

Assessment of Knowledge and Practice of Infection Control Policies in College of Dentistry, Taibah University, KSA

Mohammed Faris Shahadah*, Ahmed Bhayat, Anas Osamah Shahadah
Taibah University, Janadah Bin Umayyah Road, Tayba, Medina 42353, Saudi Arabia

*Corresponding author: Mohammed Faris Shahadah | Received: 01.01.2019 | Accepted: 09.01.2019 | Published: 19.01.2019
DOI: [10.21276/sjodr.2019.4.1.4](https://doi.org/10.21276/sjodr.2019.4.1.4)

Abstract

The study compared the knowledge and practice of dental students regarding infection control policies in College of Dentistry, Taibah University, KSA. Self-administrated questionnaire were applied to dental students of 3rd, 4th and 5th year (n = 51). Chi-square test were used for statistical analysis of data. Significance level was set at $p < 0.05$. The response rate was 100%. Knowledge of the students regarding infection control policies, none of the respondent obtained a full score of 13 (highest knowledge). The lowest score obtained (15) and 16% of respondent obtained this score. The highest score was 23 (poor knowledge). (57%) of third year students had an acceptable score of less than 18. The best score for fifth year students was 15 (29.4%) and the worst score of 21 was found in two students. The knowledge of students in relation to their year of study showed no significant differences ($P > 0.05$). Almost 70% of respondents did not know the correct procedures to follow after having a needle stick injury. There were no significant differences ($P > 0.05$) between the student's knowledge regarding the procedure to follow after a needle stick injury and the year of study. After comparing the knowledge of students to their observed practices in the clinics, Two thirds of the students reported not to wash their hands before and after each patient. (67.6%) of students don't wash their hands before the procedures and (15.8%) of students don't wash their hands after treating patient. More than 90% of respondents who were observed did not wear goggles whilst treating patients.

Keywords: Infection Control Policies; Dental Students.

Copyright © 2019: This is an open-access article distributed under the terms of the Creative Commons Attribution license which permits unrestricted use, distribution, and reproduction in any medium for non-commercial use (NonCommercial, or CC-BY-NC) provided the original author and source are credited.

INTRODUCTION

The use of appropriate infection control polices to prevent against transmission of blood borne and other microbial pathogens has become a routine and important component of dental care provision for the patients [1]. Many microorganisms such as *Mycobacterium tuberculosis*, hepatitis B and hepatitis C viruses place the dental health care professionals (DHPs) at risk [2]. Aerosols of water, saliva and potentially infectious droplets through the air/water irrigation systems in the dental setting can lead to transmission of such organisms to DHPs [2].

Blood and saliva are the ideal means for transmitting these infectious agents [3]. When using high-speed rotary instruments, it is always appropriate to use eye/face protection and have adequate suction and to strictly adhere to universal precautions for all patients such as eye protection with lateral shields, facemask, and protective clothing [2].

In 2003, the Center for Disease Control and Prevention of the United States of America (CDC) updated their guidelines for infection control in dental

settings. These included precautions which aimed to ensure a safe working environment and prevent transmission of occupational and nosocomial infections among DHPs and their patients [4].

Although DHPs have the necessary knowledge regarding infection control rules and policies, many of them do not follow those [3]. This study was carried out because there have been few studies on infection control involving dental students in Saudi Arabia.

A similar study was done on Turkish dentists about their knowledge, attitudes and behavior regarding cross-infection control and found that dentists had moderate knowledge of infection control procedures while 96% of them stated that all patients have to be considered as infectious and universal precautions should be applied to them [5].

The Centre for Disease Control (CDC) has expanded HIV testing to include all healthcare settings, including dental offices. Testing advances, including oral testing, have reduced the window period of HIV infection [6].

A study by Cleveland *et al.*, [7] reported that the likelihood of implementation of infection control policies and rules was higher among dentists who acknowledged the importance of infection control, had practiced dentistry for not more than 30 years, and had received more continuing dental education and training credits in infection control, and they had better knowledge about which surgical procedures require the use of sterile water and need to be more careful about infection control rules implementation. Hand hygiene and washing is the most important practice used to reduce the risk and spread of infection in the dental setting. Most GPDs use soap and water for hand washing usually, and a smaller number of GPDs use alcohol-based hand sanitizers for hand washing frequently. Results show that 25% of GPDs maintain inadequate hand washing [8].

In a study done in Russian Federation and there was considerable increase in HIV caseload, investigator found that about 13% of dentists did not sterilize hand pieces between patients which can be considered a fatal mistake and can transmit HIV infection from patient to another [9].

As for patient's opinions about infection control in dental settings, they said that it is preferred that dentists use masks and protective glasses when performing treatment. The use of plastic barriers made patients feel confident that proper infection-control procedures were being followed [10, 11].

The aims were to assess student's knowledge regarding infection control policies, to compare the knowledge between different years of study and to evaluate the knowledge regarding needle stick injuries.

METHODOLOGY

A cross sectional study design was used and a questionnaire was administered to male dental students (third, fourth and fifth year) at the dental college of Taibah University in al-Madinah al-Munawwarah, KSA.

The sample comprised of 51 students who were registered as full time dental students in the 2012/2013 academic year. The students voluntarily completed a self-administered questionnaire consisting of fourteen questions.

The questionnaire was developed with the help of experts in the college. The dental students were given the questionnaire in the clinics and asked to fill it out without discussing it in five minutes. There were thirteen closed ended questions to assess knowledge and one open ended to assess the behavior regarding prophylactic action following dental injury.

To assess the knowledge, we used a scale ranging from 13 to 39 depending on the answers to the questionnaire. A low score indicated higher levels of

knowledge while higher scores showed poor understanding of infection control knowledge. The lowest possible knowledge score was 13 and this meant the respondent follows the ideal infection control policies. The highest possible score was 39 and this indicated a poor level of knowledge.

The scores were further categorized into groups, acceptable knowledge (a score ranging between 13 and 18) and poor knowledge (score between 19 and 39).

Informed consent was granted for the study. The questionnaire was pretested as a pilot study on six dental students from fifth year. The same subjects received the same questionnaire again after a week to test the reliability of the research instrument. The questions were about general practices in the clinic, wearing protective clothing and disposing of contaminated sharps and the course that should be taken after a needle stick injury.

The clinical practice of the students was observed by the investigator using a prepared check list composing of eleven items. The observations were done while they were doing their usual practices in the clinics. The checklist covered items such as: utilization of infection control items (wearing of gloves, mask, eye glasses, protective clothing, washing the hands, disinfection and covering the objects in the clinic).

Chi-square test was used to compare categorical variables. A P-value of ≤ 0.05 was considered significant for all statistical analyses. Statistical analysis was performed using the Statistical Package for Social Sciences (SPSS) software.

RESULTS

All 51 students agreed to participate in the study (100% response rate) by completing the prepared questionnaire. None of the respondent obtained a full score of 39. The lowest score obtained (15) and 16% of respondent obtained this score. The highest score was 23 and one student from third year achieved this score.

More than half (57%) of third year students had an acceptable score of less than 18 Three fourth year students scored 15 while two of them scored 21. The best score for fifth year students was 15 (29.4%) and the worst score of 21 was found in two students. The knowledge of students in relation to their year of study showed no significant differences ($P > 0.05$).

Almost 70% of respondents did not know the correct procedures to follow after having a needle stick injury. There were no significant differences ($P > 0.05$) between the student's knowledge regarding the procedure to follow after a needle stick injury and the year of study (Table-1).

Table 1: Responses from students regarding the needle stick injury protocol (N = 51)

Year of study	Knowledge regarding prophylactic action following dental injury	
	Wrong answer/(%)	Right answer /(%)
3rd year	12/(70)	5/(30)
4th year	11/(64)	6 / (36)
5th year	12/(70)	5/(30)
Total	35/(86)	16/(14)

Table-2: Results of the observed practices

Observed Practice	Yes (%)	No (%)
Washing the hands before dental procedures	32.4	67.6
Washing the hands after dental procedures	84.2	15.8
wearing goggles during dental procedures	5.9	94.1
disinfecting the surfaces of the clinic before the procedures	88.9	11.1
disinfecting the impression before sending it to the lab	100	0
disposing the needle in the hard container	100	0

After comparing the knowledge of students to their observed practices in the clinics, the following was observed (Table 1).

All the Observed practices showed no significant deference in relation to year of study ($P > 0.05$).

DISCUSSION

The response rate was 100% as all students completed the questionnaire. This could be due to cooperation between the principal investigator and the colleagues who were helpful and keen to take part in the survey.

The worst score (23) in regarding the knowledge was found in third year and this could be because they were new to the clinical environment and did not have as much clinical experience as the senior students in fourth and fifth year.

Almost 70% did not know the correct prophylactic action to follow after a needle stick injury. More lectures and clinical demonstrations are required to improve and maintain the student's knowledge regarding this very important issue which is a very common occurrence for dental students.

Two thirds of the students reported not to wash their hands before and after each patient which is important for both the student and the patient. The results showed that (67.6%) of students don't wash their hands before the procedures and (15.8%) of students don't wash their hands after treating patient witch is high in comparison to other studies like the one done in 2008 where the results show that 25 % of GPDs maintain inadequate hand washing [8].

More than 90% of respondents who were observed did not wear goggles whilst treating patients. This may be because they don't think it is necessary to wear it and at the same time they don't feel comfortable to work with it.

CONCLUSION

The levels of knowledge were poor across all the years of study. The students did not know the needle stick injury protocols and their observed behavior was acceptable.

Recommendations

An educational program on infection control and policies regarding needle stick injuries is essentially required as the results show poor knowledge across all years of study.

REFERENCES

1. Molinari, J. A. (2003). Infection control: its evolution to the current standard precautions. *The Journal of the American Dental Association*, 134(5), 569-574.
2. Askarian, M., & Asadian, O. (2009). Infection control practices among dental professionals in Shiraz Dentistry School, Iran.
3. Abreu, M. H. N. G. D., Lopes-Terra, M. C., Braz, L. F., Rímulo, A. L., Paiva, S. M., & Pordeus, I. A. (2009). Attitudes and behavior of dental students concerning infection control rules: a study with a10-year interval. *Brazilian dental journal*, 20(3), 221-225.
4. Kohn, W. G., Collins, A. S., Cleveland, J. L., Harte, J. A., Eklund, K. J., & Malvitz, D. M. (2003). Guidelines for infection control in dental health-care settings-2003.
5. Yüzbaşıoğlu, E., Saraç, D., Canbaz, S., Saraç, Y. S., & Cengiz, S. (2009). A survey of cross-infection control procedures: knowledge and attitudes of

- Turkish dentists. *Journal of applied oral science*, 17(6), 565-569.
6. Wilson, E., Tanzosh, T., & Maldarelli, F. (2013). HIV diagnosis and testing: what every healthcare professional can do (and why they should). *Oral diseases*, 19(5), 431-439.
 7. Cleveland, J. L., Foster, M., Barker, L., Brown, G. G., Lenfestey, N., Lux, L., ... & Bonito, A. J. (2012). Advancing infection control in dental care settings: factors associated with dentists' implementation of guidelines from the Centers for Disease Control and Prevention. *The Journal of the American Dental Association*, 143(10), 1127-1138.
 8. Myers, R., Larson, E., Cheng, B., Schwartz, A., Da Silva, K., & Kunzel, C. (2008). Hand hygiene among general practice dentists: a survey of knowledge, attitudes and practices. *The Journal of the American Dental Association*, 139(7), 948-957.
 9. Budnyak, M. A., Gurevich, K. G., Fabrikant, K. G., Miller, K., & Puttaiah, R. (2012). Dental infection control and occupational safety in the Russian Federation. *J Contemp Dent Pract*, 13(5), 703-12.
 10. Shulman, E. R., & Brehm, W. T. (2001). Dental clinical attire and infection-control procedures: patients' attitudes. *The Journal of the American Dental Association*, 132(4), 508-516.
 11. Singh, A., Purohit, B. M., Bhambal, A., Saxena, S., Singh, A., & Gupta, A. (2011). Knowledge, attitudes, and practice regarding infection control measures among dental students in Central India. *Journal of dental education*, 75(3), 421-427.