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## Evaluating Epidemiology, Symptoms, and Routes of COVID-19 for Dental Care: A Literature Review

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### ABSTRACT

COVID-19 has now been spread worldwide and has become a significant concern. Despite universal attempts for repressing this disease, it increasingly spreads due to the prevalence pattern of the infection. According to a new report made by the WHO situation report (May 16, 2020), 2019-nCoV has affected more than 454395 reported cases. A few facilities of dental care in influenced nations are closed or are merely giving negligible treatments for some emergency cases. The coronavirus (COVID-19) is found abundantly in nasopharyngeal and salivary secretions of the affected patient. It is also transmitted through respiratory particles and contact with the infected surface; that's why dental jobs and dental professionals are more at risk. Therefore, the present study was an attempt was made to propose epidemiology symptoms and routes of COVID-19 for dental care for patient screening.

### 1. Introduction

As shown by the reports, since the development of the infection of 2019 novel coronavirus (2019-nCoV) in Wuhan, China in December 2019, the virus quickly became a public health crisis. It spread many other countries.<sup>[1]</sup> In this regard, the World Health Organization (WHO) announced an available title for epidemic infection caused by 2019-nCoV on February 11, 2020, called Corona Virus Disease (COVID-19).<sup>[2]</sup> Moreover, the already temporarily called 2019-nCoV has been re-named as the severe acute respiratory syndrome coronavirus-2 or SARS-CoV-2 by the International Committee on the Taxonomy of Viruses.<sup>[3]</sup> Earlier research demonstrated transmission from animals to humans, but the latest studies have illustrated the human to human transmission of the covid-19 via direct contacts or droplets.<sup>[4, 5]</sup> So far, the 2019-nCoV has affected more than 454395 reported cases according to a new report in the WHO situation report (May 16, 2020) (Figure 1). According to several published reports on the health care provided by SARS-CoV-2, dentists are at the increased risks and thus may be carriers of disease.<sup>[5, 6]</sup> Therefore, appropriate measures should be taken to identify, prevent, and manage this crisis.<sup>[7]</sup> Experts in the field ascribed the respective risks to the type of dental intervention. Also, if not cautious enough, dental offices may expose the patients to contamination.<sup>[8]</sup>

On the other hand, this new disease is understood increasingly day by day, so dental procedures must detect a probable COVID-19 infection and admit those patients who are suspected, verified, or referred to a medical center for a history of COVID-19 infection. Hence, the present literature review is a summary of the recent advice for diagnosis as well as management of patients with COVID-19. It should be noted that these recommendations are up to May 2020. For more information on the COVID-19 statistics, it is a good idea to check out the sites that provide up-to-date reports, as shown in Table 1.

#### Symptoms

It is widely accepted that COVID-19 influences different people in various ways. A majority of the infected people get the mild-to-moderate disease and thus recover without to be hospitalized in the care centers or hospitals. The most typical symptoms are fever, tiredness, and dry cough. Moreover, less common symptoms are sore throat, pain, conjunctivitis, diarrhea, loss of taste or smell, headache, discolouration of the toes or fingers, and rash. And most importantly, there are serious symptoms that need special attention, including difficulties in breathing or shortness of breath, loss of speech or movement, and chest pain or pressure.<sup>[9]</sup> On the other hand, 80% of patients experience merely mild symptoms or signs, which may not lead to an

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increased number of undiagnosed cases; these people are called carriers.<sup>[10]</sup> It takes an average of 5-6 days for a person to get the virus to show symptoms, but it can take up to 14 days. However, the patient population with higher

risks shows common symptoms of acute respiratory distress syndrome or pneumonia.<sup>[11]</sup>

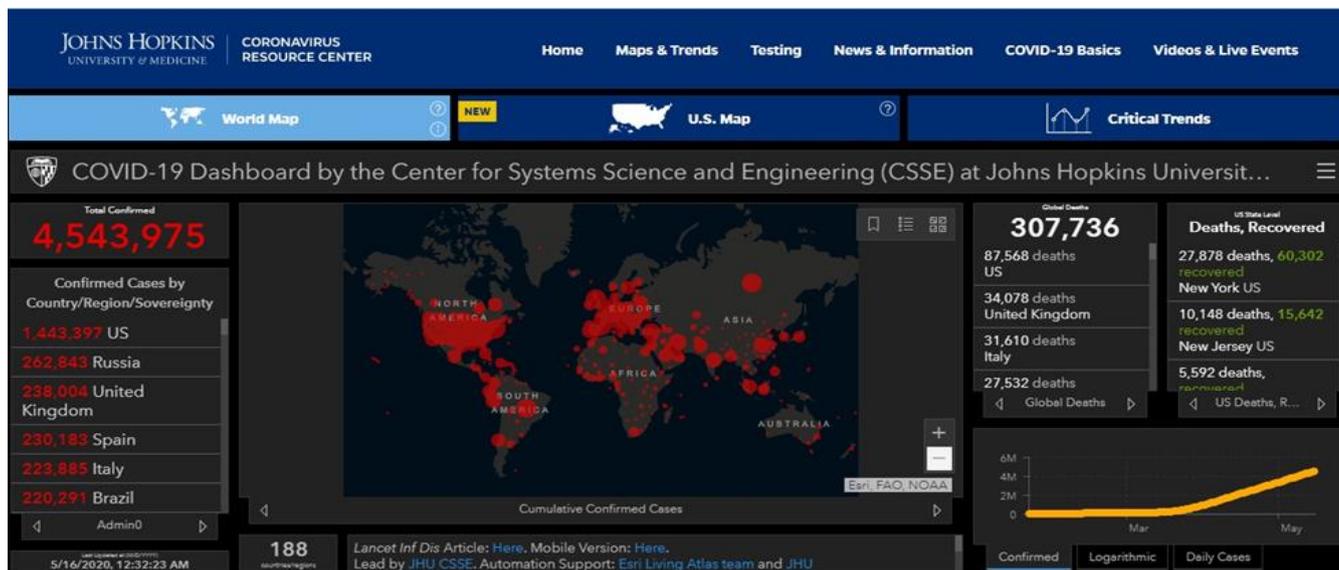


Figure 1. Screenshot of global statistics of COVID-19 by the Center for Systems Science and Engineering (CSSE) at Johns Hopkins University (JHU). Available at <https://coronavirus.jhu.edu/map.html>.

Table 1. Online Resources for COVID-19.

Online Resources
<a href="https://www.who.int/emergencies/diseases/novel-coronavirus-2019">https://www.who.int/emergencies/diseases/novel-coronavirus-2019</a> .
<a href="http://www.ada.org/en/publications/ada-news/2020-archive/march/ada-develops-guidance-on-dentalemergency-nonemergency-care">http://www.ada.org/en/publications/ada-news/2020-archive/march/ada-develops-guidance-on-dentalemergency-nonemergency-care</a> .
<a href="https://www.cdc.gov/coronavirus/2019-ncov/hcp/dental-se%20ngs.html">https://www.cdc.gov/coronavirus/2019-ncov/hcp/dental-se%20ngs.html</a> .
<a href="https://www.nejm.org/coronavirus">https://www.nejm.org/coronavirus</a> .
<a href="http://www.elsevier.com/connect/coronavirus-information-center">http://www.elsevier.com/connect/coronavirus-information-center</a> .
<a href="https://www.cdc.gov/coronavirus/2019-ncov/about/transmission.html">https://www.cdc.gov/coronavirus/2019-ncov/about/transmission.html</a> .
<a href="https://www.cdc.gov/coronavirus/2019-ncov/healthcare-facilities/steps-to-prepare.html">https://www.cdc.gov/coronavirus/2019-ncov/healthcare-facilities/steps-to-prepare.html</a> .

**Transmission routes**

According to the presented reports, SARS-CoV-2 infections have been transmitted from human to human by respiratory droplets or by contacts.<sup>[6, 12]</sup> A cough or sneezing by a carrier can spread SARS-CoV-2 within a radius of about 6 feet, so social distance is said to diminish the disease spread in the community.<sup>[6]</sup> One of the other major routes of transmission has been considered to use equipment that has previously been in contact with the infected person.<sup>[12]</sup> Therefore, it is necessary to disinfect objects and wash the hands to stop the spread of this disease. Studies have shown that individuals touch their face 23 times per hour, and thus 44% of the cases transmit the mucous membranes of nose and mouth; therefore, it is best to avoid touching face again.<sup>[13]</sup> Moreover, investigations demonstrated the existence of SARS-CoV-2 in the feces and saliva of the infected patient.<sup>[14]</sup> However, SARS-CoV-2 is concentrated in salivary glands because it is capable of binding to the human angiotensin-converting enzyme two receptors. Therefore, COVID-19 is likely to be transmitted through salivary particles, aerosol, and fomites, which can spread the disease to dental offices.<sup>[14-16]</sup>

**Patient screening for COVID-19 and dental care**

According to research conducted during the spread of COVID-19, demand for dental treatment declined by 38%.<sup>[17]</sup> This reflects that people require critical dental care during this pandemic that is a fundamental issue.

Figure 2 shows an overview of dental management for patients along the COVID-19. To provide primary care, people can use the phone for identifying the patients suffering from or suspect of COVID-19 or postponement of treatment for 14 days.

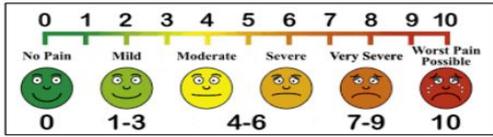
**Patient Assessment**

As soon as the patient is scheduled for dental treatment, the patient must present a comprehensive medical history, a valid emergency questionnaire, as well as COVID-19 screening questionnaire. COVID-19 screening questionnaire includes six questions:

1. Have you or any household member travelled areas with some instances of covid-19 in the past 14 days?
2. Have you or any household member had any contacts with a specific COVID-19 patient in the past 14 days?
3. Have you or any household member have a history of exposure to COVID-19 biologic martial?
4. Have you any history of fever in the last 14 days?
5. Have you had any symptoms such as cough, difficult berating, diarrhea, nausea, body cage, loss of smell or loss of taste in the last 14 days?
6. Do you have an open dental or oral plan, infection, swelling or bleed ingot trauma to your mouth?

Also, the right emergency questionnaire includes eight questions:  
1. Do you feel pain?

2. What is your level of pain on a scale of 0-10?



3. When did the pain begin?
4. Do you have a dental abscess?
5. Do you have a fever?
6. Are you having any trouble swallowing?
7. Are you having any trouble opening your mouth?
8. Did you experience any trauma?

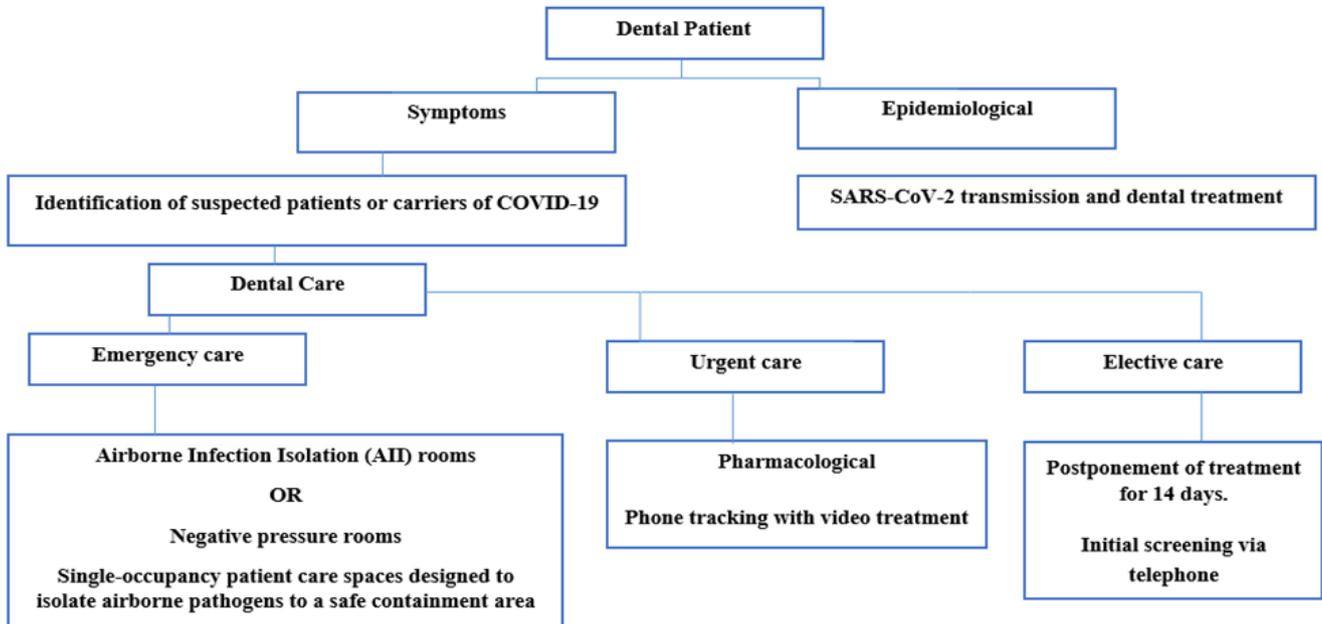
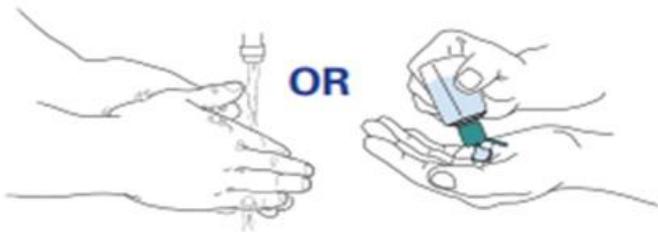


Figure 2. Dental care for the epidemic period of COVID-19.



Personal protective equipment and hand cleanliness practices.



Personal protective equipment (PPE).



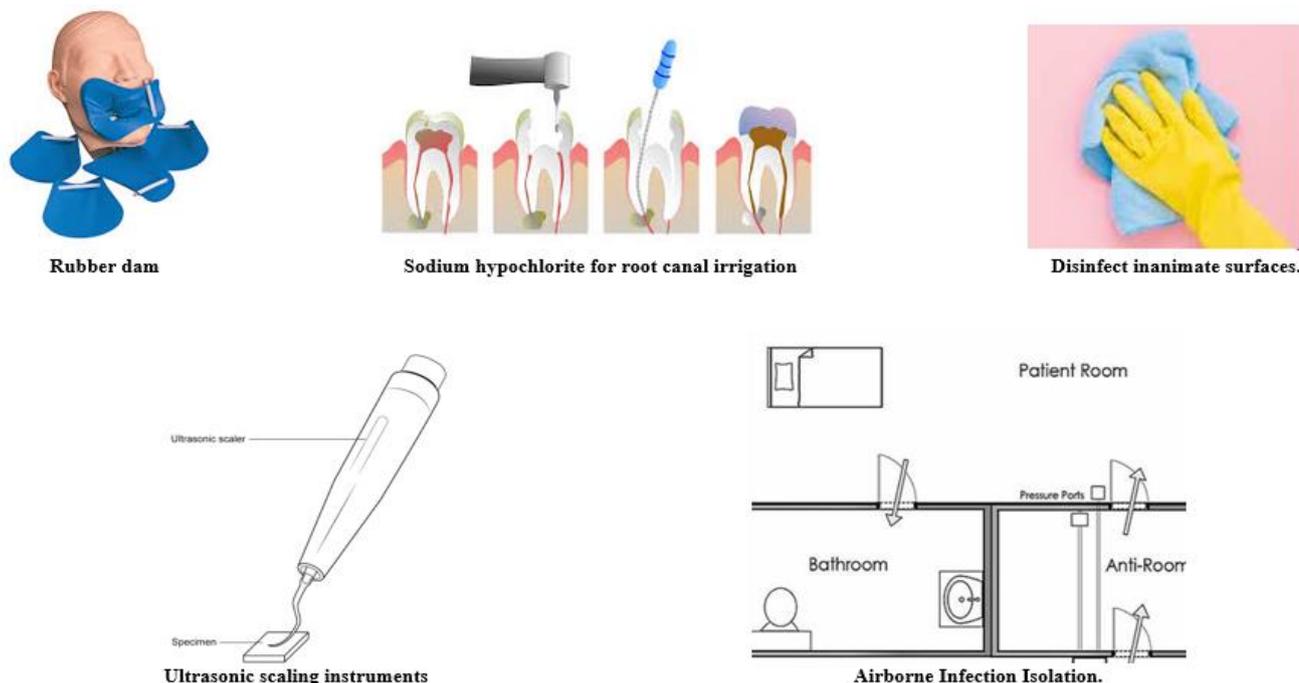
Preprocedural mouth rinse.



Single-Use (Disposable).



PA and CBCT.



**Figure 3. Recommendation to manage a dental emergency in the course of COVID-19.**

According to the recommendations of the American Dental Association, dentists can decide for providing or delaying dental cares after observation of the teeth condition. The following tips will also help dentists in caring about the situation (Figure 3). Dentists ought to take after the contact, airborne as well as standard provisions for suitable utilization of the personal protective instruments and standard cleanliness practices.<sup>[6, 18, 19]</sup> It is emphasized that people use the control and prevention directions to discard the personal protective equipment (PPE) (e.g., protective clothes, goggle, helmets, or other garments and instrumentations supplied for protecting their bodies from any injuries or infections.<sup>[20]</sup> Also, they should use preprocedural mouth rinse (antimicrobial mouth rinses used by patients before a dental procedure).<sup>[21-24]</sup> Moreover, according to the Food and Drug Administration (FAD), people must use the single-use (disposable), panoramic radiography or cone-beam computed tomographic imaging.<sup>[25, 26]</sup> dental dam or rubber dam,<sup>[27, 28]</sup> ultrasonic scaling instruments<sup>[28]</sup>, sodium hypochlorite for root canal irrigation,<sup>[29]</sup> chemicals approved for covid-19 on disinfecting inanimate surfaces using,<sup>[30]</sup> and Air-borne Infection Isolation (AII) rooms or Negative pressure rooms (Figure 2).<sup>[19]</sup>

## 2. Conclusion

This new emerging SARS-CoV-2 is a threat to the world, and it may remain as a persistent infection in the population, or other evolutionary patterns may be seen. This necessitates conscious clinical decisions and proper training. Therefore, the use of prevention and treatment protocols can be considered vital for dentists and dental patient. Hence, it is recommended to perform retrospective and prospective research in the field of dental care in conjunction with COVID-19 for future studies.

## Conflict of Interest

The authors declared that there is no conflict of interest.

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