 %	97.2 % 2.8 %
3	Does your examiner change gloves from patient to patient?	Yes No	95.2 % 4.8 %	86.1 % 13.9 %
4	Does your examiner wear face mask while treating patient?	Yes No	85.7 % 14.3 %	58.3 % 41.7 %
5	Do you wear face masks?	Yes No	88.88 % 11.2 %	71.4 % 19.4 %
6	Do you wear face shields while treating patients?	Yes No	46 % 54 %	40.3 % 59.7 %
7	Do you change gown if its contaminated?	Yes No	57.14 % 42 %	48.6 % 51.4 %
8	Do you wear protective eye wear?	Yes No	22.2 % 77.8 %	19.4 % 80.6 %
9	Do you ask the patient to wear the protective eye wear during treatment?	Yes No	7.93 % 92.1 %	6.9 % 93 %
10	Do you change handpieces between patients?	Yes No	51 % 49 %	29.2 % 70.8 %
11	Do you change burs in operative dentistry after each patient?	Yes No	87.3 % 12.7 %	88.9 % 11.1 %
12	Do you change saliva ejector after each patient?	Yes No	87.3 % 12.7 %	94.4 % 5.6 %
13	Do you disinfect impressions?	Yes No	79.4 % 20.6 %	80.6 % 19.4 %
14	Do you wash hands before and after each dental procedure?	Yes No	84.1 % 15.9 %	79.2 % 20.8 %
15	Do you use apron for each patient?	Yes No	93.7 % 6.3 %	97.2 % 2.8 %
16	Do you use autoclave for sterilization of handpieces and instruments?	Yes No	85.7 % 14.3 %	81.9 % 18.1 %
17	Do you use plastic wrapping for sterilized instruments?	Yes No	90.5 % 9.5 %	73.6 % 26.4 %
18	Do you recap needle after their use?	Yes No	95.2 % 4.8 %	93.1 % 6.9 %
19	Have you ever suffered any accidental injury?	Yes No	34.9 % 65.1 %	52.8 % 47.2 %
20	If yes, what was the source of injury?	Scalpel blade Burs Needle Scaler tips	9.1 % 31.8 % 31.8 % 27.3 %	23.7 % 65.8 % 10.5 % 0 %

Table 4: Illustrates College and instructor guidance and provision to facilities of infection control.

No.	ANSWERS	CHOICES	4TH STAGE ANS. (%)	5 TH STAGE ANS. (%)
1	Do our College provide students of items for infection control?	Yes	49.2 %	51.4 %
		No	50.8 %	48.6 %
2	Do you think that instructor guide and encourage students for infection control?	Yes	84.1 %	87.5 %
		No	15.9 %	12.55 %

assessment of undergraduate dentistry students' knowledge, attitudes, and practices regarding infection control measures because the percentage of being infected with any disease in dentistry is higher compared to other scientific fields. The nature of dental work involves close contact with sharp instruments and frequent patient movement, making it essential to examine the transmission of specific diseases. The study revealed that the hepatitis B virus had the highest transmission rate at 9%, followed by the hepatitis C virus at 1.4%, and varying rates of the human immunodeficiency virus ranging from 0 to 0.8%.

The findings of the present study indicated a very low-rate HBV vaccination only 73% of the students were vaccinated against HBV, this rate is much lower than that reported by other studies in Saudi Arabia (90%),⁷ but it's similar to findings from dental schools in Yemen (71%),⁸ unfortunately the percentage of students who completed the recommended number of doses in our study is 2.3% which is much lower than that found in Saudi Arabia (74%) completed doses,⁷ and Yemen (50%).⁸

The high compliance with the use of gloves, masks, and gowns reported in this study is similar to the findings of previous studies conducted in UAE, Saudi Arabia, Yemen, and Jordan about one fifth (20%) of the students reported the use of protective eye wear, this percentage is lower than that found in Saudi Arabia (69.6%).⁷ this result indicates insufficient understanding of the importance of eye protection given the chance of disease transmission through aerosol and blood.

Hand hygiene among dental students is very important to limit infection of patients; it is considered to be one of the most effective methods of infection control, although nearly all students (98%) in the present study reported changing gloves between

patients, more than two third (81%) reported washing their hands between glove changes, which is higher compared to that reported by studies in Yemen (43%),⁸ and Jordan (12.8%).⁹

In this study the percentage of students (43%) reporting non sterile injuries while working is lower to those found in Yemen (62%) (6), and Saudi Arabia (65%).⁹

The main sources of injury were burs among 5th year dental students (65%), while burs and needle were the main sources of injury among 4th year dental students, the reporting of more injuries among 5th year than among 4th year students can be attributed to the longer clinical exposure of the former.

The outcome of 5th year students having the highest scores of knowledges and compliance could be because it is their second clinical year in the field where the basics of infection control are overemphasized on both theoretical and practical levels. Having much heavier load in the year of graduation could explain the decrease in compliance toward infection control precautions while still obtaining a good attitude. When compared to faculty members, compliance was found to be higher in students. This may be attributed to the fact that students work under the supervision of instructors during their clinical sessions. The difference in attitude of participants may go back to the variation in personal beliefs, thoughts, and behavioral aspects and training.

One limitation of this study was that the response relied on self-assessment by the students, rather than being supervised by investigators in a clinical setting. Consequently, the accuracy of the reported levels of knowledge, attitude, and behavior may be questionable, and the actual level of practice might be higher than what was reported. Additionally, the limited number of questions used in the study may not fully capture the respondents' true knowledge and

practice. However, this approach was chosen to maximize the response rate, which proved to be successful.

CONCLUSION AND RECOMMENDATION

The overall practice of infection control measures among the participants is very good. educational programs and training strategies should be implemented to

maximize and enhance the compliance of dental care providers with infection control guidelines.

Finally, consistent infection-control compliance evaluations of various dental environments by well-trained persons/ specialized committee are highly recommended.

Appendix

Questionnaire about:

Knowledge, Attitude, and Practice of Infection Control among Dental Students in College of Dentistry.

1. You are belonging to which Class of the college? 4th year 5th year
2. Ineffective sterilization during clinical practice can transmit infection from one patient to another? Don't know
No Yes
3. Dentists are at higher risk of HBV infection than the general population? Yes No
4. Have you taken hepatitis B vaccination and when did you take the vaccination?
Never taken <3 months 3-9 months >9 months
5. How many Doses you taken (hepatitis B vaccination)?
1st dose only 2 Doses 3 Doses Don't Remember Booster Dosage
6. Have you tested for post -HBV Immunization? Yes No
7. Have you taken COVID-19 vaccination? Yes No
8. What are the modes of infection transmission in the dental office?
Direct & Indirect contact Blood Transmission
Air Transmission All Options
9. Which of the following has the highest rate of transmission?
Tuberculosis AIDS Hepatitis B Don't know
10. Apart from instrument sterilization, disinfection of dental chair, clinic, dental office is required?
No Yes Don't know
11. Do you wear gloves for every dental procedure? Yes No
12. Do you change gloves from patient to patient? Yes No
13. Does your examiner change glove from patient to patient? Yes No
14. Does your examiner wear Face Masks while treating patients? Yes No
15. Do you wear face masks? Yes No
16. Do you wear face shield while treating patients? Yes No
- Do you change gown (for procedures that generate splashes or sprays) if it's contaminated? Yes No
18. Do you wear protective eyewear? Yes No
19. Do you ask the patient to wear protective eyewear during treatment? Yes No
20. Do you change handpieces between patients? Yes No
21. Do you change burs in operative dentistry after each patient? Yes No
22. Do you change saliva ejectors after each patient? Yes No
23. Do you disinfect impressions? Yes No
24. Do you wash hands before and after each dental procedure? Yes No
25. Do you use apron for each patient? Yes No
26. Do you use autoclave for sterilization of handpieces and instruments? Yes No
27. Do you use plastic wrappings for sterilized instruments? Yes No
28. Do you recap needles after their use? Yes No
29. Have you ever suffered any accidental injury? Yes No
30. If yes; What was the source of injury? Scalpel Blade Burs Needle Scaler Tips
31. Do our college provide students of items (like Masks, gloves etc) for infection control? Yes No
32. Do you think that the instructors guide and encourage students for infection Control? Yes No

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