

# Prevalence and duration of loss of smell and taste among COVID-19 affected dentists

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## ABSTRACT

**Objectives:** This study was aimed to look into the prevalence of Sensory loss of Smell and taste among dentists and dental faculty affected with COVID-19 during the current pandemic.

**Methods:** This cross sectional study was conducted in August, 2021, carrying out detailed evaluation of onset, temporal development and resolution of loss of taste and smell among 207 COVID-19 patients with confirmatory PCR lab reports. Clinical and epidemiological variables of COVID-19 symptoms were studied that included age categories, gender, onset and resolution of loss of taste and smell as compared with other symptoms. This study also included altered taste aspect experienced by the COVID-19 affected dentists.

**Results:** Of 207 previous patients of COVID-19, 168 (81%) reported that they experienced loss of smell and/or loss of taste during the ailment. Of these 168, 151 (89.88%) patients experienced both loss of taste and smell while 17 (10.11%) reported to have been afflicted with isolated loss of smell or isolated loss of taste. Among 114 (67.85%) patients, Onset of loss of smell and taste was reported to be occurring at the same time along with other symptoms. A vast majority of the patients 141 (89.24%) also reported altered taste associated with recovery period of COVID-19.

**Conclusion:** Sensory loss of smell and taste should be regarded as important symptom at the very early stage of COVID-19 and patients should take isolation measures upon appearing of these symptoms.

**Key Words:** Anosmia, Hyposmia, COVID-19, Dysgeusia

## INTRODUCTION

Covid-19 Pandemic started off from Capital city of Hubei Province of China, Wuhan<sup>1</sup>. It is caused by a species of virus named "severe acute respiratory syndrome coronavirus-2 (SARS-CoV-2)"<sup>2</sup>. This disease spread swiftly through airborne transmission and became a Global Health Emergency. From Pakistan, the cases of Covid-19 started reporting in February, 2020<sup>3</sup>. Since then, Pakistan have reported 4 waves of Covid-19 in the form of high incidence of cases and deaths. During initial days of spread of pandemic, World Health Organization didn't include loss of smell and taste among symptoms of COVID-19 because of low incidence of loss of smell and taste as compared to other symptoms like Fever, Shortness of Breath, Cough and Fatigue among patients with COVID-19 infections<sup>4</sup>. The data on loss of smell and taste was not as promising as that on other symptoms. Later on, more documented cases reported the loss of smell and taste with high incidences and it was included among the symptoms. Sensory loss of smell and taste has been linked to viral infections like influenza before emergence of COVID-19. It was even established that loss of smell and loss of taste contribute to 10 times odds of being already infected with COVID-19 as compared to other diseases<sup>5</sup>. Hence, the loss of smell and taste started being considered as important diagnostic symptoms<sup>6</sup>. However, variations in all symptoms among COVID-19 patients are reported worldwide. These variations are not only seen among different sets of symptoms but also in the severity of same symptoms<sup>7</sup>. Because of this variations, the health care specialists

categorized the symptoms as Common and Uncommon (or Less Common) symptoms. The common symptoms category included Fever, Cough, Shortness of Breath and Fatigue. Headache, Diarrhea and cardiovascular manifestations were included in category of less common symptoms<sup>8</sup>. Moreover, a large proportion of COVID-19 patients remain asymptomatic<sup>9</sup>. With these developments, loss of smell and loss of taste were reported to be relatively more prevalent and discriminative diagnostic symptoms than less common symptoms.

## METHODS

This study was designed as cross-sectional study as for qualified dentists and dental faculty members affected by COVID-19 to investigate the resulting symptoms of loss of smell and taste. Acquisition of data for the study was done by questionnaires that were filled by dentists recovered from COVID-19. These affected dentists were pointed out by snowball sampling technique. Some of the questionnaires were filled via phone calls directly to the recovered patients. The data was collected from different dental colleges of Lahore and included faculty members of dentistry that were once diagnosed with COVID-19 anytime during the pandemic. The data collected was primarily retrospective evaluation and investigation of loss of smell and taste. The questionnaire mainly comprised of different variables e.g. time of contraction of COVID-19, onset of loss of smell and taste before or after other symptoms, duration of loss of taste and duration of loss of smell. The questionnaire also encompassed the resolution of

symptoms and their chronology. The participants were asked to choose between multiple options that best suited their experience on loss of taste and smell. It is pertinent to mention that confirmed reports of COVID-19 infections from reliable laboratories were also collected from the recovered patients and also verified later. The laboratory investigation of COVID-19 should be PCR testing collected as Nasopharynx swab specimens. Over a period of one month, data was collected from 207 participants working in different recognized dental institutes in Lahore. Some dentists participants (n=24) were working as only general dental practitioners in various areas of Lahore.

**Data Analysis:** To analyze the obtained data, we used standard descriptive statistics. Continuous variables (Age at the contraction of COVID-19) were statistically expressed in mean while categorical variables were statistically expressed in proportions or percentages. P value of less than 0.05 was considered to be of standard significance.

## RESULTS

From 17 August, 2021 to 12 September, 2021, the data on loss of smell and taste was collected from 207 dentists who recovered from COVID-19.

Patients' Demographics (N=207)		
Gender (N=207)		
	Male	88 (52.51%)
	Female	119 (57.48%)
Age (N=207)		
	Mean Age at the Contraction of Covid-19	36.2 Years (SD $\pm$ 2.1)
	20-30 Years	58 (28%)
	31-40 Years	98 (47.34%)
	41-50 Years	39 (18.84%)
	51-60 Years	11 (5.31%)
	61 Years & Above	1 (0.5%)
Time Passed Since Contraction of COVID-19 (N=207)		
	3 Months	34 (16.42%)
	4-6 Months	25 (12%)
	7-9 Months	59 (28.50%)
	10 Months & Above	89 (42.99%)
Appearance of Loss of Smell and Taste (N=207)		
	Isolated Loss of Smell	10 (4.8%)
	Isolated Loss of Taste	7 (3.38%)
	Experienced Loss of Taste & Loss of Smell	151 (72.94%)
	No Loss of Taste and No Loss of Smell	39 (18.84%)
Onset of Loss of Smell & Loss of Taste (N=168)		
	Before appearance of other Symptoms	33 (19.64%)
	Along with appearance of other Symptoms	114 (67.85%)
	After appearance of other Symptoms	21 (12.5%)
Duration of Loss of Smell (N=161)		
	1-7 Days	0
	8-14 Days	119 (73.91%)
	15-21 Days	40 (24.84%)
	22-28 Days	2 (1.25%)
	More Than 28 Days	0
Duration of Loss of Taste (N=158)		
	1-7 Days	0
	8-14 Days	102 (64.55%)
	15-21 Days	54 (34.17%)
	22-28 Days	2 (1.26%)
	More Than 28 Days	0
First Resolution of Sensory Loss (N=151)		
	First Resolution of Loss of Smell	19 (13%)
	First Resolution of Loss of Taste	2 (1.32%)
	Both at the same time	130 (86%)
Resolution of Sensory Loss as compared to other symptoms (N=168)		
	First Resolution of Loss of Taste and Smell	20 (11.90%)
	First Resolution of other Symptoms	148 (88.09%)
Altered Taste experienced (N=158)		
	Yes	141 (89.24%)
	No	17 (10.75%)
Types of Altered Taste Experienced (N=141)		
	Salty	35 (24.82%)
	Bitter	106 (75.17%)
	Sweet	0
	Sour	0

Collection of data was done by two methods i.e. Face-to-face questionnaire and via phone. Of 207 dentists, 119 (57.48%) were female and 88 (42.51%) were male. From the survey of individuals taking part, it was observed that mean age at which participants contracted COVID-19 infection was a little above 36 years (SD  $\pm 2.1$ ). By categorizing the age into 5 categories of 20-30 years, 31-40 years, 41-50 Years, 51-60 years, 61 and Above, this research observed that most the dentists falling in the category of 31-40 years contracted the virus (n=98) while 61 years and Above age category showed only 1 dentist working as General Dental Practitioner. 89 (42.99%) dentists reported that they contracted COVID-19 virus 10 or more than 10 months back. 34 (16.42%) dentists reported that they were reported positive of virus -3 months ago. While 59 (28.50%) reported to be positive in the past 7-9 months. This study also reported that 39 (18.84%) of the dentists didn't show any symptoms of loss of taste and loss of smell. However, a vast majority of the dentists (n= 151, 72.94%) had both symptoms of loss of smell and taste, while only 10 (4.8%) dentists showed only loss of smell and 7 (3.38%) showed only loss of taste. Of the dentists (n=168) with loss of smell or/and taste, 33 (19.64%) dentists reported that they observed loss of smell and taste (Isolated or combined) even before the onset of other symptoms like fever, malaise, cough and shortness of breath. While 114 (67.85%) dentists claimed to have symptoms of loss of taste and smell at the same time as other symptoms appeared. 21 (12.5%) dentists reported that loss of smell and taste appeared after other symptoms of COVID-19 showed. Of 161 dentists with loss of smell, 119 (73.91%) reported that duration of loss of smell was 8-14 days. For 40 (24.84%) patients, the duration of loss of smell was between 15-21 days. Only 2 patients reported the duration of loss of smell lasted for 22-28 days. As for 158 dentists reporting loss of taste, 102 (64.55%) noticed the duration of the symptom to be 8-14 days, 54 (34.17%) patients reported the duration of loss of taste as 15-21 days while only 2 reported that duration of loss of taste was between 15-21 days. Dentists reporting loss of both senses (n=151) observed that loss of smell was resolved first for 19 (12.98%) individuals. However, for 130 (86%) dentists, resolution for both senses appeared at the same time. Similarly, of 168 dentists who experienced the loss of smell and/or taste, 148 (88.09%) reported that other symptoms resolved first as compared to resolution of loss of smell and/or taste. Among 158 dentists with loss of taste (isolated or combined), 141 (89.24%) reported altered taste at the end of resolution of sensory loss. Of them, 35 (24.82%) reported the altered taste to be salty and remaining 106 (75.17%) reported it to be bitter taste.

## DISCUSSION

In this study we retrospectively tried to establish the sensory loss of smell and taste as early symptoms of COVID-19 infection among dentists working as faculty members in different dental institutes of Lahore along with general dental practitioners. We got the questionnaires filled by these dentists that included multiple questions regarding loss of smell and taste. With the help of questions, we looked into the time passed for each

participant since they contacted the COVID-19 infection. Rationale for the inclusion of this question was two folds. First, we wanted to trace the waves of COVID-19 in Pakistan during which our participants got infected. This could also help us to map the symptoms with different variants of SARS-CoV-2. Second rationale was to look into bias caused by memory recall of affected dentists. The data showed that major percentage (42.99%) of the dentists were sick with the virus more than 10 months ago. This conducted study showed that sensory loss of smell and taste was prevalent among 72.94% of dentists. These results are consistent with other studies done on olfactory and gustatory dysfunctions in COVID-19 infection. Lechien *et al.* did the investigation on COVID-19 infected patients and used validated assessment methods for loss of smell and taste and found out the prevalence of 80% of anosmia (loss of smell) reported among the patients<sup>10</sup>.

We also tried to draw a temporal sequence on onset and resolution of symptoms compared with other symptoms (fever, malaise, shortness of breath and cough) as well as between sensory loss of sensations of taste and smell. About 20% of the patients experienced symptoms of sensory gustatory and olfactory loss well before the appearance of other symptoms. 68% of patients observed the symptoms at the same time as other symptoms. This study observed that resolution of loss of taste took longer than resolution of loss of smell among participants. This phenomenon may be explained by the damage to the mucosal epithelia of oral cavity because of Viral infection<sup>11</sup>. Another important finding of this study was alteration in taste experienced by COVID-19 affected dentists was in great proportion. This may be attributed by changes in dietary habits during Active COVID-19 infection and prolonged use of drugs such as antibiotics and antipyretics<sup>12</sup>. High proportion of patients reporting loss of smell and taste in this study is consistent with other studies<sup>13, 14</sup>. Strengths of this study was drawing a relative temporal sequence of symptoms and inclusion of investigation of altered taste among COVID-19 patients. Weaknesses of this study include the cross-sectional study design and a memory recall bias by the participants who had been diagnosed with COVID-19 over 10 months ago. A better study design with a complete follow up of the patients from the date of laboratory confirmation of COVID-19 till the end of ailment should be adopted.

## CONCLUSION

Sensory impairment of smell and taste should be considered to be a red flag for COVID-19 infection. Complete self-isolation along with PCR lab testing for COVID-19 should be done as immediate proceeding after development of loss of smell, loss of taste, sore throat, cough and fever or any or the above.

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