European Journal of Molecular & Clinical Medicine

ISSN 2515-8260 Volume 07, Issue 07, 2020

AN INVESTIGATION OF DENTAL DISEASES AND TECHNIQUES FOR ADVANCEMENTS IN DENSTISTRY

Dr.Maunika M Junior Resident[1],

Dr. Anand V Professor & HOD[2]

Meenakshi Academy of Higher Education and Research

anandv@mmchri.ac.in

Abstract:

When Coronavirus Disease 19 appeared in 2019, the public was renewedly worried about the spread of aeronautical and aerosolized viruses. Many contradictory dialogues on which types of personal safeguards defend dentists and patients better against viral exposure follow this issue. In this comprehensive analysis, we carry out a thorough and critical evaluation of face masks and face shields, some of the personal protections most widely prescribed against viral infection.

The roles and practises of most popular types of masks in odontology are described: operation masks, operative masks, and respiratory masks are filtered (also called N95s). Following this would be the crucial evaluation of masks used on the basis of an analysis of the recorded proven results in three main areas: the extent to which each type of mask is demonstrated to defend against airborne and aerosolized environments, the recorded possibility that masks are not acceptable and risk factors for both correct and incorrect use of masks[1–3]. Our examination finished with some realistic, evidentiary guidance for use in dentistry and dental clinics using this material.

Keywords: COVID, DENTISTRY, EQUIPEMENT, INNOVATION

INTRODUCTION

An online survey of potential risk of disease in dental medicine was conducted by a report by Ramich et al. in 2017 by 275 dentists and students. 33 percent claimed the risk of transmission of blood-borne diseases was high and the rest indicated that transmission of diseases from dentists to patients was greater than the opposite. However, 28% of participants did not know their routine airborne disease vaccine status, including viruses that are most likely when they are dentists. This research illustrates a break-up between belief and fact in the prevention of and reduction of dental disease transmission. Its findings are particularly timely considering the intensified emphasis on aerosol and airborne viral transmission arising from the development of Coronavirus Disease in 2019 (colloquially called COVID-19)[4–6]. This manuscript provides a systematic analysis of what is also considered a "frontline" defence against viral infection in order to share the evidence-funding dentistry as the discipline adapts to this new epidemic (as well as to those yet to come). Most of what are learned regarding virus outbreaks and the usage of a mask derives from inquiries concerning

ISSN 2515-8260 Volume 07, Issue 07, 2020

different strains of influenza, for whom the occurrence of outbreaks in the colder se According to the Disease Control Center (CDC), the cost of healthcare in the United States is about 36,000 deaths and 200,000 hospsitalisations annually. In the middle of a pandemic of the 2006 H5N1 outbreak, the Medical Institute (IOM) of the Institute of Medicine (National Academies of Science) reviewed a literature on the reuse of N95 filtering fake respirators to handle infections (FFRs). Their results predicted FFR deficit should exist in the United States with a 6-week pandemic. The IOM calculated that up to 90 million FFRs would be required for such a case. In addition, the 2009 Study on the Occupational Safety and Health Administration (OSHA) (Number 3328-05R) showed that a potential influenza pandemic requires up to 360 million RFFs, which will exceed domestic stocks. The number of FFRs actually expected to protect primary health workers associated with COVID-19 patients is, according to these studies, extremely insufficient[7–10].

PREVENTING DENTAL DISEASES

The transmissibility of aerosol from serious acute respiratory coronavirus 2 syndrome (SARS-CoV-2) has had an impact on health care provision and effectively halted medical and dental therapies. This has politically traumatised the regular provision of health services and impeded the access of most disadvantaged populations to health care. Dentistry involves dental handpieces, ultrasound scalers, air polishing systems, and air abrasion units that typically create visible aerosols by means of the irrigation provided. The closeness of health workers to people where potential pathogenic agents are aerosolized by treatments using such systems presents a high risk of disease transmission for health workers[11–13]. Ultrasonic instruments can also dilute oral fluid without more water irrigation without aerosolization. These aerosolized materials include bacteria, tissue, and plaque cells. While centuries of aerosol in medicine and dentistry were largely ignored in the past, often people get famous when people's lives are threatened during infectious outbreaks like COVID-19.

Preventing dental diseases is a task that any clinician must face. This critical aspect in health care is being increased in culture and in focus, motivated partly by the growing conceptions of patients' own personal security. Infections may occur due to poor air quality or the use of polluted water through the use of infected equipment. A significant attention is paid to (and justified) the sterilisation of instruments, but the handling of air and water is usually less important. Water in dental procedures has gradually been established as the source of biorisk. Water is the vehicle used to distribute the bulk of diseases in the dental clinic. The entire water network of this house, including a dentist's office may be polluted with a biofilm forming inside a construction tube. Water spreads like an aerosol within the dental office, both raising the dissemination of bacteria within the clinic and the possibility that anyone in this region will contaminate. Several micro-organisms, such as algae, bacteria and fungi, are capable of covering and penetration of nearly all dental compounds. Biofilms have been found to contain a toxic bacterial contaminant deposit in dental cliniques that may be immune to multiple disinfectants[14–17]. Dental clinics' biofilms derive from one of two types of contamination: municipal water supplies, or from the mouth of the patient.

Public source of water with an absolute loss of pathogenic bacteria can be poor in bacteria. The water is not a sterile water. It almost definitely would contain a distinct microbial flora that is usually harmless for humans by form and concentration. However, pathogens or

ISSN 2515-8260 Volume 07, Issue 07, 2020

opportunistic pathogens may enter the dental device from the water source under certain circumstances. It is worth emphasising that microbiological inspections of upstream samples of the catchment area at origin are dominated by the bacterial load of environmental waters. The water content "at source" of the dispensing body's microbiological properties does not generally correlate to the microbiological values which may be observed at locations closer to the dental clinic[18–20].

Both water-emitting tools need to be addressed when considering the possibility of reflux water or dental devices.. Turbines are high-speed instruments, which have a centrifugal suction force in the slowdown process that lets them incorporate organic material from the end of the instrument. The rotary instruments are also fitted with special valves which are intended to maintain the suction fluid in the rotor. However, such valves cannot form an absolute seal, and any leakage may lead to bacterial colonies within the device. This may produce a dangerous risk of infection because this is a perfect condition for bacterial growth, which is why all modern dental centres have automated disinfection systems[21–23].

DISCUSSION

In fact, there are many infectious and pathogens found in the water supply networks of the dental clinics, including legionella, pseudomonas, bacteria from tuberculosis, HIV and hepatitis C viruses. Much can be verified by a simple water bacteriological examination. It should be borne in mind that viruses and bacteria found in the water system are sprayed into the air in the form of aerosols by dental instruments and come into close contact with the injured patients who are seeking care. In addition, considering their hygienic and dental status, some patients with dical experience are more vulnerable to this route of infection[24–26].

Many patients need GA dental care, often patients who experience fear or severe anxiety, or have an excessive need for treatment or have a significant dental problem. Some patients have a variety of signs for GA dentures, especially noncooperative kids; patients with increased dental destruction due to trauma, tooth grinding or regeneration; or patients with inadequate sedation[27–29].

GA is a patient- and dentist-friendly treatment, avoids collaboration, only takes one visit, and has a favourable effect in young patients' parental emotion and clash, but is no risk-free procedure. In fact, after dental procedures under GA, pain, nausea and dizziness are the main elements of disease. Even if it is very unlikely that mortality is not a potential complication: in the years 1999 through 2005, all GA-benefitting children in the USA were averaged by 34 deaths per year. However, an increasing demand is being made by patients for GA care which means that painkillers or antibiotics are being consumed more long enough and patients are being complicated. More experiments were actually dependent on this delay: Researchers in the Netherlands found out that GA demand exceeded supply and that waiting period was on average 8 weeks[17]. The average waiting period was 10 weeks in the United Kingdom based on the report. For Foster Page, the average time between 2001 and 2005 was about 2.8 months or about 11.5 weeks. The time of waiting in Australia is represented between 8 to 12 weeks, and in the United States it is on average ten weeks[30–33].

Therefore, GA dental processes, frequently related to the use of MDDS, are a public health concern. Given the risk, disability and comorbidity associated with these treatments, it is vital

that dental GA care is carried out as safely as possible. For example, certain patients with cancer or haemophilia may need hospitalisation and may undergo GA dental procedures. Guidelines for the preoperative usage of antibacterial mouthwashing, but 24-hour no mouth rindering, were developed based on the high risk of bleeding in patients with coagulopathies It is also necessary to ensure that the bacterial load is minimised in the mouth of these susceptible patients.

REFERENCES:

1. Bradford Smith P, Agostini G, Mitchell JC. A scoping review of surgical masks and N95 filtering facepiece respirators: Learning from the past to guide the future of dentistry. *Saf Sci*. 2020;131. doi:10.1016/j.ssci.2020.104920

2. Plog J, Wu J, Dias YJ, Mashayek F, Cooper LF, Yarin AL. Reopening dentistry after COVID-19: Complete suppression of aerosolization in dental procedures by viscoelastic Medusa Gorgo. *Phys Fluids*. 2020;32(8). doi:10.1063/5.0021476

3. Choudhary A, Anjaneyulu K, Smiline Girija AS. Risks of dentistry in COVID 19-a review. *Int J Res Pharm Sci*. 2020;11(Special Issue 1):972-976. doi:10.26452/ijrps.v11iSPL1.3351

4. Offner D, De Grado GF, Strub M, Belotti L, Deboscker S, Musset A-M. Mobile dental delivery system: An effective protocol for hygiene and disinfection. *Int J Environ Res Public Health*. 2020;17(5). doi:10.3390/ijerph17051603

5. Giacomuzzi M, Zotti CM, Ditommaso S. Colonization of dental unit waterlines by Helicobacter pylori: Risk of exposure in dental practices. *Int J Environ Res Public Health*. 2019;16(16). doi:10.3390/ijerph16162981

6. Gupta S, Hakim M, Patel D, et al. Reaching vulnerable populations through portable and mobile dentistry — Current and future opportunities. *Dent J*. 2019;7(3). doi:10.3390/dj7030075

7. Hsu L-H, Hsiao Y-H. Facilitating green supply chain in dental care through kansei healthscape of positive emotions. *Int J Environ Res Public Health*. 2019;16(19). doi:10.3390/ijerph16193507

8. Meertens BR, Berkhout EWR, Hoogeveen RC. Precision of aiming with a portable X-ray device (Nomad Pro 2) compared to a wall-mounted device in intraoral radiography. *Dentomaxillofacial Radiol*. 2019;48(5). doi:10.1259/dmfr.20180221

9. Giovana Renata G, de Andrade Vieira W, Paranhos LR, de Macedo Bernardino Í, Bulgareli J V, Pereira AC. Assessment of the ergonomic risk from saddle and conventional seats in dentistry: A systematic review and meta-analysis. *PLoS One*. 2018;13(12). doi:10.1371/journal.pone.0208900

10. Mulimani P, Hoe VCW, Hayes MJ, Idiculla JJ, Abas ABL, Karanth L. Ergonomic interventions for preventing musculoskeletal disorders in dental care practitioners. *Cochrane Database Syst Rev*. 2018;2018(10). doi:10.1002/14651858.CD011261.pub2

11. Ma KW, Wong HM, Mak CM. Dental environmental noise evaluation and health risk model construction to dental professionals. *Int J Environ Res Public Health*. 2017;14(9). doi:10.3390/ijerph14091084

12. Yilmaz A, Kucukay ES, Istektepe M, Sisli SN, Ersev H, Karagoz-Kucukay I.

Comparison of the shaping ability of waveone reciprocating files with or without glide path in simulated curved S-shaped root canals. *J Int Soc Prev Community Dent*. 2017;7(7):S13-S17. doi:10.4103/jispcd.JISPCD_32_17

13. Mandler J, Moritz S, Binder S, et al. Disinfection of dental equipment-inactivation of enterococcus mundtii on stainless steel and dental handpieces using surface micro-discharge plasma. *Plasma Med*. 2017;7(4):407-416. doi:10.1615/plasmamed.2018019502

14. Ditommaso S, Giacomuzzi M, Ricciardi E, Zotti CM. Cultural and molecular evidence of Legionella spp. Colonization in dental unit waterlines: Which is the best method for risk assessment? *Int J Environ Res Public Health*. 2016;13(2). doi:10.3390/ijerph13020211

15. Yi I, Chan KH, Tsuji GH, Staninec M, Darling CL. Selective removal of esthetic composite restorations with spectral guided laser ablation. In: Rechmann P. FD, ed. *Progress in Biomedical Optics and Imaging - Proceedings of SPIE*. Vol 9692. SPIE; 2016. doi:10.1117/12.2218658

16. Livas C, Kouskoura T, Ren Y, Katsaros C, Pandis N. Are claims made in orthodontic journal advertisements evidence-supported? *Angle Orthod*. 2015;85(2):184-188. doi:10.2319/040814-258.1

17. Mehdizadeh M, Nosrati K, Hamzeh M. Availability of emergency drugs and equipment in general and specialist dental settings in Babol, Iran. *J Contemp Dent Pract*. 2014;15(6):677-680. doi:10.5005/jp-journals-10024-1598

18. Szymańska J, Sitkowska J. Opportunistic bacteria in dental unit waterlines: Assessment and characteristics. *Future Microbiol*. 2013;8(5):681-689. doi:10.2217/fmb.13.33

19. Dutta A, Mala K, Acharya SR. Sound levels in conservative dentistry and endodontics clinic. *J Conserv Dent*. 2013;16(2):121-125. doi:10.4103/0972-0707.108188

20. Morant JJ, Salvaḍ M, Herńandez-Giŕon I, Casanovas R, Ortega R, Calzado A. Dosimetry of a cone beam CT device for oral and maxillofacial radiology using Monte Carlo techniques and ICRP adult reference computational phantoms. *Dentomaxillofacial Radiol*. 2013;42(3). doi:10.1259/dmfr/92555893

21. Shakibaie F, Walsh LJ. Differential reflectometry versus tactile sense detection of subgingival calculus in dentistry. *J Biomed Opt*. 2012;17(10). doi:10.1117/1.JBO.17.10.106017

22. Finkler M, Caetano JC, Ramos FRS. Ethical-pedagogical care in the process of professional socialization: Towards ethical education. *Interface Commun Heal Educ*. 2012;16(43):981-993. doi:10.1590/S1414-32832012005000046

23. He L-H, Foster Page L, Purton D. An evaluation of dental operative simulation materials. *Dent Mater J*. 2012;31(4):645-649. doi:10.4012/dmj.2011-264

24. Rabbo MA, Mitov G, Gebhart F, Pospiech P. Dental care and treatment needs of elderly in nursing homes in Saarland: Perceptions of the homes managers. *Gerodontology*. 2012;29(2):e57-e62. doi:10.1111/j.1741-2358.2010.00409.x

25. Wolff D, Hahn P, Ding P, et al. Proximal contact tightness between direct-composite additions in the posterior dentition: An in vitro investigation. *Oper Dent*.

2012;37(3):272-280. doi:10.2341/11-147-L

26. Custódio RAR, Brandão JGT, Amorim JBO. The influence of an abdominal support for a dental stool in the distributions and electrical activity of the longissimus and the superior trapezius muscle in dentists. *Work*. 2012;41(SUPPL.1):5652-5654. doi:10.3233/WOR-2012-0908-5652

27. Puppin-Rontani RM, Dinelli RG, De Paula AB, Fucio SBP, Ambrosano GMB, Pascon FM. In-depth polymerization of a self-adhesive dual-cured resin cement. *Oper Dent*. 2012;37(2):188-194. doi:10.2341/10-288-L

28. Ryf S, Flury S, Palaniappan S, Lussi A, Van Meerbeek B, Zimmerli B. Enamel loss and adhesive remnants following bracket removal and various clean-up procedures in vitro. *Eur J Orthod*. 2012;34(1):25-32. doi:10.1093/ejo/cjq128

29. Joyce Tiong T, Price GJ. Ultrasound promoted reaction of Rhodamine B with sodium hypochlorite using sonochemical and dental ultrasonic instruments. *Ultrason Sonochem*. 2012;19(2):358-364. doi:10.1016/j.ultsonch.2011.06.022

30. Kimyai S, Lotfipour F, Pourabbas R, Sadr A, Nikazar S, Milani M. Effect of two prophylaxis methods on adherence of Streptococcus mutans to microfilled composite resin and giomer surfaces. *Med Oral Patol Oral Cir Bucal*. 2011;16(4):e561-e567. doi:10.4317/medoral.16.e561

31. Holmgren C, Benzian H. Dental volunteering - A time for reflection and a time for change. *Br Dent J*. 2011;210(11):513-516. doi:10.1038/sj.bdj.2011.426

32. Kadanakuppe S, Bhat PK, Jyothi C, Ramegowda C. Assessment of noise levels of the equipments used in the dental teaching institution, Bangalore. *Indian J Dent Res*. 2011;22(3):424-431. doi:10.4103/0970-9290.87065

33. Feierabend SA, Matt J, Klaiber B. A comparison of conventional and new rubber dam systems in dental practice. *Oper Dent*. 2011;36(3):243-250. doi:10.2341/09-283-C