

Waterpipes (shisha)

Introduction

This fact sheet provides a brief overview of waterpipe smoking, including common misconceptions and health consequences associated with using waterpipes, and the public policy implications of waterpipe use. This fact sheet focuses primarily on waterpipe use and regulation in the United Kingdom (UK).

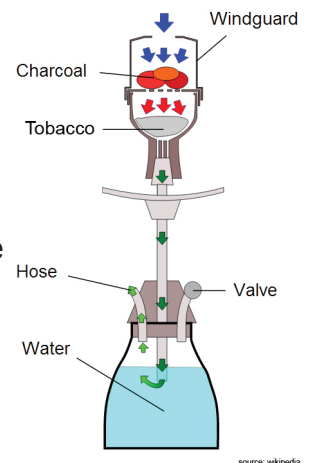
What are waterpipes?

Waterpipes, also known as *shisha*, *hookah*, *narghile*, or *hubble-bubble pipes* have long been used for smoking tobacco in the Middle East and parts of Africa and Asia, and are now increasingly used in Western countries.

Waterpipes can be used to smoke a number of substances. Whilst they are largely used to smoke tobacco, which may be flavoured with fruits or sugar syrup, herbal mixtures are also commonly used. Although the latter do not contain tobacco or nicotine, the negative health effects of smoking herbal shisha are similar to smoking tobacco shisha, as both involve burning charcoal and inhaling the smoke (see the 'Common Misconceptions' section for more information).

Waterpipes generally consist of a head, body, water bowl and a hose. A tobacco mixture is placed on top of the head and this is often covered with perforated aluminium foil. Burning charcoal is placed on top of the foil. On breathing in through the hose, a mixture of the coal and tobacco smoke is drawn down through the body of the apparatus and into the bowl of water. This causes a vacuum in the air space above the water, resulting in smoke passing through the water, producing bubbles (hence the name "hubble-bubble") and into the hose and finally the mouth of the user. The size of the waterpipe, number of hoses and other features may vary.

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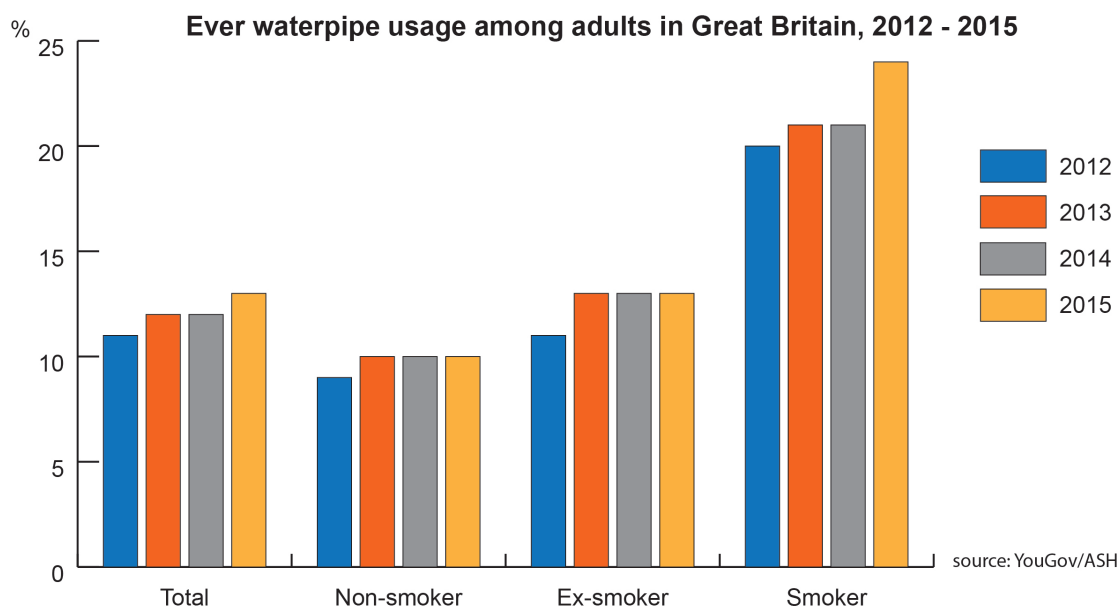
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Who uses waterpipes?

Waterpipe smoking is often a social activity and two or more people may share the same pipe. In some cultures, children may smoke with their parents. Although waterpipes have traditionally been used in Middle Eastern countries, a systematic review of 38 studies examining the global prevalence of waterpipe use found an increase in use, not only in Middle Eastern regions but also in Western countries.¹ A national cross-sectional survey of over 12,000 adults in Great

Britain in 2012/13 found that the prevalence of ever waterpipe use among adults was 12% and frequent use was 1%. Frequent waterpipe use was more common among adults of Asian (7%), Mixed (5%) and Black (4%) ethnicity than among White adults (0.5%).² Similar national cross-sectional surveys were conducted in 2014 and 2015, producing similar results.^{3,4}

The 2015 survey found that the prevalence of ever waterpipe use among adults was 13% and frequent use (defined as more than 3 to 4 times a month) was 1%.⁴ The survey also found that the percentage of smokers who had ever used waterpipes increased from 21% in 2014 to 24% in 2015.³



Waterpipe use and age

Waterpipe smoking appears to be more popular among younger people, with the cross-sectional study in Great Britain finding that younger adults were more likely to have ever used waterpipe and to frequently use waterpipe than older adults.² Similar results were also found in the YouGov surveys conducted in 2014 and 2015, with ever usage of waterpipes being more prevalent among younger adults.^{3,4}

A survey of 15 year olds in England - What about YOUth 2014 (WAY 2014) survey - found that on a national scale 15 year olds from a mixed, black or minority ethnic backgrounds were more likely to have ever used other tobacco products including shisha compared to White youngsters (22%, 18% and 14% respectively).⁵

Another study conducted among 1252 secondary school students aged 11 – 16 in Stoke-on-Trent found that there was a higher prevalence of lifetime waterpipe smoking (12%) than there was with drug use (6.5%), although prevalence was less than cigarette (22.2%) and alcohol use (49.2%). The results also indicated that shisha use was much more common among older teenagers, males and people of South Asian ethnicity.⁶

A further study conducted among 2399 secondary school students from years 8, 10, 12 and 13 in northwest London found that current waterpipe use (7.4%) was higher than current cigarette smoking (3.4%). Students were also more likely to have tried waterpipe smoking (24%) compared to cigarette smoking (15.8%). The study also found similarities in the reasons cited for both waterpipe and cigarette use and these included increase in age, personal, family and friends' use of tobacco.⁷

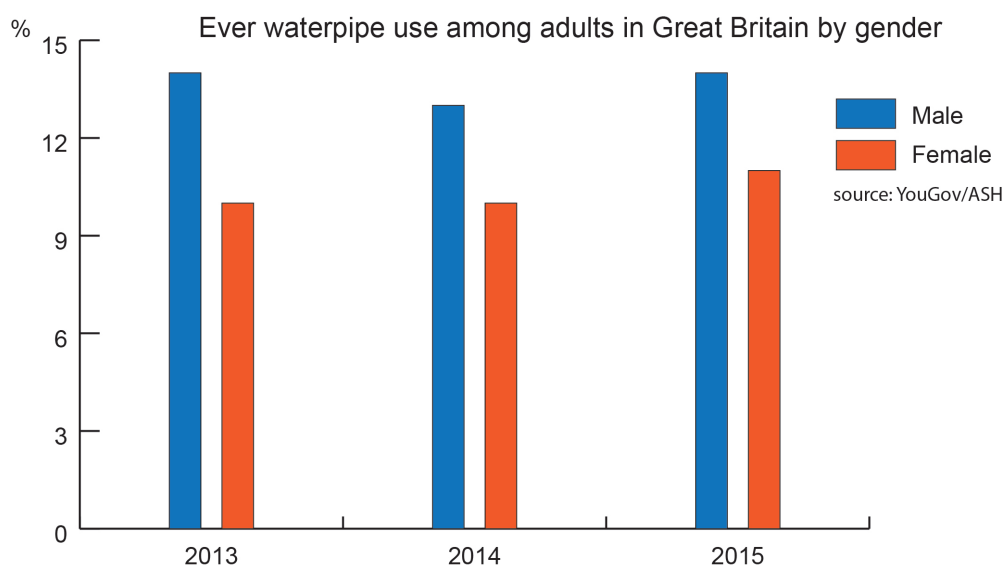
Worldwide, waterpipe use among youth is increasing. The Global Youth Tobacco Survey, a survey of more than half a million young people, aged between 13 and 15 years, found a net decrease in cigarette smoking prevalence between 1999 and 2008, but an increase in other forms of tobacco (attributed to waterpipe) in 33 of the 97 global sites surveyed.⁸

Waterpipe use and gender

The 2012/2013 cross-sectional survey of waterpipe use in Great Britain found that males were three times more likely than females to smoke waterpipe.² While waterpipe use is more common among males than females, the gender divide was smaller than that seen for cigarette smoking in many countries.¹

Similar results were found in the surveys conducted in 2014 and 2015, with a slight increase in female net ever waterpipe use in 2015 (from 10% to 11%).⁴

Among younger people the evidence of a gender divide is less clear. Statistics from the WAY 2014 survey found that 15-year-old girls were more likely than boys to have ever tried other tobacco products, including shisha, waterpipe etc. (17% and 14% respectively).⁵ However, the Smoking, Drinking and Drug Use 2014 survey found that among 15 year olds 12% of both boys and girls reported trying waterpipe tobacco.⁹



Common misconceptions

Waterpipe smoking compared to cigarette smoking

The most common belief among waterpipe users across all regions of the world, is that waterpipe smoking is less harmful and less addictive than cigarette smoking.^{10,11} Users often report the belief that the water, which the smoke passes through before it is inhaled, “filters out” the harmful substances in the smoke. Although waterpipe smoking has not yet been as extensively researched as cigarette smoking, preliminary research suggests that it is associated with many of the same risks as cigarette smoking and may incur some unique health risks.

A review of the literature found that waterpipe smoking consistently produces significant levels of noxious chemicals, including “tar”, nicotine, carbon monoxide (CO), nitric oxide and various carcinogens (cancer causing chemicals), in amounts comparable to cigarette smoking.¹⁰ A laboratory-based study compared exposure to waterpipe toxicants with cigarette smoking among 54 participants. Each participant completed two 45-minute sessions, one in which they smoked tobacco using a waterpipe and the other in which they smoked a single cigarette. Both waterpipe and cigarette smoking exposed participants to similar levels of nicotine. However, when smoking waterpipe, participants had expired-air CO and carboxyhaemoglobin levels four times that when smoking cigarettes and they inhaled 56 times more smoke.¹²

Relative safety of herbal vs tobacco shisha

Many users believe that herbal waterpipe products are less hazardous than tobacco waterpipe products. However, both tobacco and herbal waterpipe smoking involves burning charcoal and inhaling the smoke this produces. The charcoal is a major source of two extremely toxic chemicals in the smoke: CO and benzene. As a result, herbal and tobacco waterpipe smoking are similarly hazardous to health.¹⁰ A Canadian study found that herbal shisha also contains high amounts of toxins similar to those found in tobacco products, suggesting that the use of these products could potentially be harmful to health.¹³

Quitting waterpipe smoking

Almost all (78-98%) waterpipe users believe that they can quit at any time.¹⁰ Unlike cigarette smoking, where daily users smoke to alleviate cravings, waterpipes are predominantly smoked infrequently, and in social situations. It is possible, therefore, that these infrequent waterpipe users may not be tobacco dependent.¹⁴ However, as waterpipe tobacco smoking delivers nicotine, the addictive component of tobacco, at levels similar to cigarette smoking¹², regular smokers of waterpipe tobacco are at risk of nicotine dependence. More research is needed to assess the long-term impacts of occasional and frequent waterpipe use on nicotine dependence and the ease of quitting.

Harmful Effects of Waterpipe Smoking

Inhaling waterpipe tobacco smoke, either through directly smoking a waterpipe or via second-hand smoke, is strongly associated with serious negative health impacts. The second edition of the World Health Organisation (WHO) Group on Tobacco Product Regulation Advisory Note found that there are many toxic chemicals in waterpipe tobacco smoke which can cause various types of cancer and other short and long term health effects (see below).¹⁵

Short term health effects

After 45 minutes of tobacco or herbal waterpipe use, expired air CO, plasma nicotine and heart rate are substantially increased¹⁶ and these levels are equal to, or higher than exposure when smoking cigarettes.¹² There have also been reports of CO poisoning from waterpipe use, leading to non-specific neurological signs such as headaches, dizziness and nausea,^{17,18} a phenomenon which is largely unseen in the cigarette smoking literature.

Longer term health effects

Some of the studies examining the health effects of waterpipe are of low or very low quality, as the research is complicated by the fact that many waterpipe users are also cigarette smokers and that the pattern of use between cigarette and waterpipe smoking is very different. However, a systematic review of the literature on the health risks of waterpipe smoking found that waterpipe smoking more than doubled the risk of lung cancer, respiratory illness, low birth-weight and periodontal disease.¹⁹ Because of the low quality of the evidence, this review could not rule out associations between waterpipe smoking and bladder cancer, nasopharyngeal cancer, oesophageal cancer or infertility.¹⁸ A recent literature review on the harmful effects of waterpipe smoking also found that those who smoke shisha are significantly more likely to have disorders associated with metabolic syndrome (a combination of high blood pressure, diabetes and obesity).²⁰

Secondhand smoke from waterpipes

The smoke from waterpipes is a mixture of smoke exhaled by the smoker, plus smoke from the fuel used to heat the pipe. Secondhand smoke from waterpipe therefore poses a serious risk to the health of non-smokers. One study of machine-smoked waterpipes found that compared with cigarette smoking, waterpipe smoke contained five times the amount of ultrafine particles, four times the carcinogenic polyaromatic hydrocarbons and volatile aldehydes and 35 times the CO. These are all toxic or carcinogenic substances.²¹

A study in Virginia, in the United States of America (USA) measured the air quality in 17 waterpipe cafes, five cigarette smoking restaurants and six smokefree restaurants. Both smoking and non-smoking rooms in waterpipe cafes had poorer air quality than cigarette smoking and non-smoking rooms in restaurants and smokefree restaurants.²² This indicates that patrons and employees in non-smoking rooms in waterpipe cafes may be exposed to concentrations of air pollution above international standards.

The use of all forms of smoked tobacco including waterpipe use in enclosed public places in the UK has been prohibited since July 2007. In many other parts of the world, however, and unlike cigarette smoking, waterpipe smoking is not covered by smokefree legislation. This includes the USA, where waterpipe smoking is exempt from these laws in most cities.²³

Public policy implications

In the UK, waterpipe tobacco is subject to the same regulations as other tobacco products. These include regulations on taxation, advertising, point of sale displays and labelling, as well as smokefree laws. Although herbal shisha has similar negative health effects as tobacco shisha, it is not currently subject to the same regulations as tobacco in the UK, apart from smokefree legislation.

In the UK, enforcement of the smokefree regulations has presented some challenges. Cases of non-compliance with smokefree legislation among owners of waterpipe bars have been reported and as a result, additional guidance has been provided to support local council regulatory officers in continuing to implement the smokefree legislation.²⁴

Laws governing use of tobacco versus non-tobacco shisha

	Tobacco shisha	Non-Tobacco shisha
Smokefree law	Yes	Yes
Advertising (including point of sale)	Yes	No
Age of sale	Yes	No
Labelling (eg. health warnings)	Yes	No
Taxation	Yes	No

In countries where there is a tradition of using waterpipes, work to change cultural norms and attitudes will be required alongside any proscriptive laws and regulations. However, in countries where waterpipe usage is still a novelty, public health advocates should seize the opportunity to limit its spread through a combination of education and legal measures.

The WHO recommends that governments regulate waterpipe tobacco and waterpipes in accordance with the WHO FCTC.¹⁵

Further reading

ASH Scotland shisha brieflet and briefing '[Shisha and the law in Scotland](#)'

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