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## The dental office: A safe place against COVID19 and other future pandemics

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## ABSTRACT

**Background:** The pandemic caused by the spread of COVID19 generated throughout the world great changes in all areas of life. Social distancing was carried out very drastically in some countries, and even in the field of dental care, some countries prohibited the practice of dentistry.

**Objective:** To demonstrate that the dental office is safe regarding the possibility of contagion of Sars-Cov-2 as long as good biosecurity protocols are used.

**Methods:** A structured survey of 19 questions was applied to 103 patients who subsequently attended a periodontics and oral and maxillofacial surgery office in Mexico, to receive care from these specialties between April 2020 and July 2021. The questions posed in this survey were aimed at knowing the opinion of the patients regarding the measures that this establishment has for the prevention of the transmission of COVID19, as well as questions regarding the possible effects of attending this office in contagion of the disease from patients and their families.

**Results:** A total of 18 (17.5%) patients reported having suffered COVID19, and none reported that they fell ill after the consultation. None of the clinic's specialists and assistants have fallen ill with COVID-19 during the pandemic.

**Conclusions:** It is not necessary to suspend or condition dental care during times of pandemics such as what happened with COVID19, as long as strict safety protocols are observed within clinical facilities.

## 1. Introduction

In the month of December 2019, in the Chinese city of Wuhan, Hubei province, a group of people were reported with a type of pneumonia [1]. These people used to buy or work in a market in that city where meat from wild animals, including bats, is sold. The initial diagnosis was atypical pneumonia of possible viral origin, and later, derived from studies carried out on sputum obtained from bronchial washings, it was possible to isolate a type of coronavirus [2]. In January 2020, the World Health Organization (WHO) recognized this situation as a global public health emergency due to an emerging disease called COVID19 caused by a coronavirus (SarsCov2) [1], and in March that same year it was recognized as a true pandemic [3].

A permanent quarantine began worldwide from that moment, where activities drastically ceased. The effects of this pandemic have been

affecting different areas of the daily life of the world population [3].

As a result of this pandemic, several countries have adopted restrictive measures and actions to reduce close contact between people, to prevent the spread of the virus and limit contagion [4].

Pandemics have had devastating and transformative effects on society, the economy, and health systems [5]. The COVID-19 outbreak presented unprecedented challenges and difficulties to dental personnel [4,6,7], due to the high risk of transmission in dental care settings [8], a profound effect of economic deficit has been generated in dental practice [7,9]. Some have felt that dental services should not be provided due to the high chance of spread [10]. This would help protect the dental profession, family members, and also prevent the transmission of infection from one patient to another. In addition, the recommendation was carry out these emergency procedures with stricter security, personal protection and infection control measures. This new situation has

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made it imperative that dentists learn and adopt new care protocols [11].

Because dental care cannot be postponed for long periods, as severe oral health complications would result, eligible precautionary measures had to be implemented quickly to ensure safety in dental settings [8].

One of the concerns is that of having more severe complications with the suspension of routine dental care, since more patients than usual may need admission for the treatment of acute dental infections that threaten the respiratory tract and require intensive care [12]. This situation led to the need to leave without attention and without a true diagnosis many patients [13].

Other authors have argued that the fact of suspending dental care during the pandemic could help reduce the spread of the virus, but would have a negative influence by increasing the morbidity of oral diseases [14].

Procedures using turbines or ultrasonic devices that cause aerosol release have been suspended in several countries, including the United Kingdom, to reduce virus transmission [12].

Limiting aerosol-generating procedures along with the use of appropriate personal protective equipment was considered crucial to protect dental health care providers and patients, thus reducing the risk of transmission of COVID-19 [8,15].

A careful examination of each patient before entering the dental clinic is very important to detect patients affected by COVID-19 through a telephone survey [16].

Some researchers, such as Scarano, suggest that the decontamination technique that best suits the needs of dental clinics is hydrogen peroxide and sodium hypochlorite sprayed through a high-speed turbine device with the ability to produce small aerosol particles, which is also recommended due to its low cost [17].

Some of the preventive measures adopted to limit contagion are triage of patients, mouth rinses before dental treatment (H<sub>2</sub>O<sub>2</sub>, iodine), hand hygiene, personal protective equipment for dentists, limitation of aerosol production procedures, cleaning of potentially contaminated surfaces, among others [18]. Rapid tests for this disease in dental offices through saliva samples can be valuable in the early identification of infected patients [19].

The purpose of this study is to demonstrate that the dental office is safe with respect to the possibility of contagion of SRasCov2 as long as good biosafety protocols are used.

## 2. Material and methods

A structured survey of 19 questions was applied to 103 patients who subsequently attended a periodontics and oral and maxillofacial surgery office in Mexico, to receive care from these specialties between April 2020 and July 2021. The questions raised in this survey were aimed at finding out the opinion of the patients regarding the measures that this establishment has for the prevention of the transmission of COVID19, as well as questions regarding the possible effects of attending this office on contagion of the disease of patients and their families.

The dental care protocol used was as follows:

For the patient:

1. At the time of scheduling the appointment, a triage was carried out to find out if the patients presented any symptoms of contagion by COVID 19, and if necessary, re-schedule the appointment.
2. Upon arrival at their appointment they stepped on a sanitizing mat, before going to the waiting room, to which only unaccompanied patients were allowed access unless they were minors or were going to receive surgical treatment, in their case only one companion could stay.
3. The entrance was strict with face masks.
4. Upon admission, the entire body was nebulized with an aerosol gun containing extracts of citrus seeds (44%), citric acid (11%), vegetable glycerin (22%) and ammonium carbonate.

5. Temperature taking, those detected with low-grade fever (37.5 °C) were not admitted to the consultation and were sent to the state health services.
6. Alcohol gel was placed on their hands when they were admitted and only two patients could remain, one for each specialist with a separation of 2 m between them.
7. Before entering the clinical space, they were passed through another sanitizing mat.
8. Once seated in the dental unit, rinses were performed with hydrogen peroxide and tap water at a ratio of 1:3 for 1 min without spitting into the spittoon, which has been closed. Once the rinse was over, the water in their mouths was collected directly with the ejector.
9. The patient was covered with a plastic protector and over it a sterile cloth surgical field that only leaves the mouth free (this for any procedure, including diagnostic).

For the specialist dental surgeon and assistant staff:

1. All wore sterile laminated overalls with cap included, which were placed at the beginning of the day, and were removed until the end of it.
2. Sterile cloth boots were placed, which are removed until the end of the consultation.

The protocol for removing the overalls and boots was as follows: removing them backwards and placing them in an exclusive bag for dirty clothes, which was taken to the laundry area where the following protocol was followed: all clothing was placed inside a container with water and sodium hypochlorite and later it was introduced in the washing machine with common detergent to finally proceed to dry in a tumble dryer.

3. N-95 face masks, vision lenses and/or protectors and an acetate mask were placed.
4. Between patient and patient, gloves were removed, hands were washed thoroughly, gel was placed on the hands and the operator was sprayed with alcohol spray.

## 3. Results

The sample was made up of 103 patients, of which 69 (67%) were women and 34 (33%) men with a mean age of 45.6 and a range of 12–83 SD 18.3.

There were 88 (85.4%) patients who attended the consultation more than 2 times during this period, only 1 respondent did not notice that there were 2 sanitizing mats in two different areas before entering the clinical area.

The 103 respondents reported that the secretary took their temperature and sprayed it around their body with an aerosol gun containing a disinfectant for this purpose, and that the dental surgeon was protected with security barriers (full nylon uniform, covers mouths and mask).

Only 2 (1.9%) patients reported not having undergone a hydrogen peroxide-based rinse, and spitting into the disposable ejector prior to their care, and denied having been completely covered by a square field, leaving only the mouth exposed and its dentist used protective barriers.

16 patients (15.5%) did not notice that all the instruments are unwrapped from a sterile cover, and that the disposable ones are changed between one patient and another (gloves, ejector, needles, etc.)

18 (17.5%) did not notice that the clinical areas (dental unit area) are disinfected between one patient and another.

36 (35%) did not know that the days of consultation have been spaced out to wear strict disinfection and sterilization stockings on days of non-consultation.

99 (96.1%) trust that the staff and facilities comply with the sanitary measures for their dental care, in the face of this COVID-19 Pandemic.

A total of 18 (17.5%) patients reported having suffered from

COVID-19, and only one of them reported to fell ill after one day consultation. None of the clinic's specialists and assistants have fallen ill with COVID-19 during the pandemic.

When asked about our measures and protocols for the prevention of COVID-19, 81 (78.6%) thought that they were very good, and 22 (21.4%) that they were good.

#### 4. Discussion

The pandemic caused by the spread of COVID-19 generated in Mexico as well as throughout the world great changes in all areas of life. Social distancing was carried out very drastically in some countries, and even in the field of dental care, some countries prohibited the practice of dentistry, limiting it to emergency care. In Mexico, in general terms, there was no prohibition of private dental care, however, in the public institutional setting, dental practice was limited to emergency care.

Logically, these actions deferring preventive or curative dental care could have led to the aggravation of many patients who, from having a mild or moderate oral pathological condition, could have turned into a serious condition.

We believe that if strict biosafety protocols are carried out within dental clinics, we can avoid the possibility that Sars-Cov-2 and other microorganisms can be transmitted within the facilities during dental care. We only have one patient who developed the disease near after the consultation in our clinic, however, that time is not enough to consider that he was infected during the consultation.

Contrary to Falahchai's conclusion about that dental treatments should be limited to emergency patients, we think otherwise based on our results. If we defer such treatment, we will generate a worsening of the oral conditions of the population, subjecting them to an unnecessary risk [10].

Our results coincide with authors such as Alhabrbi et al. who believe that although dental care limitations would contribute to the reduction of virus transmission, it would also contribute to the worsening of patients' oral health conditions [14]. We think that by carrying out good protocols within dental clinics, the safety conditions to prevent the spread of Sars-Cov.2 and other microorganisms are very high. In this way we avoid spreading microorganisms, and we also avoid deferring treatments that could lead to an increase in oral morbidity.

When this problem started at the beginning of the year 2020, we all thought that deferring treatment was a good idea assuming that this deferral would be for a short time. However, we have seen that this time has been prolonged, and that the ailments have worsened. Procedures as simple as adjusting a prosthesis that generates an ulcerated lesion in the mucosa, for example. In this case, after more than a year of deferral, a reactive lesion would be generated that would require surgical management, which, if it had been managed at the time with all the indicated protection, it could have been avoided.

Some authors, such as Alharbi et al. have categorized patients to determine their degree of urgency to be treated, however, our results differ from those published by these authors, since they suggest deferring procedures such as the adjustment of removable dentures.

Regarding the triage implemented in our protocol, we agree with Goswami and Chawla who consider that this allows a professional to suspect a possible patient with COVID-19 who is still hidden [20].

The use of sanitizing mats is useful as stated by Kahur et al. who indicate their use with 2.25% benzalkonium chloride, changing it every 20 patients [21]. In our protocol we use sodium hypochlorite, replacing it after each working day (around every 10 patients).

Siles-Garcia et al. mention in their meta-analysis that many authors recommend the use of mouthwashes administered before dental care to help reduce the number of bacteria and/or viruses. However, some research has shown that the use of chlorhexidine is not effective in eliminating COVID-19. There are 2 antiseptic options with oxidant content that favorably reduce the salivary load of the virus without causing damage to the oral mucosa: 1% diluted hydrogen peroxide,

0.2% povidone. Based on available studies, the mouthwash of choice is hydrogen peroxide because COVID-19 is vulnerable to oxidation. To obtain 15 mL of rinse at a concentration of 1%, 5 mL of hydrogen peroxide of 10 vol in 10 mL of distilled water can be used [22]. We also prefer to use hydrogen peroxide with distilled water at a ratio of 1:2, instead of povidone, since the latter pigments the mucous membranes and is allergenic.

#### 5. Conclusions

It is not necessary to suspend or condition dental care during times of pandemics such as what happened with COVID-19, as long as strict safety protocols are observed within the clinical facilities.

The systematized deferral of dental care in these times of pandemic can lead patients to aggravate their oral health conditions and transform a mild or moderate condition into a serious condition that will ultimately require urgent attention.

#### Ethics statement/confirmation of patient permission

Ethics approval not required. Patient permission obtained.

#### Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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