



Commentary

The waterpipe: An emerging global risk for cancer

Wasim Maziak^{a,b,*}^a Department of Epidemiology, Robert Stempel College of Public Health and Social Work, Florida International University, Miami, FL 33199, USA^b Syrian Center for Tobacco Studies, Miami, FL 33199, USA

ARTICLE INFO

Article history:

Received 31 August 2012

Received in revised form 29 October 2012

Accepted 31 October 2012

Available online 26 November 2012

Keywords:

Waterpipe

Hookah

Cancer

Risk

ABSTRACT

Tobacco smoking continues to be the leading preventable cause of morbidity and mortality worldwide. Each year more than 5 million smokers die prematurely because of their habit wreaking havoc on the welfare of families and communities worldwide. While cigarettes remain the main tobacco killer worldwide, for many youth tobacco use and addiction is maintained by means other than cigarettes. In particular, over the past decade, waterpipe smoking (a.k.a. hookah, shisha, narghile) has become increasingly popular among youth in the Middle East, and is rapidly spreading globally. Available evidence suggests that waterpipe smoking is associated with many of the known risks of tobacco smoking, particularly cancer. Despite these worrisome signs, policies and interventions to address this emerging public health problem have been lagging behind. In this short review I discuss briefly the evidence generated mostly in the past decade about the global spread of waterpipe smoking and its cancer risk potential.

© 2012 Published by Elsevier Ltd.

1. Introduction

Tobacco smoking continues to be the leading preventable cause of morbidity and mortality worldwide. Each year more than million smokers die prematurely because of their habit wreaking havoc on the welfare of families and communities worldwide. Most of the brunt of the tobacco epidemic is currently borne by developing countries, and this is likely to worsen unless an effective and comprehensive response is materialized [1]. While cigarettes remain the main tobacco killer worldwide, for many youth tobacco use and addiction is maintained by means other than cigarettes. In particular, over the past decade, waterpipe smoking (a.k.a. hookah, shisha, narghile) has become increasingly widespread among youth in the Middle East, and is rapidly spreading elsewhere [2]. Many factors are suggested as the main drivers behind the re-emergence of this ancient tobacco use method including; the introduction of manufacture sweetened-flavored waterpipe tobacco (a.k.a. Maassel), the harm-reduced perception of waterpipe smoking, and the communication revolution brought about by the internet [2].

The waterpipe, known in many cultures under different shapes and names (e.g., hookah, shisha, narghile), is a centuries-old tobacco use method that has traditionally been associated with

eastern societies. Evidence from around the world is accumulating to signify the emergence of waterpipe smoking as a global threat to public health [3–8]. In the waterpipe, charcoal-heated air passes through a perforated aluminum foil separating the charcoal from the flavored tobacco to become smoke that cools as it bubbles through the water on its way to the smoker (Fig. 1). This last feature; i.e. the passage of smoke through water, underlies much of the widespread misperception about waterpipe's "reduced" harm and addictiveness [9]. Available evidence however, suggests that waterpipe smoking is associated with smoking-related diseases [10]. Despite these worrisome signs of fast spread and potential health risks, policies and interventions to address this emerging public health problem have been lagging behind. In this short review I discuss briefly the evidence generated mostly in the past decade about the global spread of waterpipe smoking and its cancer risk potential.

2. The global epidemic of waterpipe smoking

Epidemiological trends of waterpipe smoking are very alarming, and what started in the 1990s as a local phenomenon among youth in the Middle East soon became a global trend [2]. In the Middle East, prevalence estimates of waterpipe smoking among youth have already surpassed those of cigarette for most of countries, and has been increasing considerably in the past decade or so [5]. For example, in a representative sample ($n = 1781$) of 7th graders (≈ 13 years) in Irbid-Jordan, the prevalence of waterpipe smoking was more than double that of cigarette for both boys (20% vs. 9%) and girls (7.5% vs. 2.3%) [11]. This same study showed 79%

* Correspondence address: Department of Epidemiology, Robert Stempel College of Public Health and Social Work, Florida International University, Miami, FL 33199, USA. Tel.: +1 305 348 4501.

E-mail address: wmaziak@fiu.edu.

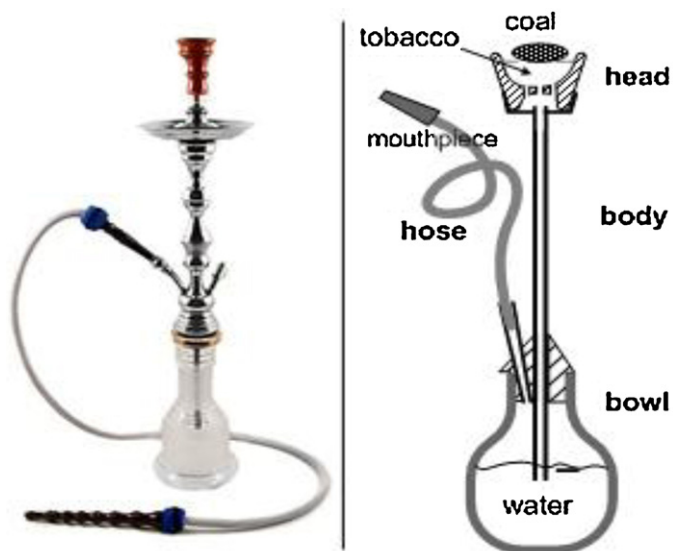


Fig. 1. Waterpipe picture (left) and schematic showing main parts (right).

increase in ever waterpipe smoking and 42% increase in current waterpipe smoking among students within 2 years of follow up. A multi-county study involving a representative sample of all 13–15 year school children in several Arab gulf countries (Bahrain, Oman, Qatar, UAE, Kuwait, Yemen) showed a prevalence of waterpipe smoking ranging from 9 to 15%, and mostly surpassing the prevalence of cigarette smoking among these populations [12]. Recent evidence from dispersed populations and societies around the world shows that the rest of the world is catching up on the waterpipe trend [13]. For example, among college students in the US, waterpipe smoking is steadily becoming the second most popular form of tobacco use. According to a recent survey involving more than 100,000 students in 152 colleges in the US, current waterpipe smoking was reported by 8.4% of students, second only to cigarettes (16.8%) [14]. The global spread of waterpipe smoking among youth is best revealed by the Global Youth Tobacco Survey (GYTS); the largest to date surveillance of tobacco use among youth (13–15 years) with 209 surveys conducted in 95 countries. Time trends from the GYTS (1999–2008) involving more than half million participants worldwide, show that while cigarette smoking is either stable or declining, other forms of tobacco are showing a rising trend, most notably waterpipe smoking [15]. In epidemiological terms, such trends covering vast geographical territories, diverse societies, and encompassing several age groups are indicative of an epidemic that has taken hold among youth rather than a passing fad. This trend has the potential only to exacerbate unless we do something about it.

3. Epidemiological evidence of waterpipe cancer risk

So far, solid epidemiological evidence about cancer risk associated with waterpipe smoking is scarce. What we have is converging evidence from several lines of inquiry about the cancer-inducing potential of waterpipe smoking. A recent systematic review of studies of health effects of waterpipe smoking shows for example that waterpipe smoking more than doubles the risk of lung cancer, but was not significantly associated with bladder cancer, nasopharyngeal cancer, esophageal cancer, or oral dysplasia [10]. At the same time the review highlights the methodological problems of the available literature on the long term health effects of waterpipe smoking. Specifically, most waterpipe-lung cancer studies concerned local types (e.g. Chinese) of waterpipe that are different from the waterpipe used

in most parts of the world nowadays, and suffered from inadequate attention to confounding such as exposure to secondhand smoke, or occupational exposures [10]. More recently, a recent-case control study of the association between waterpipe smoking and lung cancer in the Kashmir valley showed that waterpipe smoking is associated with a 6-fold increase in lung cancer risk compared to nonsmoking [16]. This study again, did not control for any other exposures (secondhand smoke, occupational exposures), or even socio-economic factors.

The relation between waterpipe smoking and oral cancers is even less studied. To date, only one study looked at waterpipe smoking and nasopharyngeal cancer, but the small sample size of that study precluded any meaningful conclusions about that cancer risk [17]. The lack of studies of waterpipe smoking and oral cancers lies in contrast with the strong potential of this tobacco use method to cause such cancers. This potential has been highlighted in two recent reports based on the (1) high levels of oral and oropharyngeal cancers in some countries of the Middle East compared to other parts of the world, (2) extended exposure to the carcinogenic smoke content (e.g. tar, PAH, aldehydes) associated with waterpipe smoking (average session time 1 hour), (3) chronic mechanical trauma and irritation from the wooden or plastic mouth piece, (4) chronic infection triggered by waterpipe sharing, (5) oral complications of waterpipe smoking such as bone loss and acute osteitis, and (6) oral epithelial cells reaction to exposure to waterpipe smoke indicative of early carcinogenic processes [18–20].

Most of the direct epidemiological evidence about waterpipe smoking and cancer risk lacks the methodological rigor needed to provide clear public health and policy guidance. On the other hand, the relative novelty of the waterpipe epidemic is another barrier for epidemiological studies looking at the long term health effects of waterpipe smoking akin of the case control and cohort studies of the 1950s that led the way for tobacco control efforts against cigarettes. However, awaiting such evidence can be very costly, as the history of the cigarette epidemic clearly demonstrates. In addition, already existing evidence draws a picture of a highly hazardous and widespread behavior that requires urgent attention by policy makers and tobacco control advocates. Below I review some of indirect evidence of waterpipe cancer risk based on studies of waterpipe smoke constituents and smokers' exposure to known smoking-related carcinogens, as well as some evidence about waterpipe-related genetic toxicity.

4. Waterpipe smoke constituents related to cancer risk

Several studies pioneered by one of our collaborators at the American University of Beirut (Alan Shihadeh, AUB), have demonstrated the presence of high levels of major tobacco-related carcinogens and toxicants in waterpipe smoke (Table 1) [21]. Most of these studies relied on analyzing machine-generated smoke (programed to imitate actual waterpipe smoking behaviors) that showed good correlation with human exposure for several key waterpipe smoking related toxicants [22,23]. One note of caution when interpreting the waterpipe/cigarettes comparative data of smoke constituents is that when comparing one "unit" of waterpipe and cigarette we need to bear in mind that a typical waterpipe smoking session involves exposure to much larger volumes of smoke due to larger puff volume (about 500 ml for waterpipe compared to 50 ml for cigarette) and longer session duration (about 1 h for waterpipe compared to 5–6 min for cigarette) [21–26]. Studies of smoke constituents have shown that waterpipe smoke contains known carcinogens such as polycyclic aromatic hydrocarbons (PAHs), and naphthylamines [22,24]. Specifically, a group at the German Federal Institute for Risk Assessment demonstrated recently that waterpipe smoke contains a variety of carcinogenic and toxic substances such as

Download English Version:

<https://daneshyari.com/en/article/10897472>

Download Persian Version:

<https://daneshyari.com/article/10897472>

[Daneshyari.com](https://daneshyari.com)