

Perception of Endodontic Staff towards Safety Procedures at Selected Dental Clinics, Saudi Arabia

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Abstract: **Background:** Safety Procedures are designed to help dental professionals advocate for good dental health especially to maintain the root canal safety which concern the main role for dental endodontic. Furthermore adherence to safety procedures will assist the dental endodontic to understand the advancements in modern dentistry that make endodontic treatment predictable, effective and successful. **Objective:** The current research study was utilized to assess the perception of endodontic staff towards Safety Procedures at selected dental clinics, Saudi Arabia. **Method:** A cross-sectional survey was conducted at selected dental clinics, Saudi Arabia. Self-administered questionnaire was provided to 100 Endodontic staff in the research setting based on their area of their perspectives to assess the perception of endodontic staff towards Safety Procedures at selected dental clinics, Saudi Arabia. **Results:** The current research finding showed that perception towards safety procedures among some Endodontic staff at selected dental clinics. The majority (88.0%) of the Endodontic staff had a high level of perception towards safety procedures in relation to for Entire precautions are applied to Infectious Patients ". On the other hand (60.0%) of the Endodontic staff had a lowest level of perception towards safety procedures in relation to Decontamination of devices with only contact with skin washing with usual detergent is enough. While, concerning the Intermittent Level of Perception the highest level was perception towards safety procedures in relation to Universal precautions are not necessary in situations that might lead to contact with saliva as well as in the item of Blood spills should be cleaned up promptly with sodium hypochlorite (18.18%). While, regarding the Low Level was in the item of Universal precautions are not necessary in situations that might lead to contact with saliva. Although, the highest percentage concerning the low level of perception towards safety procedures was in the aspect of Universal precautions are applied to patients with HIV and viral hepatitis only". While the lowest level in such item (9.9%) was in the aspect of Needles can be recapped after giving an injection as well as in the item of Endodontic Staff with non intact skin should not be involved in direct patient care until the condition resolves. **Conclusions:** The current study results revealed that there were high levels of Perception among the Endodontic staff towards policies of safety measures within the study setting. The current research study was utilized to assess the perception of endodontic staff towards Safety Procedures at selected dental clinics, Saudi Arabia. The majority (88.0%) of the Endodontic staff had a high level of perception towards safety procedures in relation to for Entire precautions are applied to Infectious Patients ".

Keywords: Safety Procedures; Endodontic Staff & Perspectives

1. Introduction

According to Cathrine, et al., (2007) , endodontic procedures on the most delicate structures in confined spaces require a maximum of precision and tactility on the part of the operator. Safety will always have to come first — safety for the patient as well as safety for the dentist. Morita and its portfolio of endodontic solutions meet these requirements at the highest level, setting benchmarks for treatment perfection. The individual systems seamlessly integrate into the modern clinical workflow, from the initial clinical examination to complex chair side procedures and regular recall appointments.

Klevens & Moorman, (2013), mentioned that, Morita's Soaric treatment unit allows an ideal combination of diagnostic and therapeutic procedures. The high-quality dental chair with its award-winning design supports the endodontic treatment sequences with its integrated functions and modular extensions, such as the apex locator, the monitor, or microscopes by different manufacturers. The unit provides generous storage space and allows intuitive hand movements. Its ergonomic design offers protection for the dentist's muscles. For example, the hoses in the operator's element include a strain relief that minimizes muscle stress when using the instruments. Geriatric patients with reduced mobility will benefit from swiveling armrests and a fold-away footrest that facilitates access to the patient

chair. The patient, the dentist and the dental team enjoy uncompromising comfort and functionality and optimum conditions for a harmonious workflow and excellent treatment results.

Dentists are independent contractors or employed directly by local primary care trusts (PCTs).they may provide care to both NHS and private patients. Compared to general practitioners they have a higher proportion of private practice. The National Reporting and Learning Service (NRLS) has produced a range of patient safety resources relating to dental services, including, Specific information about patient safety culture for primary care settings .Alerts and guidance about patient treatment and procedures, such as information on treating dental patients who are taking oral anticoagulants.

The dental personnel is obliged to wash their hands before and after coming in contact with the patient (or the instruments used) independently of wearing gloves or not during the operation. Hand washing must be performed meticulously so that every hand surface is adequately cleaned. Special attention must be paid to hand surfaces usually neglected when washed. (Rapiti, et al., 2005).

Redd, Baumbach, Kohn, et al. (2007) , stated that sterilizing examination gloves is also not allowed as manufacturally there is no guarantee of the protection of their integrity. Disinfection fluids, essential oils, acrylic monomers, various

dental materials and instruments, several skin soaps and lotions may distort the cohesion of the glove material. In patients with confirmed HIV or HBV and HCV infection, it is recommended that double gloves are used for the protection of the surgeon. If during any dental work it is necessary to use an extra device or material, gloves should be covered with an extra pair of nylon gloves so that contamination of those surfaces is prevented.. To the greatest of our understanding, the attentiveness of Endodontic staff in relation to knowledge and Preception about policies of safety measures within the work setting. Consequently, conducted this study to assess the perception of endodontic staff towards Safety Procedures at selected dental clinics, Saudi Arabia.

2. Participants and Methods

This study was conducted to assess the level of perception of endodontic staff in relation to safety procedures at the dental clinics, Saudi Arabia. The study was granted ethical approval by the clinics ethical committee.

The participants were selected from the selected dental clinics. After signing an informed written consent form, the questionnaire was given to each participant. Before administration of the questionnaire, the purpose of the study was explained to each respondent and confidentiality of the information guaranteed.

The research was carried out by one of the authors who were appropriately trained in administering the informed consent and the self-report questionnaire to the participants. In this cross-sectional study, a structured questionnaire prepared by the authors, was administered to the participants. A self-administered structured questionnaire about assessment of

the level of perception of endodontic staff in relation to safety procedures at the dental clinics, Saudi Arabia.

Incorporated a full range of response options, designed to identify the practitioner's level of to evaluate their level of perception of endodontic staff in relation to safety procedures at the dental clinics, within the selected setting. Prior to distribution of the questionnaire, a pilot study was done on a selective group of health care workers who were asked to fill out the questionnaire and return it back with their remarks and criticism. Minor changes were then made to the final tool.

Groundwork part of the questionnaire consisted of demographic information such as occupation, age, gender, and the marital status. The second part of the questionnaire comprised of questions regarding their level of assesses the level of perception of endodontic staff in relation to safety procedures at the dental clinics, Saudi Arabia.

In the course of examining questions ; a score of "1" was assigned for a correct answer and "0" for an incorrect answer. A health care worker who obtained a total score of "5" was considered "very aware;" "4 or 3" "somewhat aware;" and "1 or 0" "not aware."The data were coded and analyzed by SPSS® for Windows® ver. 12.0. Strict confidentiality was maintained. All the data were stored in computers at a secured location, with access provided only to the researchers involved in the study. The χ^2 test was used to test association between categorical variables. A p value <0.05 (two-tailed) was considered statistically significant differences.

3. Results

Level of Perception of Endodontic Staff in relation to Safety Procedures at the Selected Dental clinics, Saudi Arabia

Items of Safety Procedures	High Level of Perception		Intermittent Level of Perception		Low Level of Perception	
	No	%	No	%	No	%
Entire precautions are applied to Infectious Patients	88	88%	12	11.09%	10	9.09 %
Segregation is necessary for patients with blood-borne infections	75	68.18%	15	13.63%	20	18.18%
Needles can be recapped after giving an injection	89	81.09%	11	10.0%	10.0	9.09 %
Decontamination of devices with only contact with skin washing with usual detergent is enough	66	60.0%	14	12.72%	30	27.27%
Universal precautions are not necessary in situations that might lead to contact with saliva"	79	71.81%	20	18.18%	11	10.0%
Endodontic Staff with non intact skin should not be involved in direct patient care until the condition resolves	86	78.18%	14	12.72%	10	9.09 %
Blood spills should be cleaned up promptly with sodium hypochlorite	74	67.27%	20	18.18%	16	14.54%

Table (1): Showed that perception towards safety procedures among some Endodontic staff at selected dental clinics. The majority (88.0%) of the Endodontic staff had a high level of perception towards safety procedures in relation to for Entire precautions are applied to Infectious Patients ".On the other hand (60.0%) of the Endodontic staff had a lowest level of perception towards safety procedures in relation to Decontamination of devices with only contact with skin washing with usual detergent is enough. While, concerning the Intermittent Level of Perception the highest level was

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This study finding showed that perception towards safety procedures among some Endodontic staff at selected dental clinics. The majority (88.0%) of the Endodontic staff had a high level of perception towards safety procedures in relation to for Entire precautions are applied to Infectious Patients ".On the other hand (60.0%) of the Endodontic staff had a lowest level of perception towards safety procedures in relation to Decontamination of devices with only contact with skin washing with usual detergent is enough. While, concerning the Intermittent Level of Perception the highest level was perception towards safety procedures in relation to Universal precautions are not necessary in situations that might lead to contact with saliva as well as in the item of Blood spills should be cleaned up promptly with sodium hypochlorite (18.18%).While, regarding the Low Level was in the item of Universal precautions are not necessary in situations that might lead to contact with saliva. Although, the highest percentage concerning the low level of perception towards safety procedures was in the aspect of Universal precautions are applied to patients with HIV and viral hepatitis only". While the lowest level in such item (9.9%) was in the aspect of Needles can be recapped after giving an injection as well as in the item of Endodontic Staff with non intact skin should not be involved in direct patient care until the condition resolves

4. Discussion

The level perception towards safety procedures among some Endodontic staff at selected dental clinics. The majority (88.0%) of the Endodontic staff had a high level of perception towards safety procedures in relation to for Entire precautions are applied to Infectious Patients ".On the other hand (60.0%) of the Endodontic staff had a lowest level of perception towards safety procedures in relation to Decontamination of devices with only contact with skin washing with usual detergent is enough. While, concerning the Intermittent Level of Perception the highest level was perception towards safety procedures in relation to Universal precautions are not necessary in situations that might lead to contact with saliva as well as in the item of Blood spills should be cleaned up promptly with sodium hypochlorite (18.18%).While, regarding the Low Level was in the item of Universal precautions are not necessary in situations that might lead to contact with saliva. Although, the highest percentage concerning the low level of perception towards safety procedures was in the aspect of Universal precautions are applied to patients with HIV and viral hepatitis only". While the lowest level in such item (9.9%) was in the aspect of Needles can be recapped after giving an injection as well as in the item of Endodontic Staff with non intact skin should not be involved in direct patient care until the condition resolves.

This research study steady with the results carried out by Klevens RM, Moorman AC,(2017), involving 550 medical students and residents during the 1989–1990 training year likewise reported a high prevalence of needle stick injuries (65%), and a higher frequency of injury by a factor of (6) among surgical residents than among medical residents. In these two studies, rates of reporting needle stick injuries ranged from 11 to 21%, and a more recent survey of all types of providers from an Iowa medical organization found that 34% had reported their exposure to an employee health service. On the other hand, the study carried by Regina (2002), showed that only 61% of surgical residents report such injuries extends previous observations that underreporting may result in a substantial underestimation of the magnitude of the problem.

Pertaining to the Intermittent Level of Perception the highest level was perception towards safety procedures in relation to concerning the While, concerning the Intermittent Level of Perception the highest level was perception towards safety procedures in relation to Universal precautions are not necessary in situations that might lead to contact with saliva as well as in the item of Blood spills should be cleaned up promptly with sodium hypochlorite (18.18%).It is very important that health care workers have good understanding about the risk of blood-borne pathogens at work place and about the preventive measures for reducing risk.

The current study findings were congruent with the research findings carried out by Radcliffe, Bixler & Moorman, et al., who reported that the adjusted response rate was 66.4%. Respondents reported use of an IC manual (52%); post-exposure protocol (41%); biologic monitoring of heat-sterilizers (71%); hepatitis B immunization of dentists (91%: of these 72% had post-immunization screening; natural immunity 3%) all hygienists (78%), and all other clinical staff (70%); hand washing (before treating patients 76%, after de-gloving 63%); always wearing gloves (95%); changing gloves after each patient (97%); masks (82%); protective eyewear (82%); protective uniform (48%); puncture-proof container for sharps (94%); recapping needles with scoop technique/device (60%); flushing waterlines (55%); heat-sterilizing hand-pieces (94%); after each patient 77%); high-volume suction (92%) and "excellent" compliance (6%). Significant predictors of "excellent compliance" included attending continuing education about IC

Improvements in IC are necessary in dental practice. The introduction of mandatory continuing education about IC may improve compliance with recommended IC procedures, which is important because of concerns related to transmission of blood borne pathogens and drug-resistant micro-organisms. This study results congruent with the research data carried out by Pournaras, et al., (2004) , who reported that Infection control practices which increase the risk of blood-borne virus transmission with associated dental practice in one South African province were studied. All 24 state dental clinics were observed for adequate provision to carry out good infection prevention and control (IPC) practice, 75 staff including dentists, nurses and dental assistants were interviewed to assess IPC knowledge and 23

dental procedures were observed. Significant findings were the difference between knowledge and practice, despite adequate provisions for safe infection control practice. The lack of protective eye wear during a dental procedure, not washing hands between patients, not disassembling an item prior to disinfection or sterilization, and not using a sterile drill for each patient were identified. A rapid method for detection of occult blood was used as a marker for inadequate IPC practice. Contaminated dental items of equipment just prior to patient use in 25% of equipment tested and 37% of surfaces and surrounding areas in the dental clinics and units were recorded. This study concludes that, despite provision for safe dental practice available in state dental clinics, there was a lack of knowledge application in clinical practice. The risk of blood-borne virus transmission in a population with high human immunodeficiency virus (HIV) prevalence cannot be ignored.

5. Conclusion

The current research finding showed that perception towards safety procedures among some Endodontic staff at selected dental clinics. The majority of the Endodontic staff had a high level of perception towards safety procedures in relation to for Entire precautions are applied to Infectious Patients ".On the other hand of the Endodontic staff had a lowest level of perception towards safety procedures in relation to Decontamination of devices with only contact with skin washing with usual detergent is enough. While, concerning the Intermittent Level of Perception the highest level was perception towards safety procedures in relation to Universal precautions are not necessary in situations that might lead to contact with saliva as well as in the item of Blood spills should be cleaned up promptly with sodium hypochlorite. While, regarding the Low Level was in the item of Universal precautions are not necessary in situations that might lead to contact with saliva. Although, the highest percentage concerning the low level of perception towards safety procedures was in the aspect of Universal precautions are applied to patients with HIV and viral hepatitis only". While the lowest level in such item was in the aspect of Needles can be recapped after giving an injection as well as in the item of Endodontic Staff with non intact skin should not be involved in direct patient care until the condition resolves

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References

- [1] Redd JT, Baumbach J, Kohn W, et al. (2007), Patient-to-patient transmission of hepatitis B virus associated with oral surgery. *J Infect Dis*. 195(9):1311–1314.
- [2] Radcliffe RA, Bixler D, Moorman A, et al. Hepatitis B virus transmissions associated with a portable dental clinic, West Virginia, 2009. *J Am Dent Assoc*. 2013;144(10):1110–1118.
- [3] Oklahoma State Department of Health. Dental Healthcare-Associated Transmission of Hepatitis C: Final Report of Public Health Investigation and Response, 2013. Available at: http://www.ok.gov/health2/documents/Dental%20Healthcare_Final%20Report_2_17_15.pdf.
- [4] Klevens RM, Moorman AC. Hepatitis C virus: an overview for dental health care providers. *J Am Dent Assoc*. 2013;144(12):1340–1347.
- [5] Centers for Disease Control and Prevention. Guidelines for infection control in dental health-care settings—2003. *MMWR Recomm Rep* 2003;52(RR-17):1–61. Available at: www.cdc.gov/mmwr/PDF/rr/tr5217.pdf.
- [6] Saif-u-Rehman, Rasoul Mohammad, Wodak Alex, Claeson Mariam, Friedman Jed, Sayed Ghulam: Responding to HIV in Afghanistan. *Lancet*. 2007, 370: 2167-9. 10.1016/S0140-6736(07)61911-4.
- [7] Guo YL, Shiao J, Chuang Y-C: Needlestick and sharps injuries among health-care workers in Taiwan. *Epidemiology and Infection Journal*. 2003, 122: 259-65. 10.1017/S0950268899002186.
- [8] Regina Chan, Molassiotis Alexander, Eunice Chan, Virene Chan, Becky Ho, Chit-Ying Lai, et al: Nurses' knowledge of and compliance with universal precautions in an acute care hospital. *International Journal of Nursing Studies*. 2002, 39: 57-63.
- [9] Pournaras S, Tsakris A, Mandraveli K, Faitatzidou A, Douboyas J, Tourkantonis A: Reported needlestick and sharps injuries among healthcare workers in a Greek general hospital. *Occupational Medicine*. 2004, 7: 423-6. 10.1093/occmed/49.7.423.
- [10] Lacerda RA. Infecção hospitalar e sua relação com a evolução das práticas de assistência à saúde. In: Lacerda RA, ed. *Controle de infecção em centro cirúrgico*. São Paulo: Atheneu, 2003: 9-23.
- [11] Lacerda RA, Egry EY. As infecções hospitalares e a sua relação com o desenvolvimento da assistência hospitalar: reflexões para análise práticas atuais de controle. *Rev Latinoam Enfermagem* 1997;5:13-23.
- [12] Beltrami EM, Williams IT, Shapiro CN, Chamberland ME. Risk and management of blood-borne infections in health care workers. *Clin Microbiol Rev* 2000;13(3):385-407.
- [13] Gerberding JL. Incidence and prevalence of human immunodeficiency virus, hepatitis B virus, hepatitis C virus, and cytomegalovirus among health care personnel at risk for blood exposure: final report from a longitudinal study. *J Infect Dis* 1994;170(6):1410-7.
- [14] Ruben FL, Norden CW, Rockwell K, Hruska E. Epidemiology of accidental needle-puncture wounds in hospital workers. *Am J Med Sci* 1983;286(1):26-30.
- [15] Pruss-Ustun A, Rapiti E, Hutin Y. Estimation of the global burden of disease attributable to contaminated sharps injuries among health-care workers. *Am J Ind Med* 2005;48(6):482-90.
- [16] Khuri-Bulos NA, Toukan A, Mahafzah A, et al. Epidemiology of needlestick and sharp injuries at a university hospital in a developing country: a
- [17] Year prospective study at the Jordan University Hospital, 1993 through 1995. *Am J Infect Control* 1997;25(4):322-9.

- [18] Wang FD, Chen YY, Liu CY. Analysis of sharpedged medical-object injuries at a medical center in Taiwan. *Infect Control Hosp Epidemiol* 2000;21(10):656-8.
- [19] Pruss-Ustun A, Rapiti E, Hutin Y. Sharp injuries: global burden of disease from sharp injuries to health care workers Geneva, Switzerland. World Health Organization, 2003.
- [20] Orji EO, Fasubaa OB, Onwudiegwu U, et al. Occupational health hazards among health care workers in an obstetrics and gynaecology unit of a Nigerian teaching hospital. *J Obstet Gynaecol* 2002;22(1):75-8.
- [21] Recommendations for protection against viral hepatitis. *MMWR Morb Mortal Wkly Rep* 1985;34(22):313-24, 329-35.
- [22] Recommendations for preventing transmission of infection with human T-lymphotropic virus type III/lymphadenopathy-associated virus in the workplace. *MMWR Morb Mortal Wkly Rep* 1985;34(45):681-6, 691-5.
- [23] McCarthy GM. Universal Precautions *J Can Dent Assoc* 2000;66:556-7.
- [24] Update: human immunodeficiency virus infections in health-care workers exposed to blood of infected patients. *MMWR Morb Mortal Wkly Rep* 1987;36(19):285-9.
- [25] Acquired immunodeficiency syndrome (AIDS): precautions for health-care workers and allied professionals. *MMWR Morb Mortal Wkly Rep* 1983;32(34):450-1.
- [26] Garner JS. Hospital Infection Control Practices Advisory Committee. Guideline for isolation precautions in hospitals. *Infect Hosp Epidemiol* 1996;17:53-80.
- [27] Spire B, Barre-Sinoussi F, Montagnier L, Chermann JC. Inactivation of lymphadenopathy associated virus by chemical disinfectants. *Lancet* 1984;2(8408):899-901.
- [28] Martin LS, McDougal JS, Loskoski SL. Disinfection and inactivation of the human T lymphotropic virus type III/Lymphadenopathy-associated virus. *J Infect Dis* 1985;152(2):400-3.
- [29] McDougal JS, Martin LS, Cort SP, Mozen M, Heldebrant CM, Evatt BL. Thermal inactivation of the acquired immunodeficiency syndrome virus, human T lymphotropic virus-III/lymphadenopathy-associated virus, with special reference to antihemophilic factor. *J Clin Invest* 1985;76(2):875-7.
- [30] Olowu O, Oluaje E, Kehinde O. Knowledge and practice of universal precautions among final year medical and dental students in the University College of Ibadan. *Dokita* 2001;28:6-9.
- [31] Odujurin OM, Adegoke OA. AIDS: Preception and blood handling practices of health care workers in Lagos. *Nig J Epidemiol* 1995;11(4):425-30.
- [32] Palenick C. Strategic planning for infection control. *J Canadian Dental Association* 2000;66:556-7.
- [33] Danchaivijitr S, Tantiwatanapaiboon Y, Chokloikaew S, et al. Universal precautions: knowledge, compliance and attitudes of doctors and nurses in Thailand. *J Med Assoc Thai* 1995;78 Suppl 2:S112S117.
- [34] Twitchell K. Bloodborne pathogens: what you need to know-Part I. *Journal of the American Association of Occupational Health Nurses* 2003;51:46-7.
- [35] Godin G, Naccache H, Morel S, Ebacher MF. Determinants of nurses' adherence to universal precautions for venipunctures. *Am J Infect Control* 2000;28(5):359-64.