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Water Pipe Smoking Among the Young: The Rebirth of an Old Tradition

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Tobacco use, primarily cigarette smoking is the second most preventable cause of death and disability in the world.¹ In the United States (U.S.), it is the number one most preventable cause, being responsible for about 1 in 5 (or approximately 443,000) deaths each year.² An estimated 49,000 of these deaths are related to secondhand smoke exposure.³ Cigarette smoking costs this nation more than \$193 billion annually (ie, \$97 billion for lost productivity and \$96,000 in health care expenditures) with additional costs for secondhand smoke health problems at more than \$10 million.⁴ On average, male smokers shorten their lives by 13.2 years, and female smokers lose 14.5 years.⁵ In addition to the burden of cigarette smoking is the growing use of other tobacco products, such as chewing tobacco, cigars, moist and dry snuff, and water pipe smoking.⁶

WATER PIPE (HOOKAH) SMOKING

Water pipe smoking (WPS), also known as the hookah, shisha, narghile, argchile, and hubble bubble (depending on where you are in the world), is a 500-year-old form of tobacco use historically engaged in by older men in the Middle East, North Africa, and Asia. The water pipe (WP) is a symbol of social sharing and cultural identity in the Middle East.⁷ Since the early 1990s, there has been a significant increase in its use around the world⁸ and in the United States.^{9,10} Wolfram and colleagues¹¹ reported that more than 100 million people worldwide smoke hookahs daily.

THE WATER PIPE

The WP operates by water filtration and indirect heat (Fig. 1). It has 4 fundamental parts: (1) a head where a special tobacco is placed and heated (usually by charcoal or burning embers); (2) a bowl or smoke chamber, which is partially filled with water; (3) a pipe or body connecting the head to the bowl by a tube that carries the smoke downward into the water; and (4) a hose with a mouthpiece through which the smoke is drawn from the bowl. As the smoker inhales, the tobacco smoke is sucked down-ward into the bowl and then bubbles up through the water into the air of the smoke chamber, and then through the hose to the smoker. The water cools the smoke and filters out a very small amount of tars and particulates¹² and about 5% of the nicotine.¹³ In the Arab world, people see the hookah as representing their past and their traditions.

Social smoking is done with a single or double hose, and sometimes a triple or quadruple hose in parties or small get-togethers. When the smoker is finished, either the hose is placed back on the table signifying that it is available or it is handed from one user to the next. If on

the table, the hose must be folded back on itself so that the mouthpiece is not pointing at another recipient. Smoking the WP is a “ceremonial” activity governed by rules for each stage of the preparing, lighting, sharing, and smoking process.¹⁴ WP units come in a variety of materials (eg, glass, ceramic, metal), designs, and sizes. There are hundreds of Web sites to learn about WPS and its history and to purchase its elements for personal use (eg, <http://sacrednarghile.com/en/index.php>).

WATER PIPE SMOKING PREVALENCE

Global Tobacco Youth Survey data from nationally representative samples of students (13–15 years) from 7 countries in the Middle East were collected between 2001 and 2005. The results confirmed that boys are significantly more likely than girls to smoke cigarettes or to use the shisha (water pipe). Students had higher rates of tobacco use than adults in Bahrain, Oman, and the United Arab Emirates. For both boys and girls, WPS rates were higher than cigarette smoking rates in almost all of the countries.¹⁵ Akl and his colleagues¹⁶ reviewed 38 studies; only 4 were national surveys, the rest evaluated specific populations. The highest prevalence of current WPS was among adolescent high school students in the Arabic Gulf region (9%–16%), Estonia (21%), and Lebanon (25%). Current WPS, defined as used in the past 30 days, by university students was high in the Arabic Gulf region (6%), the United Kingdom (8%), the United States (10%), Syria (15%), Lebanon (28%), and Pakistan (33%). Current WPS for adults included those in Pakistan (6%), the Arabic Gulf region (4%–12%), Australia (11% in Arab-speaking adults), and Lebanon (15%). The World Health Organization’s (WHO) highest rates for adults in 2008 were in Jordan (61.7%) and Tunisia (51%), followed by the Syrian Arab Republic (42%).¹⁷

Major reasons for the growing popularity worldwide of the WP include migrations of people from regions where WPS is commonly used,¹⁸ the “new” molasses-flavored and fruit-flavored tobacco mixes (eg, maassel),⁸ public restaurants and cafes that host WPS, and the adoption of WPS as youths.^{19–21} In the Middle East, limited research has documented WPS because of its long standing as a social tradition,^{22,23} and the unsubstantiated belief that it is less harmful than cigarettes or other tobacco products.^{21,24} WHO and the American Lung Association study teams both indicated a need for more thorough investigations of the water pipe and its risks and health effects wherever it was being used.^{8,9} A country that is showing increased WPS is the United States.^{9,10}

Arab Americans

Although there are no national or even regional water pipe smoking databases in the United States, the American Lung Association⁹ has labeled it “...the first new tobacco trend of the 21st century”⁹ and has linked its use to the growing numbers of those with a Middle Eastern heritage. This population first came to the American auto industry in small working groups at the turn of the last century; the number of Middle Eastern immigrants has grown dramatically in the past 50 to 60 years because of wars, religious conflicts, and political struggles. Today, more than 4 million claim an Arab American heritage.²⁵ Most, around 62%, originated from the region of the Levant, which includes Syria, Lebanon, Palestine/Israel, Egypt, and Lebanon. The rest are from Jordan, Iraq, Libya, Morocco, and many other small Arab nations. Arab Americans live in all 50 states and Washington, DC; 94% reside in the metropolitan areas of major cities. According to the 2000 US Census, the city with the largest percentage of Arab Americans is Dearborn, Michigan, a southwestern suburb of Detroit, at nearly 30%. The Detroit metropolitan area is home to almost 500,000, the largest concentration of those with an Arab heritage outside the Middle East.²³

Rice and colleagues^{19–21} conducted several studies in the Arab American youth population. Over 8 years, tobacco use data were collected from 2454 teens (14–18 years). The findings

indicated that Arab American versus non-Arab American youth reported lower percentages of ever cigarette smoking (20% vs 39%), current cigarette smoking (7% vs 22%), and regular cigarette smoking (3% vs 15%). In contrast, Arab American versus non-Arab American youth reported significantly higher percentages of ever WPS (38% vs 21%) and current WPS (17% vs 11%). Seventy-seven percent of the students perceived WPS to be as harmful or more harmful than cigarette smoking.

Grade, race, and gender were significantly related to WP use. With regard to grade, students reported more experimental use of hookahs at higher grades (30% in the 9th grade vs 43% in the 12th grade), more social use of WPs in higher grades (9% in the 9th grade vs 21% in the 12th grade), and more addictive use of water pipes in higher grades (6% in the 9th grade vs 11% in the 12th grade). With regard to gender, boys (33%) reported higher experimental use than girls (20%), higher social use (13% vs 8%, respectively), and higher regular use (9% for boys and 3% for girls). Boys were 3 times more likely to engage in addictive use. Youth were more likely to be regular smokers if they had smoked the WP in the past 30 days (odds ratio [OR] = 1.6) and were more likely to be regular cigarette smokers if they also smoked WPs regularly (OR = 1.9). Age of first using a WP was predictive of regular WP use, but not of regular tobacco use.

The age of first smoking a whole cigarette was predictive of both regular WP and cigarette smoking. Contrary to expectations, these asymmetric results suggest that cigarette smoking rather than WP is a gateway behavior for Arab American youth. Logistic regression showed that youth were 11 times more likely to be currently smoking cigarettes if they currently smoked water pipes. Youth were also 11 times more likely to be current WP smokers if they currently smoked cigarettes. If one or more family members smoked WP in the home, youth were 6.3 times more likely to be current WP smokers. The effects of ethnicity were reduced as a result of the explanatory value of family smoking. The results of this study indicate that further research is necessary with youth to learn more about the potential for one form of tobacco use leading to another, given their close association and the relative health consequences of both. Other studies that have looked at adolescent WPS in the United States are those by Grekin and Ayna,²⁶ Primack and colleagues,²⁷ Smith-Simone and colleagues,²⁸ and Barnett and colleagues.²⁹ Studies of adult WP smokers include those by Jamil and colleagues.³⁰⁻³²

As the Arab and Arab American populations in this country have grown, so has the availability and use of WPs. Hookah bars or cafés have sprung up in urban and suburban areas and in cities and towns near large colleges and universities. Even a few of the states with strong smoke-free air laws have been unable to slow the growth of hookah bars and cafés. California, Illinois, New York, Texas, and Virginia currently have the largest number of these establishments; however, hookah bars and cafés have appeared in more than two-thirds of the states and there is growing concern about their health risk.³³ Based on US business listings and categorized Web listings, an estimated 200 to 300 of them currently operate in the United States, with more appearing every day.

HEALTH PROBLEMS RELATED TO WPS

Recently, there have been several reviews on the negative effects of WPS on health outcomes.^{10,34,35} In addition, findings from specific studies associate WPS with poor lung function,³⁶⁻³⁸ malignant lung disease,³⁹ cancers of the mouth,⁴⁰ coronary heart disease,⁴¹ perinatal risks,⁴² and various other health problems. Cigarette smoking by adolescents is known to cause a number of health problems, including asthma, frequent respiratory infections, and impaired lung function,⁴³ but little is known about the effects of WP use with or without cigarette smoking on the respiratory function and health of adolescents.

One cannot assume that the lung and health consequences of these 2 types of smoking are the same, as they are performed in different ways with different doses and with different tobacco types. In addition, they produce different volumes of smoke, particulates, and nicotine.^{44,45} One study⁴⁶ of hookah smokers found nicotine and cotinine increased up to 250% and 120%, respectively, after a typical 40-minute to 45-minute smoking session. WP use may increase exposure to carcinogens because smokers use a WP over a much longer period of time, often 40 to 45 minutes, rather than the 5 to 10 minutes it takes to smoke a cigarette. Because of the longer, more sustained period of inhalation and exposure, water pipe smokers may inhale as much smoke as consuming 100 or more cigarettes a single session.

WPS INTERVENTION

Although there have been several trials that have tested interventions for cigarette smoking, Grimshaw and Stanton⁴⁷ reviewed 15 of them, showing moderate positive effects for successful cessation. No such trials were found for WPS.⁴⁸ Rice and colleagues⁴⁹ tested the effects of a prevention/cessation Project No Tobacco Use on cigarette and WPS in 380 Arab American and 236 non-Arab American ninth graders. Tenth-grade non-Arab American students (given the intervention as ninth graders) were 23% less likely to experiment (OR = 1.31, 95% confidence interval [CI]: 1.05, 1.64) or to have smoked cigarettes in the past 30 days (OR = 1.43 times, 95% CI: 1.03, 2.01) compared with Arab American youth. Arab American students reported greater experimentation with WPS than cigarettes (38% vs 22%), and more current (16% vs 6%) and regular (7% vs 3%) use of water pipes than cigarettes, respectively. The intervention (designed to focus on cigarette smoking) had little effect on WPS. These findings provide support for a school-based intervention revised to focus on prevention as well as cessation and to be culturally consistent. They also call for further research and intervention tailoring to address WPS in growing Arab and non-Arab American adolescent populations.

SUMMARY

This article provides historical and current information on the growing threat of WPS around the world and in the United States. Not only is water pipe smoking prevalent in Middle Eastern culture, it has spread to all cultures. The evidence supports its greatest use among adolescents and young adults and a growing list of negative health problems are associated with its use. To date, no interventions have been designed and tested, but they are sorely needed. It continues to be the nurse's role to teach good health and no tobacco use to our clients, which means no WPS must be a part of every message.

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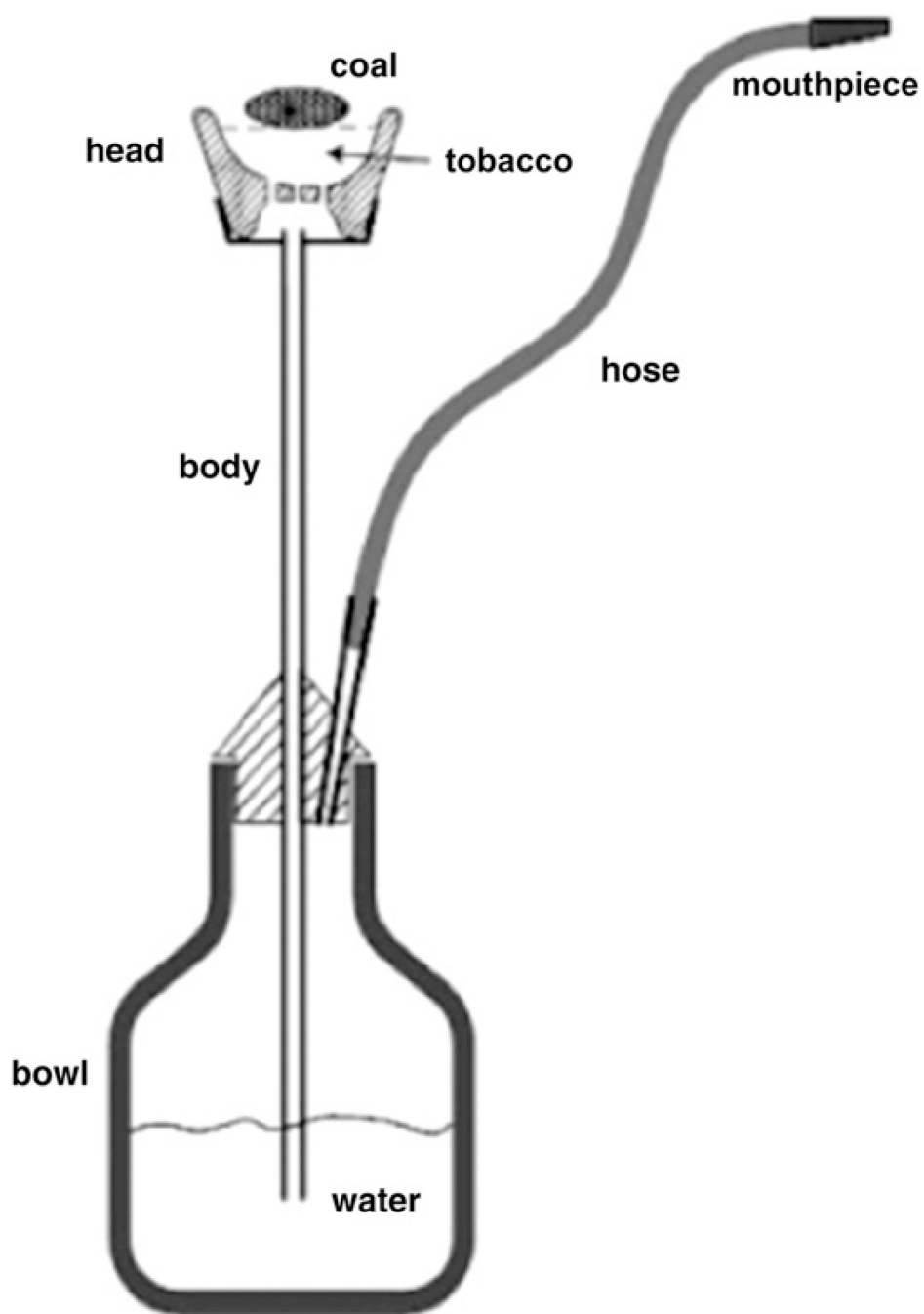


Fig. 1.
Diagram of a traditional water pipe.