

# Waterpipe tobacco smoking: A mini-review

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## ABSTRACT

The waterpipe tobacco smoking is an ancient form of smoking that is present in the society since centuries. The majority of consumers of this exotic activity are still unaware of the serious consequences that this type of smoking has on the health of the smoker. The paucity of data related to the prevalence and extent of this habit in the society is still not available. In this present short review, the authors try to highlight this serious health issue and suggest preventive measures.

**Key words:** hookah, public health, narghile, smoking, shisha, tobacco

Waterpipe tobacco smoking (WTS) is a global health concern and is an alternative form of tobacco use that involves passing tobacco smoke through water before inhalation.<sup>[1, 2]</sup> WTS is a traditional type of smoking that is present for many centuries.<sup>[3]</sup> The WTS first started in India and later spread to the whole world.<sup>[4-6]</sup> The recent reports from the last two decades show a much higher prevalence of this serious health issue from the developed world as well.<sup>[4, 7-10]</sup>

The WTS is known around the world by many different names and slightly different forms: hookah, hubble-bubble, kalian, nargeela, argeela, argihleh, shisha, sheesha, okka, nargileh, boury, ghelyoon, ghalyan, and gouza.<sup>[4]</sup> The original form of WTS included only tobacco but later a number of alterations mainly related to addition of flavors and smell were done.<sup>[4]</sup> Recently, Hookah smoking has been identified by the public health officials as a new tobacco epidemic.<sup>[3]</sup>

For many decades, the WTS was dominated by males.<sup>[4, 11-14]</sup> However, this is not always true, as reports of female waterpipe tobacco (WT) smokers are also available from various parts of the world.<sup>[4, 5, 10, 11, 15-17]</sup> Previous studies in the US also show a large variation in proportion of WTS according to gender.<sup>[4, 13, 18, 19]</sup> The

most common WT smokers are usually those persons who have at least smoked cigarette, although it may not always be true.<sup>[4, 19, 20]</sup> Various studies reported about the perception among the WT smokers that it is less harmful compared to the cigarette.<sup>[13, 18-22]</sup> WTS is not a safe alternative to cigarettes.<sup>[23]</sup> The data about the perception of WTS among the consumers is sparse.<sup>[4]</sup> Besides, the available scientific literature shows marked variations in the perception of this habit among WT smokers from various parts of the globe.<sup>[4]</sup> A section of WT smokers believes that WTS is harmless as they think that water filters out the smoke.<sup>[4, 18, 20, 24-27]</sup> However, detailed studies related to this perception are lacking.<sup>[4]</sup>

Due to the less irritating nature of the moisturized smoke, the WT smokers can smoke for 30 minutes to a few hours and inhale more deeply.<sup>[28]</sup> There is evidence that those who are occasional or regular WT smokers are more likely to become regular cigarette smokers, suggesting that WTS may be a potential entryway for regular cigarette smoking.<sup>[29]</sup> Also, a number of reports of non-smokers sharing a table or sitting at a place where WTS is done resort to WTS in future.<sup>[4, 13, 19]</sup>

It is well established that when compared to cigarette smoking, the number of puffs

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and volume from using WT are about 10 times higher than cigarettes.<sup>[4]</sup> As per the CDC, a typical 1-hour-long WT smoking session involves 200 puffs, while an average cigarette is 20 puffs.<sup>[30]</sup> Thus toxicant yields during 1–2 hours WTS was comparable to 100–200 cigarettes. The volume of smoke inhaled during a typical WTS session is about 90,000 milliliters, compared with 500–600 milliliters inhaled when smoking a cigarette.<sup>[30]</sup> WT smoke also contains 36 times the amount of nicotine and much higher concentrations of heavy metals.<sup>[4, 15, 23]</sup> And the burning temperature of tobacco for WTS is about 900°, compared to 450° for cigarettes, thus WTS could produce different type and levels of harmful chemicals and tar.<sup>[23]</sup> Further, exhaled CO levels from WTS users were twice as high as cigarette smokers in cessation programs.<sup>[4, 18]</sup> These all harmful ingredients of the WTS has serious effects on the health of the user. Also, the WTS during pregnancy can result in the low birth weight baby.<sup>[31]</sup> The effects of secondhand smoke from WTS are just similar to that arising from the cigarette smoke.<sup>[4]</sup> Besides, the WTS can also lead to a number of infectious diseases like Tuberculosis, Hepatitis C, pulmonary aspergillosis, and *H. pylori* infection that could spread from sharing the mouthpieces among the WT smokers.<sup>[4, 31–35]</sup> The WT smokers also resort to inhalation from nose, which is also harmful. Nemmer *et al.* 2015, demonstrated that sub-acute (five day) nose-only exposure to WTS resulted in pulmonary inflammation and oxidative stress without affecting pulmonary function, suggesting that inflammation and oxidative stress are early markers of WTS exposure that precedes airway dysfunction.<sup>[28]</sup> Also, the long-term habitual abuse of WTS; just similar to regular cigarette smoking; is associated with lung, GI, and bladder malignancies besides pulmonary, cardiovascular, and hematological impairments.<sup>[4, 36, 37]</sup>

Despite this knowledge, the health risks of WTS remain largely unrecognized by the general public and thus the WTS is spreading dramatically.<sup>[4, 13, 38–40]</sup> One main point that has led to widespread WTS is that there is no negative social norm against this type of smoking as is present against the cigarette.<sup>[4]</sup> Thus the lay public continues to smoke in ignorance. The exotic, social, and group nature of this habit is appealing to young adults, regardless of gender or ethnicity; as a result, the WTS is rising fast among the youths compared to cigarette smoking.<sup>[4, 41, 42]</sup> The younger generations have always been lured by the fancy advertisements in the media; the easy accessibility of the water pipes and hookah bars and also in the false belief that the passage of smoke through the water in water-pipes “purifies” the smoke of all harmful elements, which is absolutely wrong.<sup>[9]</sup> The dissemination of healthcare information to the public is essential and thus the role of agencies involved in providing the same is very important, especially in resource poor settings.<sup>[43–46]</sup>

## CONCLUSIONS

In conclusion, the WTS is a serious health issue and needs to be addressed. The role of all the stakeholders like health professionals, regulators, and the public at large is very important. There is an urgent need to explore the general public’s knowledge and attitude towards waterpipe smoking. Health policy initiatives should be formulated to prevent marketing and licensing of hookah tobacco products and paraphernalia in local markets and shops. There should be a control over the easy accessibility of the hookah cafes. Also, the age limit should be imposed to curb the indulgence of the youths in this addiction. The WTS should be included in the anti-smoking campaigns. A discouragement of the practice at this stage would make certain that the evil is controlled, if not eliminated, before it actually sets its roots into our social norms. While there is a large amount of data on the short- and long-term effects of cigarette smoke, there is a paucity of data regarding WTS, thus further research into the extent and effects of WTS in the society is warranted. Mere policy making would not help rather actions must be taken at the grassroots level.

## Conflicts of interest

The authors declare no conflicts of interest.

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