

Waterpipe tobacco smoking (shisha)

Using a waterpipe to smoke tobacco is harmful and may carry similar health risks to smoking cigarettes. Waterpipe smoking increases the risk for cancer, heart disease, lung disease, metabolic syndrome, low birth weight in newborn babies and carbon monoxide poisoning.¹⁻³ Secondhand smoke from waterpipe tobacco use produces levels of air pollution similar to cigarette smoking and likely has similar health risks.^{4,5}

What are waterpipes and waterpipe smoking?

Waterpipe smoking is a traditional method of smoking tobacco in the Middle East, Africa and Asia. Names for waterpipe vary and include shisha, hookah, narjeela, narghile, argihile, goza and hubble bubble.⁶

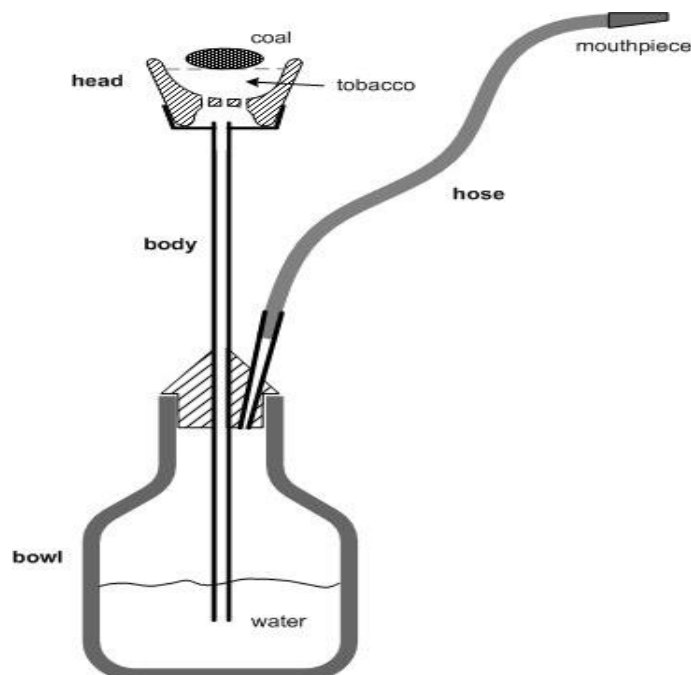


Diagram of a traditional waterpipe

To use a waterpipe, moist tobacco is placed in the head, usually covered by aluminium foil with small holes and charcoal is placed on top.⁷ When the charcoal is lit it heats the tobacco producing smoke. The person inhales through the hose, pulling both tobacco and charcoal smoke down the waterpipe body and through the water in the bowl. The cooled smoke surfaces and is inhaled through the hose.^{7,8} Sometimes electronic heating systems may be used instead of charcoal.¹

The most common type of tobacco used in waterpipes is called “maassel”, which is a tobacco fermented in molasses and flavoured with fruit essences or other flavours such as mint.^{7,9,10} Some young people are drawn to waterpipe smoking because of maassel’s sweet smell and variety of flavours.^{7,9-13} Other smoking products such as ‘steam stones’¹⁴ and flavoured herbal and sugar cane products are sometimes used in place of tobacco.¹⁵

Who uses waterpipes?

In English-speaking countries, young adults and people in Arabic communities are more likely to use waterpipes.^{9,16-20} In 2022-23, 5.9% of Australians aged 14 years and over had smoked a waterpipe in the past 12 months, with over half smoking them daily or at least weekly.²¹

Some people smoke waterpipes when alone, but they are more commonly used by social or family groups, at home or in restaurants, cafes and bars.^{6,9,19} Some young adults find this social aspect of waterpipe smoking attractive.^{7,11,22}

The harms of waterpipe smoke

Waterpipe smoking is both addictive and harmful, and it can expose people to similar or even higher levels of dangerous substances than cigarette smoking.^{7,8,23-25}

Common misunderstandings about waterpipe smoking lead some people to perceive that it is less addictive, less harmful and “cleaner” than cigarette smoking.^{7,11,26} However the facts are:

- Toxins in smoke, including much of the tar, are not filtered out by the water in the bowl and are inhaled by the person smoking.^{27,28} The water absorbs some of the nicotine, but the more someone uses a waterpipe the more nicotine they inhale.^{28,29}
- Less harsh smoke can be just as dangerous. Moist, cooler smoke from waterpipes may be less irritating than cigarette smoke but someone smoking a waterpipe may end up inhaling just as many toxins, or even more.^{7,8,13,25,30} Similarly a fruity or sweet smell or taste has nothing to do with how toxic the smoke is.^{11,26}

How much smoke is inhaled in a waterpipe smoking session?

Waterpipe smoking sessions may last from 15 minutes up to several hours, although 30 minutes to one hour is more typical.^{8,24,25,31-33} People need to take deep puffs to generate smoke from a waterpipe and each puff can be about ten times the volume of a puff from a cigarette.^{22,24,34} In an average session, people smoking a waterpipe inhale more than 100 times the volume of smoke compared to smoking one cigarette (e.g. 74 litres of smoke from a waterpipe versus 0.6 litres from a cigarette).²⁵

What's in waterpipe smoke?

To date, around 300 chemicals have been identified in waterpipe tobacco and waterpipe tobacco smoke, and many are toxic.⁸ They include carbon monoxide, nicotine, tar, cancer-causing chemicals and toxic metals such as lead, arsenic and chromium.^{7,8}

The smoke from a waterpipe is different to the smoke from a cigarette. This is partly due to burning charcoal to heat the waterpipe tobacco.^{7,8} Compared to smoking one cigarette, someone smoking a waterpipe will inhale during an average waterpipe session:^{8,25}

- two to three times the amount of nicotine
- about 11 times the amount of carbon monoxide
- about 25 times the amount of tar, and
- 10 times more lead.

Tobacco-free waterpipe products also have harmful effects. Tests show that smoking these products generates the same or even greater amounts of toxins as from tobacco waterpipe products (except for nicotine) – even for products that claim to be healthier or have “no tar”.^{8,15}

Charcoal smoke

The burning charcoal in waterpipe smoking is a major source of high levels of carbon monoxide, fine particles and cancer-causing chemicals in the smoke.^{27,35-37} The smoke from any waterpipe product smoked by using charcoal will contain these toxic chemicals, whether the smoke comes from tobacco or not.¹⁵

Waterpipe accessories

Some accessories for sale are claimed to reduce the harmfulness of the smoke, such as mouthpieces containing activated charcoal or cotton, chemical additives for the water bowl, and plastic mesh fittings to create smaller bubbles. None of these devices have been tested to show if they reduce toxins or risk of tobacco-related disease.⁷

Addiction to waterpipe smoking

Waterpipe tobacco smoke contains nicotine and smoking waterpipes can be addictive.²⁴ Several studies have shown that the concentration of nicotine in the blood of people smoking a waterpipe can go as high or even higher than that of a person who smokes a cigarette.²⁴

Smoking patterns vary enormously among people who smoke waterpipes; many smoke occasionally while others may have more than one waterpipe session a day.²⁴ People who smoke waterpipes more frequently are more likely to report that they are addicted.^{24,31,38} While occasional waterpipe smoking is common, the longer someone has been smoking, the more likely they are to smoke daily or regularly.³⁸

On average, people who smoke a waterpipe every day take in enough nicotine to maintain nicotine addiction; equivalent to the nicotine from 10 cigarettes a day.²⁹ Often, people who smoke waterpipes daily feel that they are addicted in much the same way as people who smoke cigarettes.³¹ They have reported having urges to smoke, withdrawal symptoms, difficulty quitting, and increasing use of the waterpipe over time.²⁴ Urges to smoke may be linked to triggers such as time of day or the sight and smell of a waterpipe.³¹ People who smoke waterpipes daily or weekly are more likely to carry a waterpipe with them, or choose a restaurant or café based on the availability of a waterpipe.²⁴

The nicotine inhaled from a single session of waterpipe use is equivalent to smoking two to three cigarettes in one day.^{25,29} Occasional use of the waterpipe can be enough to start to develop nicotine addiction.³⁹ A study of adolescents who smoked waterpipes showed that tobacco cravings, withdrawal symptoms and failed attempts at quitting waterpipe smoking can occur while smoking waterpipes on non-daily basis. For some people, their first symptom appeared by the time they were smoking waterpipes for 7 to 8 sessions a month.³⁹ These findings are consistent with research showing that adolescents who smoke cigarettes also develop symptoms of nicotine dependence before they start smoking daily.⁴⁰

Can waterpipe smoking lead to cigarette addiction?

Research shows that teenagers and young adults who have smoked waterpipes are more than twice as likely to later start cigarette smoking than those who had never smoked waterpipes.⁴¹ Studies that asked teenagers and young adults who smoked waterpipes (but not cigarettes) how open they were to cigarette smoking in the future also found they were twice as likely to hold more susceptible attitudes to cigarette smoking than those who did not smoke either.⁴²

Health effects of waterpipe smoking

Although the research on the health effects of waterpipes is limited, it is clear that waterpipe smoke is harmful.^{1,2,8,23}

Short-term effects ^{1,3,43}	Long-term effects ¹
<ul style="list-style-type: none">• Increased heart rate• Increased blood pressure• Carbon monoxide poisoning• Lower exercise capacity• Burn injuries	<ul style="list-style-type: none">• Heart disease and stroke⁴⁴• Lung cancer• Head and neck cancers• Oesophageal cancer• Reduced lung function• Chronic Obstructive Pulmonary Disease• Bronchitis• Low birth weight in newborns• Metabolic syndrome and obesity• Mental health problems

Cancer

There are 27 known or suspected cancer-causing chemicals in waterpipe tobacco smoke.⁸ Waterpipe tobacco smoking increases the risk for cancers of the head and neck, lung and oesophagus (wind pipe).^{1,45,46} Quitting waterpipe smoking reduces the risk of dying from tobacco-related cancer.⁴⁷

Health effects on the lungs

Waterpipe tobacco smoking reduces lung function, which is a measure of how hard and how much air you can breathe out. Waterpipe smoking is associated with bronchitis and [chronic obstructive pulmonary disease](#) (COPD).^{1,2} COPD is a serious long-term lung condition that limits airflow causing shortness of breath. It includes emphysema and obstruction of the small airways.⁴⁸ Sharing the same waterpipe can expose people to infectious disease, including tuberculosis.¹

Health effects on the heart

Waterpipe tobacco smoking is associated with heart disease and stroke.^{43,44} As with cigarette smoking, the immediate effects of waterpipe tobacco smoking include increases in heart rate and blood pressure. It also affects the body's ability to regulate blood pressure and heart rate, and lowers exercise capacity.⁴³ Waterpipe tobacco smoke contains high

levels of fine particles, which are known to increase the risk of heart disease and stroke.^{4,27,49}

Health effects of carbon monoxide

Carbon monoxide (CO) is toxic gas associated with diseases of the blood vessels including heart disease and stroke, and problems in pregnancy.⁴⁸ Waterpipe tobacco smoking has been associated with many cases of carbon monoxide poisoning severe enough for people to seek treatment at hospital emergency departments.^{3,23,50} When CO enters the bloodstream it reduces the amount of oxygen delivered to the brain, muscles and other organs, and can cause dizziness, headache, nausea and fainting.^{23,51} High levels of CO in the bloodstream can also cause problems during surgery with a general anaesthetic.⁵¹

The amount of CO inhaled during a waterpipe session can vary greatly and depends mainly on the amount of charcoal used.⁸ Compared to smoking one cigarette, an average waterpipe session can expose people to around 11 times more CO.²⁵ People who smoke tobacco-free waterpipes have been found to inhale at least as much CO as people smoking a tobacco waterpipe.^{8,52}

Health effects on pregnancy

Babies born to pregnant people who smoke waterpipes may have an increased risk of troubled breathing and of having a low birth weight, which makes them more vulnerable to illness and death.^{2,23,53}

Average rises of carbon monoxide (CO) measured in people's blood after a waterpipe smoking session can be at least three times as high as a person who's smoked a cigarette.^{54,55} CO reduces oxygen to the baby and this can last five or six hours after stopping smoking.⁵⁶ This may lead to problems with blood flow in the placenta and reduce the baby's growth.⁴⁸ CO is believed to play a role in a number of serious health effects from cigarette smoking affecting unborn babies including miscarriage, low birthweight and Sudden Unexpected Death in Infancy (SUDI).^{48,56,57} It is best that people who are pregnant also avoid secondhand smoke from waterpipes as unborn babies are particularly vulnerable to CO.⁵⁸

A waterpipe smoking session also exposes people to high levels of lead and other metals and chemicals that are potentially toxic to a developing foetus.^{8,56}

Health effects on the metabolism

People who smoke tobacco waterpipes are more likely to have the effects of metabolic syndrome, including high blood fat levels, high blood sugar levels, high blood pressure and body fat around the waist.¹ Smoking waterpipes is associated with obesity among all ages and genders.⁵⁹



Secondhand smoke from waterpipes

Secondhand smoke from waterpipes is a mixture of tobacco smoke and the smoke from the charcoal.⁷ Smoking a waterpipe for one hour is estimated to release as much carbon monoxide into the air as smoking 20 cigarettes.³⁶ Secondhand smoke contains, among other things, fine particles that can be inhaled deep into the lungs. These particles are made up of toxic and cancer-causing substances, and they can increase the risk of heart disease and stroke.^{4,5,36,49}

Research shows that a single person smoking a waterpipe for up to 30 minutes produces, on average, more fine particles than smoking a cigarette.^{4,36} When a waterpipe is shared among a group, it may produce even more pollution.⁴

Studies have found levels of fine particles in hookah bars in the United States, Canada and Pakistan to range from unhealthy to extremely high on the U.S. Air Quality Index. In some studies, the average level of fine particles across all venues was far above hazardous levels (the highest category).^{5,7}

Although the health effects of secondhand smoke from waterpipes have not yet been widely studied, they are likely to include many of those caused by [secondhand smoke](#) from cigarettes.⁵ These include lung cancer, heart disease, stroke, and in children, ear and chest infections and Sudden Unexplained Death in Infancy (SUDI).^{4,5,60,61} Breathing in secondhand smoke from waterpipes is associated with wheeze.²

In summary

- Using a waterpipe to smoke tobacco has serious health effects, similar to the types of harms from cigarette smoking.
- Harmful particles and carbon monoxide in waterpipe smoke pass through the water in the waterpipe.
- People who smoke waterpipes may be exposed to similar or higher levels of dangerous substances compared with people who smoke cigarettes.
- People who smoke a waterpipe every day feel that they are addicted in much the same way as people who smoke cigarettes. The longer people smoke waterpipes occasionally, the more likely they are to start smoking daily or regularly.
- A one-hour waterpipe smoking session can produce secondhand smoke with as much carbon monoxide as that produced by 20 cigarettes.
- Venues that allow waterpipe smoking indoors frequently have very high levels of smoke pollution that can be worse than what occurs with cigarette smoking.

Please note: this information is for general use only. Please consult your health professional for further advice.

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