

Given this contingency, which is the better option?

- Prevention? or
- Disease/disability management?

In the long-term, prevention is decidedly superior to coping with disease, hospitalizations, interventional and surgical therapies, disability, and untimely death. Thus, opting for a dialysis free or organ transplant free life should be a no brainer! And we should not expose patients to such eventualities.

Quality of life is best 'acquired' by prevention of hypertension-mediated diseases. While the American and European guidelines differ in the definition of hypertension, the proposed therapeutic BP goal is the same. By creating pathways to achieve lower BP goals irrespective of how hypertension is defined, India stands to benefit the most from the latest hypertension guidelines.

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References

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Is waterpipe-smoking bad for your heart?

Waterpipe (also known as shisha, hookah, narghile, hubble bubble, and other names) is a device for smoking tobacco invented in the 16th century. It consists of a head that contains tobacco separated from an array of coal by foil. The head is connected to a system of airtight pipes that draw tobacco smoke into a bowl which contains water. Then, as the user inhales through the hose, smoke is drawn in from the bowl to the smoker.^{1,2}

There is a common misconception that passing the smoke through water would clear it of all harmful substances; a concept that entices the younger population to take up smoking shisha, especially at a time where there is an ongoing campaign to stop cigarette smoking and people wish to use tobacco in a way, which is perceived as safer than cigarettes.^{1,2}

to the quantity of tobacco used, as well as the frequency and the length of the session.^{1,4} Finally, studies assessing prevalence of cardiovascular disease and cardiovascular morbidity and mortality in people who are accustomed to smoking waterpipe regularly or occasionally are few.

Smoke content analyses have consistently shown similarities between toxicants in waterpipe and cigarette smoke.^{1,2}

A recent review⁵ has summarized some of these similarities; at least 16 different polycyclic aromatic hydrocarbons have been detected in waterpipe and cigarette smoke, and other toxic ingredients including formaldehyde, phenols, furans, some radioactive metals, and ultrafine

Do you think that smoking hubbly bubbly is less harmful than smoking cigarettes? **Think again!**



According to a worldwide survey, prevalence of cigarette smoking is either stable or declining in many parts of the world, while other forms of tobacco, most notably waterpipe smoking (WPS) are showing a rising trend, especially in young populations.³

Epidemiological and clinical studies assessing the cardiovascular effect of WPS are sparse, particularly in western countries where most people smoke waterpipe only occasionally. Moreover, it is of note that the health effects of WPS can vary widely according

microparticles. Nicotine content in one head (20 g) of unflavoured tobacco is equivalent to the tobacco content of 70 regular cigarettes,⁵ and mean plasma nicotine levels were found to be significantly increased in cigarette, as well as in shisha-smokers.⁶

Benzo-a-pyrene levels (a proven carcinogen) in waterpipe smoke are three times higher than in standard cigarette smoke. Plasma carboxyhaemoglobin levels are 3.75 times higher in waterpipe smokers compared with cigarette smokers.⁵

The increase in tar and inhaled carbon monoxide (CO) following a single shisha smoking session was significantly higher compared with the levels following a single cigarette.⁴ Chronic exposure to environmental CO has been associated with increased cardiovascular morbidity and mortality.⁷ The main mechanism of CO toxicity is tissue hypoxia, since its affinity to bind haemoglobin is 200–240 times that of oxygen, which reduces oxygen-carrying capacity and impairs the release of oxygen to tissues.

Acute cardiovascular effect of waterpipe smoking

WPS is associated with an acute significant increase in heart rate and blood pressure.^{4,8}

In a study involving 45 volunteers, systolic and diastolic blood pressure and heart rate significantly increased after a 30-min session of WPS.⁹ In a larger population, a smaller but significant increase in blood pressure and heart rate was observed after a 15-min WPS.¹⁰ The observed differences in blood pressure and heart rate are clinically relevant and may contribute to increasing cardiovascular risk.

Moreover, WPS with or without nicotine, acutely impairs heart rate variability (increase in low frequency/high frequency shortly after smoking, with recovery to baseline levels 15–20 min post-smoking).¹¹ This change in autonomic function may result in an acute dysfunction of cardiac regulation, destabilization of vascular plaque, and the triggering of cardiac arrhythmias.¹²

Similar to cigarette smoking, WPS acutely decreases forearm post-occlusion blood flow, and increases post-occlusion vascular resistance; these detrimental effects were particularly evident in people with low physical activity.¹³

But haemodynamic factors are not the only relevant factors, which are acutely changed by WPS. In humans, both WPS and cigarette-smoking have been shown to result in a significant increase in the inflammatory marker high-sensitivity C reactive protein¹⁴ as well as in oxidative stress.¹⁵

Chronic cardiovascular effect of waterpipe smoking: effect on atherothrombotic disease

A recent meta-analysis showed that WPS was significantly associated with cardiovascular disease.¹⁶ The data are based on two cross-sectional studies evaluating the association between WPS and cardiovascular disease: In one study,¹⁷ the reported odds ratio for the association between waterpipe tobacco smoking and heart disease was 1.67 (95% confidence interval 1.25–2.24). The second study,¹⁸ a cross-sectional analysis of data from 50 045 residents included in the Golestan cohort study in Iran, revealed a significant increase in the risk of ischaemic heart disease or heart failure in people with the highest level of cumulative WPS in comparison with those with no history of waterpipe use.

One of the larger studies published so far included 1210 patients undergoing coronary angiography in a case-control design.¹⁹ In contrast to other studies, WPS was precisely quantified as waterpipe-years (a measure derived from the mean number of water pipes smoked per day multiplied by the number of years smoked). The major finding was that patients who accumulated 40 waterpipe-years or more had three times the risk of

severe stenosis of the coronary arteries, after adjustment for potential confounders including cigarette smoking and other cardiovascular risk factors.

A prospective, population-based cohort study in Bangladesh has assessed the relationship between WPS and death by cardiovascular diseases in around 20 000 men and women.²⁰ While no association has been noted between WPS and cardiovascular disease (CVD) deaths in men who were or are smoking, smoking women were at 2.08 times higher risk of CVD mortality. An analysis of data from the second Gulf registry of acute coronary events revealed an increased risk of in-hospital mortality from acute coronary syndrome in waterpipe smokers compared with non-smokers or previous smokers.¹⁷

Besides increased blood pressure and heart rate and reduced heart rate variability, people who smoke waterpipes were found to have lower levels of high-density lipoprotein (HDL), apo A1 lipoprotein, and total antioxidant capacity and increased low-density lipoprotein (LDL)-cholesterol, apo B, triglycerides, and malondialdehydes, all factors, which may contribute to the development of atherothrombotic diseases.²¹ Endothelial function measured as flow mediated dilatation of the brachial artery was found to be significantly impaired among shisha smokers compared with cigarette smokers and non-cigarette smokers.²²

Conclusion

Waterpipe has surged in popularity in the last decade, especially in Western countries. At present, there is still substantial confusion concerning the health effects of smoking waterpipe by healthcare professionals and consumers. WPS was found to be associated with wide ranging effects from cancer formation to infection, periodontal and respiratory disorders. Furthermore, WPS also has an unfavourable effect on cardiovascular risk, leading to a significant acute increase in blood pressure, heart rate and CO levels, a reduction in heart rate variability, and increase in inflammation and oxidative stress, which may contribute to an increased risk of coronary artery disease development.

Further studies are necessary to clarify and define the pathophysiological mechanisms by which shisha smoking increases cardiovascular disease.

An improvement in public awareness and health providers knowledge about the effects of WPS on human health is more than desirable.



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