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LETTER TO THE EDITOR

SARS-CoV-2 and dentistry

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Dear Editor,

The viral pandemic known as coronavirus disease (COVID-19), which started at the end of 2019 in the city of Wuhan, China, has reached daunting proportions in several countries worldwide because of the speed of its dissemination [1].

The identification that the severe acute respiratory syndrome coronavirus-2 (SARS-CoV-2) is a virus transmitted through airways or by direct contact with the mucosas [2] has prompted the dental community to become alert. The sensation was that dentistry would face an even greater challenge since this profession not only exposes the practitioner to extremely close contact with the patient's airways but also uses dental procedures causing the production of aerosols, which can potentially contaminate several surfaces in the dental office.

Some interesting studies bringing important information for the dentist began to be published. For instance, the use of personal protective equipment (PPE) and the disinfection of surfaces have become the centre of scientific information for the dental community [3, 4].

Kampf et al. [5] performed a literature review of 22 studies on the virucidal capacity of several substances, which were tested against various coronaviruses (both human and animal ones) regarding the disinfection of inanimate surfaces. They concluded that human coronavirus on inanimate surfaces could be inactivated by using ethanol (62–71%), hydrogen peroxide (0.5%) or sodium hypochlorite (0.1%) for 1 min, whereas other substances such as benzalkonium chloride (0.05% and 0.2%) and chlorhexidine digluconate (0.02%) were less effective. The authors also pointed out that although no study had tested the virucidal capacity of those agents against SARS-CoV-2, they expected a similar effect against this virus [5].

In the absence of any disinfection procedure, SARS-CoV-2 has a half-life of 6.8 h on a plastic surface and of 5.6 h on a stainless steel surface. On the other hand, its half-life was estimated to be 1.1 h in aerosol environments [6].

The identification that ACE2—a cell surface receptor necessary for the virus to enter into the human cell—may be present on the surface of oral mucosal cells [7] and that the virus was also found in saliva [8] might, perhaps, have caused greater anxiety in some dentists despite the fact that viral load is higher in the oropharynx [9].

In March 2020, a study by Peng et al. [4] published in the *International Journal of Oral Science* brought information on transmission routes and possible control strategies in the dental practice [4]. However, the suggestion to use mouthwash

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with 1% hydrogen peroxide or 0.2% povidone in order to decrease the viral load in saliva, based on the idea that SARS-CoV-2 would be vulnerable to oxidation, does not seem to be based on scientific evidence to date. It is known that the mouthwash provides a microbiological control characterised by an active substance with substantively (residual antimicrobial activity), which allows not only a mechanical effect at the moment of application but also a bacteriostatic and/or virucidal effect over a given period of time [10]. However, there is no information on the substances reported in the article regarding SARS-CoV-2 in this sense, meaning that their indication is not scientifically proven as they might lead to damage to the patient, such as risks of bronchoaspiration and allergy with hydrogen peroxide and povidone-iodine, respectively. On the other hand, catalase, produced by diverse pathogens, degrades hydrogen peroxide and releases oxygen, creating bubbles which can potentially be compared with aerosols.

Although ACE2 is present in some types of cells, including those of the oral cavity [7], the virus replicates more frequently and more easily in the pulmonary epithelium. To et al. found that SARS-CoV-2 can be present in the saliva on a sustained and consistent basis for days. This raised the question of whether saliva can contain nasopharyngeal and pulmonary secretions by the action of cilia lining the airway epithelium, suggesting that the detection of the virus in saliva may not be necessarily related to salivary glands [8]. Other respiratory viruses, such as the influenza virus, can be present in the oral cavity through the breathing process [11].

The study by Pen et al. [4] served as a conduct guide for dental practitioners worldwide, including indication for use of mouthwash with 1% hydrogen peroxide and 0.2% povidone-iodine. Brazil, Spain and Portugal have seen an increasing influence of these recommendations issued by class associations. It seems that hydrogen peroxide and povidone-iodine might reduce the amounts of viral particles in the oral cavity, suggesting that this approach would decrease the likelihood of infection among practitioners and contamination of the environment as well. However, by comparing the decontamination of inanimate surfaces to that of the mucosal surface, the indication of mouthwash proposed by the article might cause confusion among the practitioners, with undesirable effects on the healthcare protocols established for the pandemic.

Compliance with ethical standards

Conflict of interest The authors declare that they have no conflict of interests.

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