

Physiological Effects of Water-Pipe Tobacco Smoking

Effects are similar to those of cigarette smoking.

The American Lung Association has identified water-pipe smoking (WPS) of tobacco as "an emerging deadly trend." Common for centuries in the Middle East and Southeast Asia, WPS recently has gained popularity in western nations, particularly among college students and young professionals. Two new studies add to our very limited knowledge about its physiological effects.

In a meta-analysis, researchers combined data from six studies of habitual water-pipe smokers, cigarette smokers, and nonsmokers. Compared with nonsmokers, water-pipe smokers exhibited significantly lower percent-predicted forced expiratory volume in 1 second (FEV₁; 4% lower) and nearly significantly lower percent-predicted forced vital capacity (FVC) and FEV₁/FVC (1.4% and 3.1% lower, respectively). Cigarette smokers had significantly lower percent-predicted FVC (by 2.5%) than water-pipe smokers; however, percent-predicted FEV₁ and FEV₁/FVC were similar between these two groups.

Israeli researchers studied 45 experienced water-pipe smokers (30 men) before and after 30-minute sessions of WPS. After sessions, carboxyhemoglobin levels rose significantly (from 1.5% to 9.5%); three people had potentially dangerous post-WPS carboxyhemoglobin levels (>20%). Significant increases were noted after WPS in blood pressure (from 120 to 132 mm Hg systolic; from 75 to 83 mm Hg diastolic), pulse (80 to 96 beats per minute), and respiratory rate (14 to 17 breaths per minute), and a significant decrease was observed in percent-predicted peak expiratory flow rate (83% to 75%).

Comment: Despite a common belief that water-pipe smoking is less harmful than cigarette smoking, early evidence suggests that the short- and long-term effects of WPS are similar to those of cigarette smoking and could contribute to development of chronic obstructive pulmonary disease.

— **Bruce Soloway, MD**

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