



Practice of nitrous oxide inhalation sedation in dentistry during and after the COVID-19 pandemic

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Dear Editor:

The recent outbreak of the coronavirus disease (COVID-19) has attracted global attention to the health care profession. The COVID-19 pandemic has affected every medical profession worldwide, including dentistry [1]. The incubation period of COVID-19 is approximately 7–12 days, and the major signs and symptoms of the disease include dry cough, sneezing, respiratory depression, and dyspnea. The mode of transmission is mainly through infected droplets. The effect of this pandemic on dentistry is significant, as most of the treatments in dentistry involve aerosol-generating procedures that may increase the chances of the spread of the infection [2]. Many national and international societies have conveyed safety guidelines for the handling of patients during this pandemic. Despite the guidelines, there seems to be a deficiency in dental care around the usage of additional sedation with nitrous oxide. This letter is intended to shed light on care to be taken while using inhalation sedation with nitrous oxide in dental practice. The unique symptoms of COVID-19, such as cough, sneezing, and difficulty in breathing, make the choice of inhalation sedation limited. Therefore, other

non-inhalational options need to be considered (needless to mention, behavioral methods), such as the usage of oral and intravenous routes for anxiolysis. Universally accepted safety methods involving the use of personal protective equipment (PPE) and surface disinfection methods are strictly recommended in dental practice while using inhalation sedation. While administering sedation, an appropriately sized nasal hood, without any gap around the nose, should be used [3]. Additionally, the use of a rubber dam provides an advantage by reducing salivary contamination from splatters, by isolating the mouth [2]. With a proper nasal seal, and the hood and the rubber dam isolating the mouth, salivary contamination should significantly reduce contamination from aerosols. Once the procedure is completed, the disposable nasal hoods should be carefully removed, placed into a zip-lock plastic cover, and disposed appropriately into biomedical waste bins. This disposal should be done before the clinician/nurse removes PPE and gloves. If autoclavable hoods are used, they should be washed under running water after removal from the circuit and sterilized using the standard method for sterilizing rubber materials [4]. The next step is to

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handle the delivery tubing that is connected to the machine to deliver gases to the nasal hoods. The whole delivery tubing should be washed and autoclaved. All the attachments must be double-sealed for the next session. The surface of the sedation machine should be disinfected [4,5]. Because it is based on an inhalational route that involves the respiratory tract, lungs, and alveoli for gaseous exchange, respiratory anatomy and physiology have a significant influence on nitrous oxide sedation [3]. The passage of the gases through the airway systems (in and out) not only contributes to the viral load of the external environment in the dental setup but also puts the dental team at a higher risk because of the proximity of the oral cavity while performing dental procedures. An extra-oral vacuum device is assumed to reduce the risk burden. However, the scientific value of such a device is yet to be proved. Until proven otherwise, the utility of this device seems promising. Apart from the standard recommended care, there are issues specific to the effect of inhalation sedation on the infection of the airways and gas exchange at the alveolar level and contagion of the disease. Despite screening for COVID-19, an asymptomatic carrier is always a possibility. Hence, every patient should be addressed as potentially positive for COVID-19. The option of using inhalation sedation is considered judging the risks versus advantages while treating patients in the dental set-up. Information on the changes and influence of COVID-19 on the lungs and alveoli is currently available. The affected lungs and alveoli remain compromised during the period of infection and long after the patient recovers from it. Alveolar exchange is the sole mechanism for nitrous oxide to enter into the bloodstream and show its effects. Hence, while treating patients with COVID-19 under inhalation sedation, utmost care with PPE and standard safety protocols is considered. Nitrous oxide inhalation sedation may be used as a feasible pain management option during the COVID-19 pandemic, provided that the local health authority's practice guidelines are strictly adhered to.

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