

## Patients' Perception, Knowledge, And Attitudes Of Infection Control In Dentistry

Talal Owaid Alanazi<sup>1</sup>, Turki Ahmed Adwan<sup>2</sup>, Musleh Hodyan Seheman Alazmi<sup>3</sup>, Saleh Muawwadhah Mohammed AlQahtani<sup>4</sup>, Mansour awad mulhaq alotaibi<sup>5</sup>, Yousra Hassan Abusulaiman<sup>6</sup>, Mohammed Abdullah Ahmed Alzahrani<sup>7</sup>, Sultan Abdulrhman Mohammed Alzahrani<sup>8</sup>, Majed Mohammed Hasan Alzahrani<sup>8</sup>, Mohammed Ibrahim Mohammed Alzhrani<sup>9</sup>, Hanan Sulaiman Dakhil Alrehaili<sup>10</sup>

### Abstract

**Background:** The dental clinic is an environment where disease transmission occurs easily. Infections may be transmitted in the dental clinics to dental patients through several routes direct or indirect. Dentistry is a high-risk profession for infections due to contact to contaminated materials like blood, saliva, and instruments. Both dental staff and patients can contract diseases via person-to-person contact or contaminated objects. **The aim of study:** To assess patient perception knowledge, and attitudes of infection control practices in dentistry which will help in planning effective public health care delivery. **Methods:** A descriptive cross-sectional study was carried out in 170 patients visiting dental clinics in the Kingdom of Saudi Arabia. over the period of three months from January to March 2023 for any form of dental treatment. Data obtained were entered and analyzed using SPSS v.28. **Results:** Majority of the participants believed dentists should wear gloves (96.7%), face masks (93.8%), and eye goggles (61.9%) while treating patients, and (89.6%) of participants agreed that dentist should change gloves between patients. However, nearly half of the participants were not hesitant to receive treatment from the dentist not wearing gloves (48.3%) and mask (50.7%). In total, (70.2%) agreed that it was possible to catch an infection during dental treatment and (71.3%) did take interest in sterilization of instruments but only (12.3%) always asked their dentist about the method of sterilization. **Conclusion:** Patients possess a strong awareness of the importance for infection control in dental practice; however, this study underscores the importance of implementing effective infection control measures in dental settings to ensure the safety and well-being of patients.

**Key words:** Dental; Infection Control; Patient perception knowledge, and attitudes.

### Introduction:

Every patient has the right to receive the best care and treatment whenever he/she comes to hospital regardless of his or her health status at the time of the hospital visit <sup>(1)</sup>. Cross-infection is defined as the transmission of infectious agents between patients and staff

<sup>1</sup>Consultant Restorative Dentistry, Ministry of Health, Saudi Arabia.

<sup>2</sup>Dentist, Ministry of Health, Saudi Arabia.

<sup>3</sup>Dental Technology, Ministry of Health, Saudi Arabia.

<sup>4</sup>General dentist, Alnadwah primary health care center, Saudi Arabia.

<sup>5</sup>Dental prosthetics technician, Dawadmi General Hospital, Saudi Arabia.

<sup>6</sup>Dental technician, King Abdulaziz Hospital - Makkah (Al-Zaher Hospital), Saudi Arabia.

<sup>7</sup>DENTAL HYGIENE, QILWAH GENERAL HOSPITAL, Saudi Arabia.

<sup>8</sup>Dental Hygienist, Bani Hasan PHC, Saudi Arabia.

<sup>9</sup>Oral and dental health specialist, Baidan PHCC, Saudi Arabia.

<sup>10</sup>General Dentist, Alhajrah Phc, Saudi Arabia.

within a clinical environment <sup>(2)</sup>. Transmission may result from person -to- person contact or via contaminated objects <sup>(3)</sup>. Cross contamination may be via direct or indirect means as well contaminated hands are a prime cause of cross- infection <sup>(4,5)</sup>. The dental clinic is an environment where disease transmission occurs easily <sup>(6)</sup>.

Cross-infection is the transmission of infections between people, including patients and health care workers. Prevention of cross infection in the dental clinic is therefore a crucial aspect of community protection from infection, and dental health care workers should adopt a certain basic infection control routines while practicing. Both dental patients and dental health care professionals are at risk of infections caused by various microorganisms such as hepatitis B virus (HBV) and hepatitis C viruses (HCV), mycobacterium tuberculosis, staphylococci, streptococci, herpes simplex virus types (1), human immunodeficiency virus (HIV), mumps, influenza, and rubella <sup>(7)</sup>.

Infections can be transmitted in the dental clinics to dental patients through several routes, including direct contact with blood, oral fluids, or other secretions; indirect contact with contaminated instruments, operatory equipment, or environmental surfaces; or contact with airborne contaminants present in either droplet splatter or aerosols of oral and respiratory fluids. Infection via any of these routes requires that all three of the following conditions be present (commonly referred as the chain of infection): a susceptible host, a pathogen with sufficient infectivity and numbers to cause infection, and a portal through which the pathogen may enter the host. Effective infection control strategies are intended to break one or more of these links in the chain, thereby preventing infection to dental patents, dental health care providers as well community infection <sup>(8)</sup>.

Occupational Safety and Health Administration and Centers for Disease Control (CDC) supported by American Dental Association (ADA) and Office Sterilization and Asepsis Procedures Research Foundation (OSPA) have identified six basic areas for personal barrier protection: Hand washing and care, gloves, face masks, body gowns, protective eye wear, and rubber dam <sup>(9,10)</sup>. The universal infection control policy stipulates that all patients should be treated as potentially infectious, regardless of their apparent health status <sup>(11)</sup>.

Identifying patients' perception on infection control is an important issue. This should give alarming signs to dentists and dental health care programs for better awareness of extra- precautions required while treating dental patients <sup>(12)</sup>. This study was commenced to find out the perception of dental patients about infection control practices as assessment of dental patient's awareness, knowledge, and attitudes towards cross infection in a certain area which may help in planning effective public health care delivery.

## Methods

This was a descriptive cross-sectional study carried out from January to March 2023. Ethical approval for the study was granted by Ethical Committee of Medical College. Sample size was calculated using formula: Sample size (n) =

$$\frac{(Z_{1-\alpha})^2 P(1-P)}{D^2}$$

Here,  $Z_{1-\alpha}$  = standard normal variation (at 5% type 1 error ( $p < 0.05$ ) it is 1.96 and at 1% type 1 error ( $p < 0.01$ ) it is 2.58), as in majority of studies p-values are considered significant below 0.05 hence 1.96 was used in the formula; P = expected population based on previous study <sup>(13)</sup>; D = absolute error.

Sample size calculation has been done taking into consideration of the involvement of study participants in research from study <sup>(13)</sup> according to which 88.37% patient believed dentist should wear gloves and while dental treatments. Putting this value into formula, Sample size =  $[1.962 * 0.8837(1 - 0.8837)] / 0.052 = 157.92$ . Rounding off, the maximum sample size for patients = 160.

A self-developed questionnaire was used to collect the data from patients visiting dental department for any form of treatment in random manner through "convenience sampling". In the case of minors, data were collected from attendants who have already visited dental clinic before. Data were collected from 170 participants after written informed consent. The collected data were entered and statically analyzed using IBM SPSS Statistics for Windows, version 28 and descriptive statistics like frequency and percentage were used to summarize the responses.

**RESULTS**

Out of a total of 170 individuals, 94 (55.3%) were female and 76 (44.7%) were male. The mean age of the group was 33.4 years with a standard deviation of ± 14.9 years. Of the total, 155 (91.2%) individuals were literate, 5 (2.9%) were illiterate, and 10 (5.9%) did not provide information about their education level.

**Table (1)** show perception of study participants toward infection control that the majority (96.7%) believe that dentist should wear gloves while treating patients, only (7.6%) agree with dentist treat more than one patient with same pair of gloves. While (93.8%) believe dentist should always wear face mask when treating patient, (61.9%) of study participants believe dentist should always use eye goggles when treating patient. While (70.2%) of study participants believe can catch infection during dental treatment.

**Table (2)** show attitude of study participants toward infection control that (46.4%) agreements with statement receive treatment from dentist who is not wearing gloves, (45.4%) agreements with statement receive treatment from dentist who is not wearing face mask, (71.3%) agreements with statement bother about the sterilization of the instruments used for treatment.

**Table (3)** show knowledge of study participants toward sterilization that only (12.3%) always ask dentist about the way they sterilize their instruments while (56%) never ask dentist about the way they sterilize their instruments.

**Table (1):** Perception of study participants, n (%)

Questions	Yes	No	Don't know	Not responded
Do you believe that dentist should wear gloves while treating patients?	164 (96.7)	3 (1.7)	3 (1.7)	-
Can dentist treat more than one patient with same pair of gloves?	13 (7.6)	152 (89.6)	4 (2.3)	1 (0.6)
Do you believe dentist should always wear face mask when treating patient?	159 (93.8)	6 (3.5)	2 (1.1)	3 (1.7)

Questions	Yes	No	Don't know	Not responded
Do you believe dentist should always use eye goggles when treating patient?	105 (61.9)	33 (19.4)	31 (18.2)	1 (0.6)
Do you believe you can catch infection during dental treatment?	119 (70.2)	16 (9.4)	35 (20.6)	-

**Table (2):** Attitude of study participants, n (%)

Questions	Yes	No	Don't know	Not responded
Would you be reluctant to receive treatment from dentist who is not wearing gloves?	79 (46.6)	82 (48.3)	9 (5.3)	-
Would you be reluctant to receive treatment from dentist who is not wearing face mask?	77 (45.4)	86 (50.7)	4 (2.3)	3 (1.7)
Do you bother about the sterilization of the instruments used for your treatment?	121 (71.3)	33 (19.4)	16 (9.4)	-

**Table (3):** Knowledge of sterilization, n (%)

Have you ever asked your dentist about the way they sterilize their instruments?	N (%)
1. Always	21 (12.3)
2. Sometimes	41 (24.1)
3. Never	95 (56)
4. Don't know about sterilization	10 (5.9)
5. Not responded	3 (1.7)

## Discussion

This study offers a perspective on how the dental patient visiting dental practice for any form of treatment perceives the risk of cross-infection with respect to use of personal barrier protection and sterilization. The results of current study indicate that the majority of respondents expected dentists to wear protective gloves, which is a positive finding that aligns with previous research<sup>(12, 14-20)</sup>. Nevertheless, the reported percentage was greater than that of previous studies<sup>(13, 21-25)</sup>.

A significant number of respondents deemed that wearing gloves by dentists is

crucial in preventing cross- infection, suggesting a heightened awareness of the issue. Moreover, the level of awareness among patients regarding dentists changing gloves before treating a new patient was 93.8%, which is higher than the figures reported in earlier studies (12, 13, 17, 18, 21, 22, 24, 25), and lower than the findings of Deogade et al., (2016)<sup>(20)</sup> found 68% of hospital patients, 62% of general patients, and 41% of high-risk patients did not mind reusing gloves after thorough washing with disinfectant on different patients. However, in another study done by Smith et al., (2014)<sup>(15)</sup> only 25% of respondents agreed with the reuse of the gloves. Centers for Disease Control and Prevention recommended that a separate pair of gloves must be used for each new patient to avoid cross-infection<sup>(10)</sup>.

Amid coronavirus disease 2019 (COVID-19) pandemic, people have become increasingly worried about infection control, particularly healthcare facilities. Wearing masks is considered a recommended strategy to reduce the risk of cross-infection. In current study, 93.8% participants believed that dentists should wear masks when treating patients, which is consistent with previous research findings<sup>(17, 18, 20)</sup>, and higher than what has been reported by some authors<sup>(13, 19, 21, 22, 25-27)</sup>. However, the results are lower than that of Ibrahim et al., (2017)<sup>(12)</sup>.

A significant proportion of respondents (70.2%) were cognizant of the potential risk of contracting an infection during dental procedures. This finding is in agreement with the results of Kadtane and colleagues' research<sup>(13)</sup>, and is lower than the figures reported in previous studies by Deogade and others<sup>(20)</sup>, but higher than some other investigations<sup>(14, 21, 26)</sup>. The implication is that people are becoming increasingly aware of the risks involved in dental treatments.

The majority (61.9%) of responders expected the dentist to wear safety goggles while treating the patient. This figure is notably higher than the results reported in previous studies<sup>(12, 13, 18, 21, and 26)</sup>. Interestingly, participants in the research appeared to be more supportive of the use of gloves than masks or goggles, possibly because they viewed gloves as a means of protecting themselves, whereas masks and goggles were seen as primarily protecting the dentist<sup>(21)</sup>.

Patients show less concern about how dentists sterilize instruments. With regard to the sterilization of instruments used during checkups and treatment, only (71.3%) patients expressed concern about the status of sterilization. This result is comparatively less than the findings reported in prior studies by Kadtane et al., (2015)<sup>(13)</sup> and Azodo et al., (2010)<sup>(18)</sup> but more than the figures recorded in Thomson et al., (1997)<sup>(23)</sup> research. It seems that there is a discrepancy between the percentage of people who are concerned about the sterilization status of dental instruments and who actually inquire about the sterilization methods used by dentist. Although (71.3%) of people expressed concern about sterilization, only (12.3%) of them actually asked dentist about the sterilization methods and this finding is lesser to study of Kadtane et al. (2015)<sup>(13)</sup> and Azodo et al., (2010)<sup>(18)</sup> but higher to Ibrahim et al.,(2017)<sup>(12)</sup> this may be due to various reasons such as a lack of knowledge or confidence in asking, assuming that the dentist is already following proper sterilization procedures, or feeling uncomfortable bringing up the topic.

According to the current research, a majority of the participants did not inquire about the sterilization technique employed by their dentist. For a secure and healthy dental experience, it is essential that patients feel at ease inquiring about the sterilization process. Dentists must be forthcoming and candid about their sterilization protocols and should be prepared to address any queries or apprehensions raised by patients.

Despite the fact that 96.7% believed dentist should wear gloves, 93.8 % knows that face mask is preliminary requisite for the safety and 70.2% had knowledge about the cross infection during dental treatment. 46.6 % of total responders are reluctant to receive treatment from dentist who is not wearing gloves and 45.4% are reluctant to receive

treatment from dentist not wearing face mask during clinical procedure, which are lesser than the findings of Azodo et al., (2010)<sup>(18)</sup> and Kadtane et al., (2015)<sup>(13)</sup> studies.

## Conclusion

Study has revealed that patients possess a strong awareness of the importance for infection control in dental practice. The majority of participants expect dentists to wear protective masks, gloves, and safety goggles. While patients do express concerns about the sterilization of instruments used during dental treatments, only a small proportion of them inquire about the sterilization techniques used by their dentist. Overall, this research highlights the critical significance of implementing effective infection control measures in dental settings to ensure the safety and well-being of patients.

## References

1. Sharon, K. Dickinson, CDA, CDPMA, RDA; Richard D. and Bebermeyer, D.D.S: Guidelines for Infection Control in Dental Health Care Settings, Continuing Education, American. 2013.
2. Yüzbaşıoğlu, E, Saraç, D, Canbaz, S, Saraç, Y.S, and Cengiz, S. A survey of cross-infection control procedures: Knowledge and attitudes of Turkish dentists. *J Appl Oral Sci*; 2009; 17(6):565-9. Dental Assistants Association available at: [www.dentalassistant.org](http://www.dentalassistant.org).
3. Samarnayake, L.P. Essential Microbiology for Dentistry, principles of infection control, 2nd Ed, Churchill Livingstone, Edinburgh London, 2012; Pp.255-271.
4. Potter, P.A, and Perry, A.G. Fundamental of Nursing, Infection Control, and Infection control, chapter 33, 5th edition, Mosby, Philadelphia, London. 2014; pp .835-882.
5. Abichandani, S.J., and Nadiger, R. Cross contamination in dentistry: A comprehensive overview. *Chron Young Sci*; 2013; 4:51-8.
6. Australian Dental Association. Guidelines for Infection Control, Second Edition. Authorized by FS Fryer, Federal President, Australian Dental Association Inc. 2012. Available at : [www.ada.org.au](http://www.ada.org.au)
7. Singh A., Purohit B. M., Bhambal, A. Saxena, S., Singh, A and Gupta A. Knowledge, Attitudes and Practice Regarding Infection Control Measures Among Dental Students in Central India *Journal of Dental Education*, 2011; 75(3): 421-427.
8. Cleveland , J. L., Barker L., Brown.G., Lenfeste., N., Lux L, Corley, T. J. and Bonito, A. J. Advancing infection control in dental care for Disease Control and Prevention implementation of guidelines from the Centers settings: Factors associated with dentists', *JADA*; 2014, 143(10):1127-1138.
9. British Dental Association. Infection control in dentistry, Advice sheet A12. *Infect Control Dent*. 2009.
10. Kohn WG, Harte JA, Malvitz DM, Collins AS, Cleveland JL, Eklund KJ. Centers for Disease Control and Prevention. Guidelines for infection control in dental health care settings--2003. *J Am Dent Assoc*. 2004 Jan;135(1):33-47.
11. Marshall KF. 'The control of cross-infection in dentistry'. *Br Dent J*. 1989 Feb 25; 166(4):110.
12. Ibrahim NK, Alwafi HA, Sangoof SO, Turkistani AK, Alattas BM. Cross-infection and infection control in dentistry: Knowledge, attitude and practice of patients attended dental clinics in king abdulaziz university hospital, jeddah, saudi arabia. *J Infect Public Health*. 2017; 10(4):438-45.
13. Kadtane SS, Bhaskar DJ, Agarwal S, Biradar A, Jadhav SU, Bohra PD. Perception of the patients' about the infection control practices in dentistry: A cross-sectional study. *Int J Prevent Public Health Sci* 2015; 1(1):25-8.
14. Samaranayake LP, McDonald KC. Patient perception of cross-infection prevention in dentistry. *Oral Surg Oral Med Oral Pathol*. 1990 Apr; 69(4):457-60.

15. Smith AJ, Wilson SL, Read S, Welsh J, Gammie E, Szuster J, Davidson J, Binnie V. Patients' perception of infection prevention in dental practice. *Am J Infect Control*. 2014 Mar; 42(3):337-9.
16. Kearns HP, Burke FJ, McCartan BE. Patient attitudes to glove use by dentists. *Br Dent J*. 1998 Jul 25; 185(2):87-9.
17. Baseer MA, Rahman G, Yassin MA. Infection control practices in dental school: A patient perspective from Saudi Arabia. *Dent Res J (Isfahan)*. 2013 Jan; 10(1):25-30.
18. Azodo CC, Umoh A, Ehizele AO. Nigerian patients' perception of infection control measures in dentistry. *Int J Biomed Hlth Sci*. 2010; 6:173-9.
19. Sofola OO, Uti OG, Onigbinde OO. Public perception of cross-infection control in dentistry in Nigeria. *Int Dent J*. 2005 Dec;55(6):383-7.
20. Deogade SC, Mantri SS, Sumathi K, Dube G, Rathod JR, Naitam D. Perceptions of dental outpatients toward cross-infection control measures in Jabalpur city. *J Indian Assoc Public Health Dent* 2016; 14:338- 43.
21. Mousa AA, Mahmoud NM, Tag El-Din AM. Knowledge and attitudes of dental patients towards cross-infection control measures in dental practice. *Eastern Mediterranean Health Journal*. 1997; 3(2):263-73.
22. Bowden JR, Scully C, Bell CJ, Levers H. Cross-infection control: attitudes of patients toward the wearing of gloves and masks by dentists in the United Kingdom in 1987. *Oral Surg Oral Med Oral Pathol*. 1989 Jan; 67(1):45-8.
23. Thomson WM, Stewart JF, Carter KD, Spencer AJ. Public perception of cross-infection control in dentistry. *Aust Dent J*. 1997 Oct; 42(5):291-6.
24. Otuyemi OD, Oginni AO, Ogunbodede EO, Oginni FO, Olusile AO. Patients' attitudes to wearing of gloves by dentists in Nigeria. *East Afr Med J*. 2001 Apr; 78(4):220-2.
25. Reddy MNT. Perception of cross infection control among patients attending a dental college and hospital in Bangalore - A questionnaire study. *J Indian Assoc Public Heal Dent*. 2010; 8(16):179-85
26. Porter SR, Peake G, Scully C, Samaranyake LP. Attitudes to cross-infection measures of UK and Hong Kong patients. *Br Dent J*. 1993 Oct 9; 175(7):254-7.
27. Humphris GM, Morrison T, Horne L. Perception of risk of HIV infection from regular attenders to an industrial dental service. *Br Dent J*. 1993 May 22; 174(10):371-8.