

Oral hygiene practices in the pandemic- Evidence-based discussion of 8 common issues

Introduction

The coronavirus disease-2019 (COVID 19) caused by the Severe Acute Respiratory Syndrome – Corona Virus- 2 (SARS-CoV-2) is an ongoing pandemic as of June 2021. The rate of infection, rapid progression and associated mortality are alarming and called for an emergency in all the countries over the world. This pandemic has necessitated a shared responsibility of every individual. The importance of oral hygiene methods in this regard is one of the most essential steps. The angiotensin-converting enzyme 2 (ACE2) receptors, (one of the viral target receptors) are seen on the dorsal surface of the tongue, gingiva and taste buds.^[1] The asymptomatic COVID19 patients act as carriers and shed virus for 16.8-19.4 days when infected. In moderate and severe (patients on corticosteroid treatment) COVID-19 stages, the viral shedding is for 24.2 and 28.3 days respectively.^[2] This viral shedding may be seen in various biological fluids (e.g. saliva, stool, urine, tears, and blood).^[3] The oral cavity acts as a major habitat for virus throughout the infection. This mandates an individual to maintain a safe oral hygiene practice to ensure reduction in the viral load thus reducing cross-contamination or infection. The common queries prevailing regarding the oral hygiene are discussed as simple question and answers below. The overview of the same is illustrated in [Figure 1].

Which toothbrush and toothpaste is to be used?

The powered toothbrushes (PTB) are proved superior to manual toothbrush and are recommended for routine use.^[4] PTB produces droplets of size 500 µm in diameter (aerosols ≤50 µm diameter) that settle within 1 meter in less than 1.8 sec.^[5] There exists no evidence that PTB can spread aerosols. Moreover, the solid-head PTBs had significantly less residual microbial contamination than the hollow-head PTBs after 3 weeks of twice daily brushing with non-antimicrobial toothpaste.^[6]

It is advised to brush twice daily for two minutes irrespective of the type of the toothbrush used. The regular toothpaste with sodium Lauryl Sulfate, (a foaming agent) inactivates viruses by denaturing the envelope.^[7] Toothpaste containing lactoferrin is reported to possess antimicrobial and antiviral properties.^[8] However, these are not specifically tested for effectiveness for SARS-CoV-2 patients.

Is tongue cleaning necessary?

Yes, tongue cleaning is beneficial for COVID-19 patients. Tongue is the major reservoir of virus due to the wide distribution of SARS-Co-V-2 target receptors on the dorsum of tongue.^[1] Therefore mechanical methods of removing the tongue biofilm prevent potential oral viral load. The cleaning of tongue continuously for 14 days can improve the taste perception in COVID-19 patients with dysgeusia.^[9]

Which mouth rinse is effective during the pandemic?

The mouth rinses namely chlorhexidine (CHX) and povidone-iodine (PVI) are effective antibacterial and antiviral agents. The use of 1% PVI gargle for 15 seconds results in 3 hours of reduced viral load while 0.2% CHX is reported to act for a short period comparatively.^[10] Also, PVI has better virucidal effect in oropharyngeal mucosae when used as mouth rinse/gargle with reversible effect of tooth staining.^[11]

Is it enough to wash the toothbrush in running water?

The tooth brush which are shared with or stored along with that of COVID-19 patient's tooth brush, may lead to cross-contamination.^[12] The regular disinfection and change of toothbrush are recommended for co-habitants living with an infected patient. The ideal methods of toothbrush disinfection are by immersion in 0.12% CHX for 10–20 minutes, 3% hydrogen peroxide for 30 min, 2% sodium hypochlorite for 10 minutes or 10% PVI for 5 minutes.^[7]

Should we clean the brushing area with plain water?

No, it is more important to disinfect the brushing area (spittoon, mirrors, tap etc) as the SARS-CoV-2 virus can remain active in various inanimate surfaces ranging from 2 hours to 9 days. The world health organization (WHO) recommends 70-90% alcohol for disinfection of smaller surface areas while sodium hypochlorite (5%) or Hydrogen peroxide (>0.5%) with minimum 1 minute surface contact time for disinfection of larger areas.^[13]

Is it acceptable to dispose the dental waste along with household solid waste?

No, the dental waste (ex: dental floss, tissues and interdental brushing aids etc) of a COVID patient or suspect, should be segregated and disposed in double sealed yellow bag retained 72 hours before disposing. It is desirable to disinfect the outer surface of the bag with 1% Sodium hypochlorite.^[14]

How important is the hand hygiene before brushing?

Hand washing with 1 ml of liquid soap for 20 – 30 seconds before touching the bristles of the toothbrush can avoid

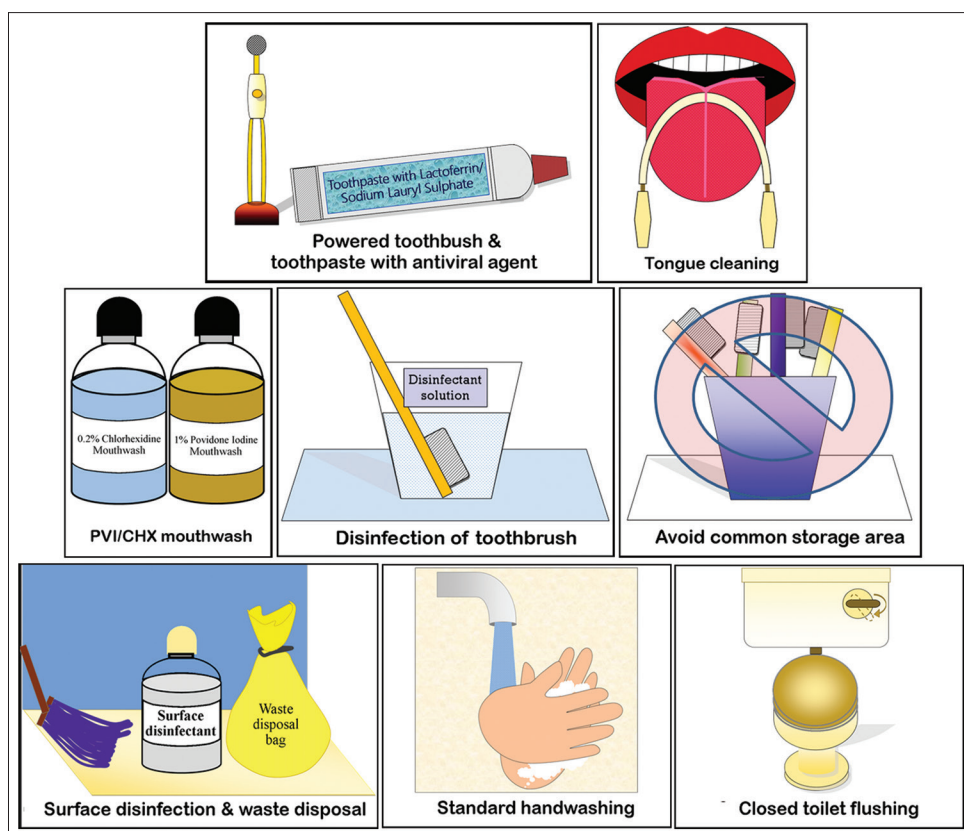


Figure 1: The summary of safe oral hygiene practices in COVID-19

inoculating the viral pathogens into it.^[15] It is also appropriate to follow the same before physical stimulation of gingiva with fingers (gingival massage), which is a routine method, followed for enhancing gingival microcirculation.^[16]

Can we store the toothbrush in bathroom if the toilet is together with it?

No, there is documented evidence that the surfaces in and around the toilets are the most contaminated areas, and can spread SARS-CoV-2 virus.^[17] The modern flush toilets exhibit upward particle movement with an estimated upward velocity of 0.27 cm/s – 0.37 cm/s during flushing, generating an aerosol (2700 particles in 70 seconds during single flush) that reaches out of the toilet bowl. Around 60% of the diffused aerosol particles can ascent to maximum of 106.5 cm from the ground contaminating wide area spread. The urban infrastructures have toilets together with bathroom (having brushing areas/wash basins) in most houses. This is the reason why one should avoid placing toothbrushes in vicinity of the toilet or place it at least 1 meter away. The best way to avoid cross-contamination is by closing the toilet lid before flushing.^[18]

Conclusion

The SARS-CoV-2 is susceptible to disinfectants and may be avoided by some safe common hygiene practices, which is in

favor of mankind. The significance of maintaining a good oral hygiene may be useful for the public in home quarantine for suspected or established COVID-19 disease.

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Conflicts of interest

There are no conflicts of interest.

**Santosh Palla¹, K. Sakthiyavathi²,
Phani Himaja Devi Vaaka³,
Mohammed Zia-Ul-Haque⁴**

¹Department of Oral Medicine and Radiology, Sun Dental Care, Corporation Colony, Tondiarpet, Chennai, Tamil Nadu, ²Department of Dentistry, Swast Dental Care, Pondicherry, ³Department of Oral and Maxillofacial Surgery, KIMS Dental College and Hospital, ⁴Department of Dentistry, Government Hospital, Kakinada, Andhra Pradesh, India

Address for correspondence: Dr. Santosh Palla, Consultant Oral Medicine and Radiologist, Sun Dental Care, 660/4, Thiruvottiyur High Road, Corporation Colony, Tondiarpet, Chennai - 600 081, Tamil Nadu, India. E-mail: pallasantosh7@gmail.com

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