

# Exploring the Signs & Symptoms of taste & smell loss & the effect it has on Oral Health status of COVID - 19 survivors; A survey-based study in Riyadh

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## ABSTRACT

**Background:** The human race was confronted with an aggressively spreading illness that has managed to travel worldwide at a rapid pace. COVID - 19 is classified by the Ministry of Health as a respiratory disease akin to similar endemics endured previously such as the MERS and SARS viruses.

**Materials and methods:** COVID - 19 survivors in Riyadh hospitals completed an online questionnaire as part of this survey-based research. All Riyadh-area hospitals were approached for participation, and survey participants were asked to fill out the form.

**Results:** Only 24.1 percent of the 30 participants were male, while 75.9 percent of the participants were women. 67.7 percent were between the ages of 15 and 35, 29 percent were between the ages of 36 and 55, and 3.2 percent were between the ages of 55 and above.

**Conclusions:** Oral health status in COVID - 19 survivors all be it affected is considered to be of better quality when compared with terminal patients.

**Keywords:** COVID-19, Symptoms of taste and smell loss, Oral health.

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## Introduction:

The first case of corona virus, otherwise known as the novel corona virus or COVID - 19, was confirmed by the World Health Organization on the 31st of December, 2019 in Wuhan, China (1). They are all similar in the physical

construction of the outer layer of the virus dubbed the crown which comes from the Latin word CORONA in reference to the protein spikes that make up the outer shell housing the RNA sequence that attacks the thin epithelial layers of the lungs. There are a variety of signs and symptoms associated with COVID 19, according to the Ministry of Health (2). Whether you are experiencing any of these symptoms but are not sure if you have a virus or something else, do not hesitate to contact your doctor or health care provider. Shortness of breath, chest discomfort, and speech or mobility difficulties are among the most significant symptoms of COPD (2).

The human being has twelve cranial nerves that which are responsible for various sensory and motor functions (3). The ones that interest us in this research are the (first, seventh, ninth and tenth) cranial nerves because they are involved in the senses of smell and taste (3). Various illnesses and conditions could lead to a loss in taste and smell such as; congenital anomalies, cold and flu, head injuries, nasal polyps and cigarette smoking. The diagnosis of these smell and taste disorders is achieved using various methods such as “scratch and sniff” as well as “sip, spit and rinse” tests (4). This study aims to explore the reasons and mechanisms involved in the symptom of smell and taste loss associated with contracting COVID - 19, and to explain why smell and taste loss occurs and the duration of onset and when it subsides, as well as identify any oral health implications associated with these particular symptoms.

#### **Study hypotheses:**

There may be a relation between the effects of COVID - 19 on oral health seeing as it affects the sensory nerves of taste and smell.

#### **Materials and methods:**

**Study Design:** This is a survey-based study conducted on COVID - 19 survivors in Riyadh as an online questionnaire.

**Study Sample:** Hospitals in Riyadh were contacted and participants were requested to fill up the survey.

**Study Instrument:** An online survey was created that included questions about demographics and personal information, as well as questions on COVID-19 and dental health in general.

**Instrument Validity and Reliability:** Data were entered into SPSS version 22 to test reliability using Chronbach's coefficient alpha after a pilot study with 20 participants was completed. The questionnaire's validity was checked by submitting it to REU researchers, but no adjustments were made to the questionnaire.

**Statistical Analysis:** A descriptive and inferential statistical analysis of the collected data was performed using SPSS version 22.

#### **Results:**

30 persons participated in the poll, 24.1 percent of whom were men, and 75.9 percent of whom were females. 67.7 percent were between the ages of 15 and 35, 29 percent were between the ages of 36 and 55, and 3.2 percent were beyond the age of 55. Only 48.4 percent of those surveyed answered "yes" when asked whether they had been infected with COVID - 19; the other 51.6 percent said “no” 5.9 percent of those 48.4% stated they had lost their sense of smell, while 11.8 percent said they had lost their sense of taste and were coughing. One in every 17 survey respondents developed a fever and 52.9 percent reported losing their sense of smell and taste while battling the infection. More over one-fifth of verified case survey participants indicated that the symptoms of taste and smell loss disappeared within a week or a month, while 17.6 percent claimed they disappeared within a day. It took the remaining 11.8 percent of respondents two months or more for the symptom of taste and smell to go away. The question of whether or not a person's diet changed as a result of an illness; only 47.1% of those who took the poll said no, while 52.9% said yes. When it comes to overall hunger, a total of 29.4 percent of individuals reported no loss of general appetite, compared to 70.6 percent who reported a general loss of appetite. Only 17.6 percent of respondents said they had changed their brushing habits, while 82.4 percent said they hadn't. When asked whether there had been a difference in the amount of occasional mouth ulcers that occurred while infected, 82.4 percent of participants said no, while 17.6 percent said yes, according to a poll, 12.5 percent of survey participants reported an increase in gum bleeding,

compared to 87.5 percent who reported a reduction in the quantity of gum bleeding after teeth brushing, according to the questionnaire.

Survey Questions	Response frequencies
Have you been infected with coronavirus?	Yes:48.4% No: 51.6%
Have you had any of the following symptoms during the period of infection?	Cough:11.8% Fever:17.6% Loss of sense of smell only: 5.9% Loss of sense of Taste only: 11.8% Loss of both senses of Smell and Taste together: 52.9%
How long has it taken for the affected lost senses of 1 Day: 17.6% smell and taste or both of them to return to normal?	1Week:35.3% 1Month:35.3% 2 Months or More: 11.8%
Has there been any changes in daily diet habits since you started losing the sense of smell and/or taste?	Yes:52.9% No :47.1%
Has there been a general loss of appetite since you started losing the sense of smell and/or taste?	Yes:70.6% No: 29.4%
Has there been a change in the daily amount times you brush your teeth since you started losing the sense of smell and/or taste?	Yes:17.6% No: 82.4%
Has there been a change in the number of the occasional mouth ulcers while you were infected with the Corona Virus?	Yes:17.6% No: 82.4%
Has there been a change in the amount of blood that is associated with brushing your teeth since you started losing the sense of smell and/or taste?	Increase:12.5% Decrease: 87.5%

**Discussion:**

This study aimed to determine whether or not COVID - 19 affects the overall status of oral health in general. Many symptoms are associated with contracting COVID - 19 and our main focus is on the symptoms that are affecting both loss of smell and taste. As dental students we constantly work with patients in the clinic and help them manage to elevate their knowledge on oral health and how maintaining a good and consistent daily routine can help fight off tooth decay. Some studies suggest that there could be a link between the severity of the COVID-19 infection and oral health, questioning whether or not a patient which has a higher oral bacterial count due to poor oral hygiene, can exacerbate the effects of COVID-19 and vice versa (5). A common ground between oral health and COVID-19 is that they are both considered public health issues, although the later being more recent and far more of a current pressing issue, it does not take away from the importance of the former. They say that dental practitioners are among the most exposed to COVID-19, according to Luciano José and Cassio Vicente (6). This and other etiological agents may be easily transmitted and susceptible to infection via the mouth cavity and the workplace. SARS-fast CoV-2's spread is facilitated by the environment of unreported cases. Fewer than 10% of persons display any indications or symptoms, while many others have moderate symptoms (6).

Studies have shown that life-saving treatments such as mechanical breathing and blood oxygenation, which are often

used in critical care units, might actually worsen a patient's oral health. Mouth breathing, hyposalivation and other forms of mechanical ventilation can cause rapid oral health decline and subsequent complications, including lower respiratory tract problems similar to aspiration pneumonia. Patients who are inducing this stage are given priority treatment for a lack of oral hygiene due to the dangers of these methods (7). Overall, the impact of COVID-19 on oral health seems to be multi-directional, immune-related, and most likely indirect, operating via several channels, reflecting the pathogenic character of mucous membrane invasion of the coronavirus respiratory tract. Complex medication may have a significant influence on the dental health of patients who have been in intensive care for a long period. It has previously been revealed that SARS-CoV-2 has neurotropic and mucotropic properties, which might possibly influence salivary gland function as well as taste/odor perceptions, as well as oral mucosa integrity (8,9). A compromised immune system and/or a predisposed oral mucosa may result in multiple opportunistic fungal infections, xerostomia associated with reduced salivary flow, ulcerations and gingivitis when a serious acute COVID-19 infection is present, along with the corresponding therapeutic steps. These outcomes could be detrimental to oral health (10). It was observed in our findings that the overall majority of survey takers have lost both senses of taste and smell, with the majority having regained their senses with the span of one week and one month. The majority have also endured a drastic change in normal appetite which subsequently led to them having fluctuations in their dietary habits. In terms of oral hygiene, the participants showed no significant change in their oral hygiene habits. A minority of survey takers have noted an increase in occasional mouth ulcers and bleeding from gums while brushing.

#### Conclusions:

COVID-19 has a resounding affect on oral health in infected patients and can be very devastating on oral health in terminal patients. Dietary habits have shown to be affected as a subsequent result of losing both taste and smell sensation. For those whom have contracted COVID-19 and survived show no substantial change in oral hygiene activity unlike those whom have unfortunately needed to be admitted into hospitals for intensive care. Oral health status in COVID -19 survivors all be it affected is considered to be of better quality when compared with terminal patients. Further research is needed to be done on a wider number of patients in order to strengthen the results.

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