ejpmr, 2022,9(10), 86-90

SJIF Impact Factor 6.222

EUROPEAN JOURNAL OF PHARMACEUTICAL AND MEDICAL RESEARCH

www.ejpmr.com

Research Article

ISSN 2394-3211

EJPMR

PREVALENCE OF ORAL COMPLICATIONS AND OTHER CO-MORBIDITIES IN COVID 19 POSITIVE PATIENTS

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Article Received on 10/08/2022 **Article Revised on 30/08/2022** **Article Accepted on 20/09/2022**

ABSTRACT

Background: Oral transmission is one of the most common ways that COVID-19 infections are spread. There is still a gap in knowledge regarding the oral complications related to COVID-19 and its impact on the oral cavity. ***Objective:*** This research is to determine the oral complications related with COVID-19 infection and the incidence of oral signs and symptoms among COVID-19 patients. ***Materials and Methods:*** Cross-sectional study taken place for this study. This study was conducted in Covid ICU at Comilla Medical College Hospital, Bangladesh from September 2020 to August 2021. COVID-19-positive adults in our survey were validated using reverse transcriptase polymerase chain reaction (RT-PCR). ***Results:*** This study included 95 of COVID 19 positive patients. The average age of the patients was 59.63 years. Among them 24.21% respondents were female and 75.79% respondents were male. The prevalence of oral complications among the patients. Maximum 52% prevalence rate of oral thrush and 0.8% minimum rate of inflamed radish gum among the respondents. Besides other prevalence rete of oral complications are foul smelling 2.4%, inflamed gum 17.9%, burning sensation in buccalsucasa & tongue 1.6%, denatalpainata 1.6%, aphthus wean 3.3%, teeth mobility 6.5%, dental pain 2.4%, teeth sensitivity 2.4%. On the other hand 8.9% respondents had no oral complications. Conclusions: COVID-19 has a major influence on the oral cavity and salivary glands, since salivary gland-related symptoms and taste problems are common among COVID-19 patients.

KEYWORDS: Oral Complication, COVID 19, Oral Thrush, Inflamed Gum.

INTRODUCTION

The COVID-19 is a human-to-human transmitted illness produced by one of the coronaviruses, which are a vast family of viruses that may cause severe conditions such as Severe Acute Respiratory Syndrome (SARS) and Middle East Respiratory Syndrome.[1-3] As of December 2019, the majority of nations have reported sizable numbers of COVID-19 infections and fatalities, earning the illness official pandemic status from the World Health Organization (WHO).[4] Fever, cough, shortness of breath, and myalgia or weakness with abnormal chest CT were the usual clinical symptoms of COVID-19 patients, whereas sputum production, headache, hemoptysis, and diarrhea were the less frequent symptoms. Patients with COVID-19 had abnormal chest CTs. A change in the sense of taste and smell, or even its complete absence, has been noted often.[5-7]

Since angiotensin-converting enzyme II (ACEII) has been shown to be the primary host cell receptor for severe acute respiratory syndrome, the coronavirus is thought to infect humans by way of ACE II receptors.[8] In this way, the spike-like surface protein of the virus will connect to ACE II, and ACE II will function as a cellular gateway for viral entrance into the cell, resulting in a COVID-19 infection.Therefore, organs with high ACE II expression (such as the lung) can become target cells during SARS-CoV-2 infection, which causes inflammatory reactions in related organs and tissues, such as the salivary glands and the tongue.[9] This could explain the occurrence of both loss of taste and oral ulceration due to the destruction of keratinocytes and oral fibroblasts. Other possible explanations include the SARS-CoV-2 infection itself.[10] On the other hand, a high viral load in the saliva and nasal discharge might be

a pathogenic component implicated in the development of the oral alterations associated with COVID-19 infection. This implies that the virus is having a direct influence on the oral tissues.[11]

On the other hand, these consequences may be related to the virus's indirect impact on the immune system, which contributes to the development of other opportunistic diseases, such as oral ulcerations and recurrent herpes simplex virus (HSV-1) infections.[12]

The COVID-19 virus may spread either directly or indirectly depending on the circumstances. Indirect transmission may occur via the use of saliva, whereas direct transmission can take place by coughing, sneezing, and the inhalation of droplets, as well as through direct contact with the oral, nasal, and ocular mucous membranes.[13,14] It is well knowledge that the mouth cavity may serve as a predictive mirror that reflects the underlying health situation. Since some oral symptoms (such as oral ulcerations, gingival bleeding, dry mouth, and oral discomfort, halitosis, burning sensation, or difficulty swallowing) can be associated with certain systemic disorders, a careful examination of the mouth will help in the early diagnosis and treatment of these conditions.[15] According to the findings of a number of research, oral transmission is one of the most common ways that COVID-19 infections are spread. There is still a gap in knowledge regarding the oral complications related to COVID-19 and its impact on the oral cavity, despite the fact that many studies have addressed the validity of saliva in the COVID-19 diagnosis as well as the precautions and implications for dental practice during the COVID-19 pandemic era. This is the case even though these topics have been the subject of many studies. As a result, the purpose of this preliminary survey is to investigate the oral complications that are related with a COVID-19 infection and to report on the predominance of oral signs and symptoms in COVID-19 patients.

METHODOLOGY

Study design: This was a cross sectional study.
Study location: This study was undertaken at Cumilla Medical College Hospital, Cumilla.
Study period: From September 2020 to August 2021
Study population: Adult population with COVID19 positive patients were the primary respondents for this study.

Study sample: Simple random sampling was used for this study.

Eligibility criteria:
Inclusion criteria:

- Must be COVID19 positive patients (RT-PCR).
- Patient must have oral complications

Exclusion criteria

- People below 18 years of age were out of this study.
- Any student who is not psychologically fit to understand the questions
- Any student who was not willing to participate inthe study.

Development of research instrument: This study was conducted using a pre-tested questionnaire. The researcher will administer the whole questionnaire. Pre-tested data was analyzed to see the accuracy of the collected data.
Data collection: One month was kept for data collection. Researchers solely administered the whole questionnaire.
Data analysis: As the primary software, SPSS 23 and Microsoft Excel were used.
Data Presentation and Interpretation: The data was presented by a compatible mixture of three basic methods. They are the textual method, the tabular method, and the graphical method. The demographic table and chart have been introduced in the data presentation. A proper bar chart, pie chart, or scatter plot will present the comparative analysis. All tables of visual graphics representation will depend on statistical applications.
Data quality management: Data quality management was performed based on integrity, completeness, validity, uniqueness, accuracy, and consistency. Data quality management was done by randomly collecting filled-up questionnaires and checking them for errors like missing data, duplication, inconsistencies, repetition of information and data, incomplete data, etc.

RESULTS

Total 95 respondents were participated in this study. Among them the average of the patient was 59.63 years (±59.63). The maximum age of respondent was 59.63 Years and minimum age was 9 years.

Table 1: Distribution of age of the respondents (N=95).

Variable	N	Minimum (Yrs)	Maximum (Yrs)	Mean (Yrs)	Std. Deviation
Age	95	9	90	59.63	15.795

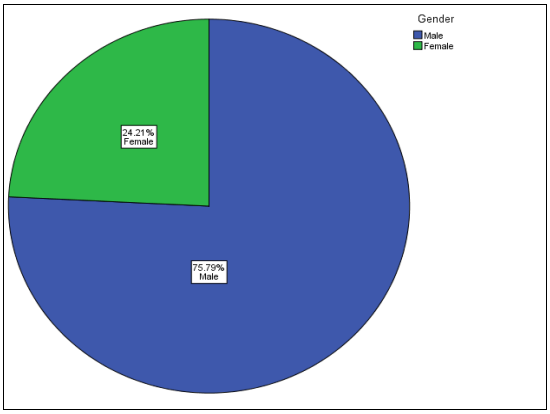

Figure 1: Pie chart of gender distribution among the respondents.

Above pie chart showed that 24.21% respondents were female and 75.79% respondents were male.

Table 2: Distribution of multiple response of oral complications (N=95).

Oral Complications	Responses		Percent of Cases
	N	Percent	
Inflamedreddish gum	1	0.8%	1.1%
Foul smelling	3	2.4%	3.2%
Inflamed gum	22	17.9%	23.2%
Oral Thrush	64	52.0%	67.4%
Burning Sensation in buccalmucosa& tongue	2	1.6%	2.1%
Aphthous ulcer	6	4.9%	4.2%
Teeth Mobility	8	6.5%	8.4%
Dental Pain	3	2.4%	3.2%
Teeth Sensitivity	3	2.4%	3.2%
None	11	8.9%	11.6%
Total	123	100.0%	129.5%

Table 2 shows that the prevalence of oral complications among the patients. Maximum 52% prevalence rate of oral thrush and 0.8% minimum rate of inflamed radish gum among the respondents. Besides other prevalence rete of oral complications are foul smelling 2.4%, inflamed gum 17.9%, burning sensation in buccal mucosa& tongue 1.6%, aphthusulcer 4.9%, teeth mobility 6.5%, dental pain 2.4%, teeth sensitivity 2.4%. On the other hand 8.9% respondents had no oral complications.

DISCUSSION

COVID- 19 patients have a wide variety of signs and symptoms, so the study of these manifestations will contribute to the early diagnosis and isolation of infected patient.[16] Additionally, COVID-19 as an acute infection with multiple therapeutic measures could have a negative impact on oral health, leading to opportunistic infections (such as recurrent herpes simplex virus (HSV-1) infection and oral ulcerations) as a result of a compromised immune system and xerostomia associated with reduced salivary flow. These opportunistic infections could be caused by the fact that COVID-19 has multiple therapeutic measures.[15]

This pilot study revealed a high prevalence oforal complications. The effect on oral complications happened various ways among the patients. Oral thrush, also known as oral candidiasis (kan-dih-DIE-uh-sis), is a disorder in which the fungus Candida albicans collects on the lining of your mouth. Another name for this ailment is oral candidiasis. Candida is a harmless organism that lives in your mouth; nevertheless, it may occasionally overgrow and create problems for you. Lesions caused by oral thrush often appear as creamy white patches on the tongue or inner cheeks. Sometimes oral thrush may spread to the roof of your mouth, gums, tonsils, or the back of your throat. This can be quite uncomfortable.[17] In this study revealed the prevalence of oral thrush 52%. Similar results found in ManjushaNambiar et al. 2021 stated that candida albicans, often known as C. albicans, is a kind of oral commensal that may be found in between 40 and 65 % of persons who have healthy dental cavities. Recent months have seen a rise in the number of instances of mucormycosis and oral candidiasis that have been recorded in COVID-19 patients. This may lead to an increase in the related risks of morbidity and death.[18]

Reasons for a burning feeling in the mouth (1.6%) are several (e.g., candidal infection, dry mouth, oral

ulceration, or drug-induced). There is some evidence to suggest that oral candidiasis and other secondary infections might result from a weakened immune system brought on by a viral infection.Candidiasis, which is also described in COVID-19, is the opportunistic illness that occurs most often in HIV patients.[19,20]

Although gingivitis (inflammation of the gums) and gingival bleeding are prominent features of HSV-1 and EVD, our data revealed that they were less prevalent in symptoms associated with COVID-19. This percentage was 17.9%.On the other hand, the prevalence of tongue redness was 5.2%, which indicates that viral infections may cause changes in the coating and color of the tongue. The fact that a geographic tongue was shown to be related with candidiasis and ulceration in COVID-19 patients in the case report lends credence to the notion that a geographic tongue in this pilot research was not uniquely connected with COVID-19.[20,21] On the other hand, the results of this pilot research showed that 8.9% of the patients did not have any symptoms linked to the oral cavity or problems. These results are in line with the estimate that has been indicated for asymptomatic individuals with COVID-19.[22]

However, there are caveats to our research that must be considered. The small size of the sample is the primary methodological restriction since this is a pilot research. Second, as this is an online survey, we have not been able to record detailed information about the patient's medical history and a clinical oral examination (such as the duration of infection, the severity of the case, oral hygiene, habits, and drugs used), which might skew the findings. Results from this small pilot research may provide light on the oral symptoms of COVID-19, despite the study's limitations.

CONCLUSION

Our results, based on a small sample size, suggest that COVID-19 has a major effect on the mouth. There is a significant incidence of symptoms related to the salivary glands and taste disturbances in individuals with COVID-19, and further research is needed to determine the exact pathophysiology of the oral problems linked to this virus. To corroborate our findings and explain the complete effect of COVID-19 on the oral complications and salivary glands, more clinical investigations are needed with bigger sample numbers and extensive patient histories.

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