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Review Article

Clinical Dentistry -The Pandemic's Late Effects

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Abstract

Coronavirus disease 2019 (covid-19) is the most recent HCID (highly contagious infectious diseases) pandemic to hit the world. The respiratory disease (sars-cov-2) has been shown to spread from symptomatic patients through droplets and aerosols. Because of the closed environment and the use of high and low-speed handpieces, ultrasonic scalers, infection spreads even more easily in a dental setting. During these times, our priority should be inward to protect ourselves as well as the patients who need medical attention. Various methods for controlling infection transmission from aerosol-generating dental procedures are recommended to accomplish this. In light of the effect of oral health on the seriousness of the Covid 19 pandemic, and to protect ourselves financially during this pandemic it is critical to explain patients that we dentists are using the most up-to-date approaches to keep them safe by reducing the risk of them contracting the virus from the dental office in order to maximise the number of outpatients. And it is important to treat every patient as a Covid -19 infected person and take the appropriate precautions to ensure our safety while rendering dental treatment.

Keywords: COVID-19; Clinical dentistry; Patient assurance; Infection control.

Introduction

Coronavirus disease 2019 (covid-19) is the most recent HCID (highly contagious infectious diseases) pandemic to hit the world. The respiratory disease (sars-cov-2) has been shown to spread from symptomatic patients to healthy

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people [1]. WHO advises Coughing, sneezing, speaking, and breathing may spread the virus from an infected person's mouth or nose in small liquid particles. These particles range from larger respiratory droplets to smaller aerosols [2].

a) Droplet transmission has been observed in particles larger than 5 m in diameter that can settle gravitationally on surfaces (1–2 m).
a) In contrast, fine and ultrafine particles (airborne transmission) can stay suspended for up to 2 hours and be transported up to 8 metres using simple diffusion mechanisms [3].

The most common ways for this infection to spread are: -

1. Direct or near-direct communication with an infected individual (main way)
2. Aerosol transfer (indirect long-distance transmission) is a possibility [4]. The virus can travel a long distance to 1 metre if it is released in small particles (WHO).

Because of the closed environment and the use of high and low-speed handpieces, ultrasonic scalers, air/water syringes, intra-oral radiographs, or an infected patient coughing, infection spreads even more easily in a dental setting [5,6].

The sars-cov-2 virus has impacted every industry to varying degrees. Of course, some sectors have been hit harder than others, and some have even been pushed into an unwelcome halt.

The World Health Organization recently released an interim study - pulse survey (on August 27, 2020) on the continuity of basic health services during the covid-19 pandemic.

They gathered country data to gain a quick understanding of the effects of covid-19 on a tracer collection of up to 25 critical health services over the course of a person's life. They found that almost every country (90 percent) was affected in some way, with low- and middle-income countries reporting more disturbances than high-income countries. The availability of urgent dental treatment has been stated to be interrupted in 45 percent of cases. On the demand side, the most commonly listed reasons were: patients who did not show up for outpatient care (76 percent) [7]. People may avoid seeking medical help because they are afraid of contracting covid-19.

What does this mean for dentists, though? Does this imply that we are afraid of being infected and, as a result, refuse to treat patients who need it? or is it now necessary for each of us to rise to the challenges faced and arm ourselves with expertise and scientific evidence in order to provide selfless service, proper health care, and, of course, higher levels of patient safety?

Yes, we must channel the 'wartime spirit,' and roll up our sleeves in every way.

During this time, our priority should be inward to protect ourselves as well as the patients who need our attention.

Understanding the mode of transmission and the contributing factors that influence the spread of this virus would undoubtedly aid in the development of preventive measures to monitor the spread of this disease during dental care, as well as assisting the clinician in selecting

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appropriate personal protective equipment to adjust to the new standard and, patients should be educated about how to overcome their fears of dental care. Above all, during this pandemic, it is a practitioner's moral and ethical duty to address patients' needs and dental health issues.

Various methods for controlling infection transmission from aerosol-generating dental procedures are recommended to accomplish this. (Both preoperative and intraoperative care) which include: -

Screening In Advance of The Procedure:

1. By administering a temperature check and questionnaire at the patient triage, where the patient is screened for fever (98.6%), fatigue (69.6%), dry cough (59.4%), myalgia (34.8%), and dyspnoea (31.2%) [8].
2. Screening of dental staff prior to entering the dental office.

Reduction of Patient-Practitioner Contact

- As little intraoperative time as possible.
- Use exposure barriers in the waiting room to keep other patients from coming into contact.
- When worn during interpersonal contact, a universal mask provides a highly effective shield for both the wearer and others.
- physical/social distancing should be maintained with a minimum distance of 6 feet between the patients in the waiting area [9].

Pre-Procedural Mouth Rinses

- 0.12 percent CHX
- or povidone iodine (pi) and 1% hydrogen peroxide to minimise sars-cov-2. bio load [10].

Dental Unit Water Line Decontamination

Filters with a pore size of 0.2 m were inserted immediately before the point of entry of water into the handpiece, flushing the water lines for 20 minutes [11].

High Volume Evacuation

There are a variety of air cleaning devices that can be used. These programmes include the following:

1. **Extremely Efficient Filtration with A Particulate Arrestor (HEPA)**- Randomly arranged fibreglass fibres that capture 99.97% of particles larger than 0.3 um in size, and then destroy the trapped microorganisms with ultraviolet radiation.
2. **Ozonation**- the use of ozone's extremely reactive nature to bind to matter and alter its composition.
3. **Differential Pressurization**- also known as an airborne infection isolation space, this prevents air from the operatory from entering common areas by either venting it to the outside environment or by recirculating air through an hepa filter and air sterilization [9].

- Use of n95/ffp2/ffp3 respirators with well-fitting masks (ffp3>ffp2=n95) efficacy [12].
- Wearing faceshields
- Additional safeguards (gowns, overshoes, gloves)

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Gowns used in the dental operatory are rated similarly to masks based on the type of agent to which the person is exposed:

i. **Level 1:** minimal risk, basic care, standard isolation, cover gown for visitors, or in a standard medical unit
ii. **Level 2:** low risk, during blood draw, suturing, in the intensive care unit, or a pathology laboratory
iii. **Level 3:** moderate risk, during arterial blood draw, inserting an intravenous line, in the emergency room, or for trauma cases
iv. **Level 4:** high risk, during long, fluid intense procedures, when pathogen resistance is needed, or infectious diseases are suspected (non-airborne).

the critical areas of a gown are the front (including neckline) and the forearm.

A level 4 protection ability is needed in these areas. For maximum protection, full-sleeved cuffed gowns with a back closure are recommended [8].

Respiratory Protective Equipment (RPE)

RPE is a type of personal protective equipment that prevents hazardous substances from being inhaled during dental procedures.

- Disposable half-mask/filtering facepiece (FFP)
- Reusable half-mask
- Full-face mask
- Powered half-mask
- Powered full-face mask
- Loose-fitting powered facepieces [12].

Options can be thought of to minimize the risk of infection transmission from the patient to the dentist

1. An anti-retraction handpiece that prevents oral fluid backflow is highly recommended 10
2. To minimise viral load, dentists may use a high-speed electric 1: 5 fg handpiece or an effect air airotor handpiece [11].
3. Use of rubber dams to keep aerosols from spreading.
4. The use of loupes and an operating microscope with a long working distance allows the endodontist and his staff to operate away from the patient during dental work, eliminating the risk of exposure to aerosols and spatter while not jeopardising their own health and physical well-being.
5. Extraoral radiographs should be used instead of intraoral radiographs.

Many people consider clinical dentistry to be the most rewarding career choice after completing a dental specialisation degree. Doctors eagerly await the opportunity to open their own practise or to begin consulting at different clinics or hospitals, but in the current situation, we in the dental community are seeing a sharp drop in the number of patients seeking elective treatments.

Patients are afraid for a variety of reasons, but two of the most common are:

a) Will I be risking unnecessarily exposing myself to the virus by visiting a dentist who deals with saliva and aerosols?

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b) Will the doctor I want to see meet the higher standards of infection prevention procedure and have sufficient knowledge of infection control?

As dental surgeons, it is important to adapt to the changes necessary to avoid infection transmission and to have advanced knowledge of treatment protocols. Post-covid, making a patient feel protected from the virus should and must be a top priority as part of the pandemic's late impact on clinical dentistry. The type of cases or treatments required post this pandemic might be more serious or emergency pain related. The long lockdowns and patients' fear of leaving their homes, let alone for dental care, are the reasons for this. Many people may show up at this point because of extreme pain in a tooth or region that started out as a mild lesion but has developed into an advanced lesion over the last year or more, necessitating urgent medical attention. As a result, dentists must be more prepared to practise pain management may be needed more often where indicated.

To reduce the risk of infection transmission from the patient to the dentist, a variety of options may be considered.

1. If appropriate, organize different clinical timings for patients.
2. Ensure that the treatment area is fully disinfected between patients.
3. The patient should not be accompanied by anyone while reporting.
4. Preference for large treatment rooms
5. scheduling 30-minute intervals between patient appointments (for fresh air)
6. Negative pressure isolation rooms could be used to treat covid-19 patients.
7. All surfaces within 3 metres of the dental chair (including the dental chair, hand-rests, spittoon, tray, buttons, and headlight switch) should be disinfected with a spray of 0.5 percent–1 percent sodium hypochlorite [9].

Impact of Oral Health on Covid-19 Severity

The bacterial count colonising teeth was found to be twofold to tenfold higher in patients with impaired oral health, resulting in more bacteria entering the bloodstream and causing bacteraemia.

C-reactive protein (CRP) is a marker of systemic hyper-inflammation. (The value is less than 10 mg/L, but it increases quickly and reaches its maximum peak 48 hours after the onset of the disease.) Though cytokine storm and C-reactive protein are typically measured in blood samples, saliva may be used as a non-invasive alternative [14].

Studies revealed that COVID-19 symptoms were found to be substantially more severe in patients with impaired oral health in recent studies. Furthermore, those with good oral health had slightly less severe symptoms.

Patients with extreme COVID-19 had higher levels of CRP than those with mild or moderate cases, according to the report [15].

Furthermore, it was discovered that the levels of CRP in patients who died increased tenfold as compared to those who recovered. These elevated CRP levels may be due to an overproduction of inflammatory cytokines, which could be exacerbated by poor oral health [15].

Conclusion

We conclude that, in light of the effect of oral health on the seriousness of the Covid 19 pandemic, and to protect ourselves financially during this pandemic it is critical to assure patients that we dentists are using the most up-to-date approaches to keep them safe by reducing the risk of them contracting the virus from the dental office in order to maximise the number of outpatients. And it is important to treat every patient as a Covid-19 infected person and take appropriate precautions to ensure our safety while rendering dental treatment.

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