



Short Communication

COVID-19 and the Risk for Hookah Users

Sarah Freygang Mendes Pilati^{1*}, Carolina Simão Flausino², Filipe Modolo³

¹University of Itajaí Valley, R. Uruguai, 458, Itajaí, Santa Catarina, Brazil

²Federal University of Santa Catarina, Av. Professor Henrique da Silva Fontes, 321, 88040-900, Florianópolis, Santa Catarina, Brazil

³Av. Professor Henrique da Silva Fontes, 321, 88040-900, Florianópolis, Santa Catarina, Brazil

Article history:

Received: January 24, 2022

Accepted: February 12, 2022

ePublished: September 8, 2022

*Corresponding author:

SFM. Pilati, University of Itajaí Valley, R. Uruguai, 458, Itajaí, Santa Catarina, Brazil.
Phone: +55 48 3721-6132,
Fax: +55 48 3721-6132,
Email: sarahfreygang@gmail.com



Abstract

After two years of the pandemic, there is still concern about COVID-19, mainly among non-vaccinated and specific groups such as patients at risk, particularly, a group of young people who may or may not be vaccinated and who are hookah users. These are exposed to trachea and lung damage considering that they use the equipment in closed places with little air exchange. Studies have shown that regular hookah users share the mouthpiece exchanging saliva and its contaminants; it well describes the presence of several bacteria in shared waterpipes, revealing potential biological hazards that may contribute to respiratory tract colonization, including case reports of patients with tuberculosis due to mouthpiece exchange. Although there is no research on the presence of coronavirus in hookah waterpipes, it was already proved that the virus is present in the self-collected saliva of 91.7% of patients with COVID-19. This coincidence may contribute to a much worse perspective of the COVID-19 pandemic in those locations.

Keywords: Smoking Water Pipes, COVID-19, Smoking

Please cite this article as follows: Pilati SFM, Flausino CS, Modolo F. COVID-19 and the risk for hookah users. Avicenna J Dent Res. 2022; 14(3):152-153. doi:10.34172/ajdr.2022.27

Hookah consumption has increased worldwide, especially among young people due to the lack of knowledge about the harmful effects of the smoke produced by this device and the erroneous perception that the water present in the hookah would filter the chemical substances of the smoke, making it less dangerous to health and causing less addiction when compared to cigarettes (1). This form of tobacco use is spreading mainly among adolescents and young adults because of their necessity for insertion into social circles. Further, several cafes and clubs worldwide have implemented hookah devices as a way to attract younger users (2). The Eastern Mediterranean is the region with the most hookah users worldwide, namely, 36.8% of the population (3), mostly young people (4, 5), followed by Europe which includes 21% of its users (5). Both regions were seriously affected by the COVID-19 pandemic, with a massive number of cases and deaths according to the World Health Organization (6).

The nicotine concentration in the *moassel* (the essence used in the hookah) is similar to that of cigarettes, but a hookah session is longer, with an average of 45-60 minutes (7). In this sense, a 45-minute hookah session has three times more carbon monoxide exposure compared to a conventional cigarette (measured on machines using the

Beirut Method) and raises the plasma levels of nicotine and carbon monoxide, which can generate the same diseases caused by cigarette use (7). Similarly, Yalcin et al reported that hookah use leads to the deterioration of pulmonary function and increases oxidative stress (4). Several studies have demonstrated the presence of toxic and carcinogenic substances in hookah smoke and correlated its consumption with the presence of cardiovascular and lung diseases (8, 9). According to Patel et al, hookah use may lead to a negative impact on lung function, and its chronic use is a potential risk factor for chronic obstructive pulmonary disease (1).

Considering all these facts, concerns about the health of these users should receive special attention; this is because they have been previously exposed to lung damage and have a higher risk of contamination by the coronavirus, as well as a potentially worse prognosis, because of the sharing of hookah mouthpiece and the smoke indoors, which may contribute to higher exposure to the virus. Studies have represented that regular hookah users share the mouthpiece with 1-5 people, exchanging saliva and its contaminants (10); this confirms the presence of several bacteria such as the coagulase-negative staphylococci, *Streptococcus* spp., *Neisseria* spp., and *Escherichia coli*



in shared waterpipes, highlighting potential biological hazard that may play a role in the respiratory tract colonization (11). There is no study regarding the presence of the coronavirus in hookah waterpipes, although it was already approved that the virus exists in the self-collected saliva of 91.7% patients with COVID-19 (12). Finally, it must be emphasized that concerns about the locations with the largest number of hookah users are the same as those with the highest number of COVID-19 cases. This coincidence may contribute to a much worse perspective of the COVID-19 outbreak in those locations.

The chronic use of hookah compromises multiple aspects of health, and the lung is one of the main organs that is affected by its chemical substances. Coincidentally, COVID-19 is causing various problems related to lung diseases, including interstitial inflammation, hyaline membrane formation, pneumocyte injuries, intra-alveolar hemorrhages, necrosis of small vessels, and bronchopneumonia (13). Therefore, hookah users should be alerted about the serious health condition they may develop when infected by the coronavirus.

Conflict of Interest Disclosures

The authors declare that they have no conflict of interests.

Ethical Statement

Not applicable.

Funding

The present article received no funding.

References

- Patel MP, Khangoora VS, Marik PE. A review of the pulmonary and health impacts of hookah use. *Ann Am Thorac Soc*. 2019;16(10):1215-9. doi: [10.1513/AnnalsATS.201902-129CME](https://doi.org/10.1513/AnnalsATS.201902-129CME).
- Maziak W, Taleb ZB, Bahelah R, Islam F, Jaber R, Auf R, et al. The global epidemiology of waterpipe smoking. *Tob Control*. 2015;24 Suppl 1:i3-i12. doi: [10.1136/tobaccocontrol-2014-051903](https://doi.org/10.1136/tobaccocontrol-2014-051903).
- Jawad M, Lee JT, Millett C. Waterpipe tobacco smoking prevalence and correlates in 25 Eastern Mediterranean and Eastern European countries: cross-sectional analysis of the Global Youth Tobacco Survey. *Nicotine Tob Res*. 2016;18(4):395-402. doi: [10.1093/ntr/ntv101](https://doi.org/10.1093/ntr/ntv101).
- Yalcin FK, Er M, Hasanoglu HC, Kilic H, Senturk A, Karalezli A, et al. Deteriorations of pulmonary function, elevated carbon monoxide levels and increased oxidative stress amongst water-pipe smokers. *Int J Occup Med Environ Health*. 2017;30(5):731-42. doi: [10.13075/ijomeh.1896.00912](https://doi.org/10.13075/ijomeh.1896.00912).
- Jawad M, Charide R, Waziry R, Darzi A, Ballout RA, Akl EA. The prevalence and trends of waterpipe tobacco smoking: a systematic review. *PLoS One*. 2018;13(2):e0192191. doi: [10.1371/journal.pone.0192191](https://doi.org/10.1371/journal.pone.0192191).
- World Health Organization (WHO). Coronavirus Disease 2019 (COVID-19): Situation Report, 59. WHO; 2020.
- Eissenberg T, Shihadeh A. Waterpipe tobacco and cigarette smoking: direct comparison of toxicant exposure. *Am J Prev Med*. 2009;37(6):518-23. doi: [10.1016/j.amepre.2009.07.014](https://doi.org/10.1016/j.amepre.2009.07.014).
- El-Zaatari ZM, Chami HA, Zaatari GS. Health effects associated with waterpipe smoking. *Tob Control*. 2015;24 Suppl 1:i31-i43. doi: [10.1136/tobaccocontrol-2014-051908](https://doi.org/10.1136/tobaccocontrol-2014-051908).
- Walters MS, Salit J, Ju JH, Staudt MR, Kaner RJ, Rogalski AM, et al. Waterpipe smoking induces epigenetic changes in the small airway epithelium. *PLoS One*. 2017;12(3):e0171112. doi: [10.1371/journal.pone.0171112](https://doi.org/10.1371/journal.pone.0171112).
- Martin R, Safaee SD, Somsamouth K, Mounivong B, Sinclair R, Bansal S, et al. Mixed methods pilot study of sharing behaviors among waterpipe smokers of rural Lao PDR: implications for infectious disease transmission. *Int J Environ Res Public Health*. 2013;10(6):2120-32. doi: [10.3390/ijerph10062120](https://doi.org/10.3390/ijerph10062120).
- Safizadeh H, Moradi M, Rad MR, Nakhaee N. Bacterial contamination of different components of the waterpipe. *Int J Tuberc Lung Dis*. 2014;18(8):988-91. doi: [10.5588/ijtld.14.0026](https://doi.org/10.5588/ijtld.14.0026).
- To KK, Tsang OT, Yip CC, Chan KH, Wu TC, Chan JM, et al. Consistent detection of 2019 novel coronavirus in saliva. *Clin Infect Dis*. 2020;71(15):841-3. doi: [10.1093/cid/ciaa149](https://doi.org/10.1093/cid/ciaa149).
- Tian S, Xiong Y, Liu H, Niu L, Guo J, Liao M, et al. Pathological study of the 2019 novel coronavirus disease (COVID-19) through postmortem core biopsies. *Mod Pathol*. 2020;33(6):1007-14. doi: [10.1038/s41379-020-0536-x](https://doi.org/10.1038/s41379-020-0536-x).