



## Oral Health Hazards of Water Pipe Smoking: Current Evidence

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**How to cite this article:** Raj AT, Patil S, Sarode S, Sarode G. Oral Health Hazards of Water Pipe Smoking: Current Evidence. *J Contemp Dent Pract* 2017;18(7):539-540.

**Source of support:** Nil

**Conflict of interest:** None

### INTRODUCTION

Water pipe smoking (WPS) has been a traditional habit in the Middle Eastern Society for hundreds of years. The WPS users have a false sense of safety due to its casual use in social gatherings. It was estimated that about 70% of WPS users believe it to be a safe alternative to cigarette smoking.<sup>1</sup> Further, the use of flavored tobacco has led to its growing popularity, especially among youngsters.

The World Health Organization (WHO) study group on "Tobacco Product Regulation" had published an advisory note on the possible health hazards of WPS. The note states the similarity between cigarette smoking and WPS.<sup>2</sup> Several carcinogens from cigarette smoking like polycyclic aromatic hydrocarbons, volatile aldehydes, phenols, and heavy metals are also a part of WPS.<sup>3</sup> Further, it was observed that the duration of one WPS session far exceeds that of smoking one cigarette. The

increased dosage of WPS in relation to cigarette smoking is well established with the WHO equating 1 WPS session to smoking 100 cigarettes or more.<sup>2</sup>

Several individual studies and systematic reviews have linked WPS to cancer and respiratory and cardiovascular diseases. Children born to mothers using WPS have shown to exhibit respiratory and mental health disorders. Communicable diseases are common in WPS due to shared water pipes.<sup>4,5</sup>

In addition to the above-mentioned systemic health hazards, WPS has shown detrimental effects on the oral cavity. Akl et al<sup>4</sup> published a systematic review examining the health hazards posed by WPS. The study showed a strong association between WPS and high plaque and gingival indices, significant bone loss, attachment loss, and development of periodontal pockets. An Egypt-based study evaluated 300 males (100 non-smokers; 100 cigarette smokers; 100 water pipe smokers). All the patients underwent extraction of the third molar under local anesthesia. The result showed that water pipe smokers had three times greater risk of developing dry socket than nonsmokers. It was also observed that there was no statistically significant difference in the risk of developing dry socket between cigarette smokers and WPS users.<sup>6</sup>

Although several systematic reviews have associated WPS with cancer, especially lung cancer, its role in oral carcinogenesis is still debated.<sup>7,8</sup> Al-Amad et al<sup>9</sup> found that WPS may cause cancer early in younger individuals (46 years in males and 43.8 years in females in comparison to a relatively older age group of 62.1 and 63.5 years in nonsmoking males and females respectively), which may be due to the rampant use of WPS among youngsters. But studies exploring WPS association with oral cancer have failed to account for the concomitant use of tobacco and alcohol.

Based on the similarity of WPS with cigarette smoking (shared carcinogens) and relatively increased dosage level with the former, it can be hypothesized that WPS is

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potentially carcinogenic. Conclusive evidence of the same can be obtained from case-control and cohort studies with exclusively WPS users. Molecular studies examining the effects of chronic WPS use on the oral tissue will aid in unveiling the molecular pathway of WPS-induced carcinogenesis. Data from such molecular studies would aid in identifying key diagnostic and therapeutic targets.

To conclude, WPS is a public health hazard and is more hazardous than cigarette smoking. Thus, it is vital to curb the rampant use of WPS using social and media-based interventions, especially among youngsters.

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