Smokeless Tobacco and Betel Quid Use in Southeast Asia

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KS is a 45 year old man visiting the International Family Medicine Clinic to establish care. He is a Karen refugee, originally from Burma, and arriving to the U.S. this month from a refugee camp in Thailand. During the social history, he denies tobacco use, drinking alcohol, and use of any other drugs; however he reports using "khaini" when probed about whether he uses any other substances or medications. According to his description, khaini is a mixture of unknown herbs that is placed between the lower lip and gums for about fifteen minutes at a time. He reports using khaini sporadically, but may use it as often as three to four times a day. He produces a packet of khaini during the interview, and is surprised when the interviewer tells him that khaini contains tobacco (as indicated on the packaging).

KS is like many refugees from Southeast Asia seeking asylum in the U.S. who were forced to move from their home country to a neighboring country for years if not decades. In the process, these refugees are exposed to multiple cultures and practices. While this paper briefly reviews smokeless tobacco and betel quid practices across Southeast Asia, discussion is focused when possible on home countries and interim refuge countries of recent Southeast Asian refugees to the U.S. such as Bhutan, Burma, Nepal and Thailand.

Khaini is among a large family of smokeless tobacco products and mixtures found abundantly in Southeast Asia. These products have many different names – such as mishri, naswar, gudhaku and zarda – and vary mostly in how the tobacco is prepared and the addition of other ingredients and spices. Calcium hydroxide "lime" is frequently added to smokeless tobacco products; lime increases the pH and thus the proportion of unprotonated nicotine, leading to increased nicotine-dosing capability[1]. Khaini consists of sundried, flaked tobacco mixed with lime; when used, a small amount of khaini is placed in the mandibular or labial groove and sucked for 10-15 minutes[2].

Betel quid preparations are close relatives to smokeless tobacco products that are commonly found in Southeast Asia, and are occasionally available in the U.S. Betel quid use is endemic to Southeast Asia and is believed to originate prehistorically in the South Pacific islands. Betel quid preparations contain a variable mixture of areca nut, betel leaf, lime, tobacco and other ingredients. Areca nut – often mistakenly called betel nut[3] – is the seed of an ornamental palm widely found in Southeast Asia and East Africa. For use in betel quid, areca nuts may be fresh, sliced, dried, or even fermented. Betel leaves are used as the wrapper for other ingredients in a betel quid; the betel leaf and occasionally added betel flowers are reported to add an aromatic flavor to betel quid[3]. The betel leaf is taken from the *Piper betle* vine, a relative of Kava (*Piper methysticum*). Kava root is widely used in the South Pacific islands for its anxiolytic and sedative qualities, and has recently spread to western markets for homeopathic use[4]. Tobacco spread to Southeast Asia from Europe in the 17th century, and has since been a common ingredient in betel quid products. While betel quid is commonly prepared by the user or by an individual vendor, manufacturers began in the late 1960's to offer powdered betel quid preparations with or without tobacco (gutka and pan masala, respectively) in convenient foil packets[3].

The prevalence of smokeless tobacco use in the WHO South-East Asia Region is estimated at 17%, representing over 250 million users[5]. Ninety-five percent of smokeless tobacco users live in India (82%) or Bangladesh (13%). Prevalence of smokeless tobacco usage is reported by country with comparison to smoking prevalence in Table 1. United States statistics are provided as a point of reference. In most countries shown, both cigarette and smokeless tobacco use is more common among men than women. In countries such as India and Thailand, cigarette smoking is considered socially unacceptable for women, and reported cigarette use among women is substantially decreased[6]. However, no such taboo exists for smokeless tobacco use among women, and reported smokeless tobacco use among women is higher in these countries than cigarette use[2]. Notably, smokeless tobacco use in almost every Southeast Asia country shown in Table 1 is almost ten times more prevalent among both men and women compared to their U.S. counterparts.

Table 1

Country	Smoking (%)		Smokeless Tobacco (%)	
	Male	Female	Male	Female
Bhutan[1,7]	1*		10	7
Burma	33	15	32	12
India	33	2	38	10
Nepal	36	15	31	5
Thailand	46	3	1	6
United States	23	18	4	0.3

Adapted from Table 1, World Health Organization. (2010)[6] with additional sources added.
*Aggregated male and female smoking prevalence reported for Bhutan.

Estimates of the prevalence of betel quid preparation use in Southeast Asia are not available for comparison to smokeless tobacco[3], but global use is estimated at 600 million users[8]. While user- and vendor-prepared betel quid sales are also difficult to track, sales of the commercial preparations gutka and pan masala are valued at several hundred million dollars[3]. One report on the betel quid habits in Thailand notes a decline in users from a once universal custom to now only few villagers under age 35 chewing betel quid[9].

Outside of recreational use, preparations of betel leaf and areca nut are used in traditional medicine as an antihelmintic, diuretic, laxative and nerve tonic[10]. Betel quid is also a central part of Southeast Asian culture, used in welcoming of guests and symbolically found in weddings, funerals, and reconciliation ceremonies[10]. Advertising of betel quid preparations is often targeted at the urban middle class and adolescents, displaying products alongside depictions of hospitality and equality[3].

High prevalence of smokeless tobacco use in Southeast Asia likely stems from many factors; however, lack of awareness of the hazards of smokeless tobacco is a major contributor, with awareness being very low in rural populations[2]. Poor awareness of harms is complicated by homeopathic use of tobacco products for common ailments such as toothache, headache, and stomach ache[2]. It is also made worse by smokeless tobacco manufacturers inappropriately portraying their products as safe alternatives to smoking.

Harsh International – the leading tobacco manufacturer in New Delhi, and maker of Chaini Khaini – dedicates a page of its website to "the hazards of smoking" pointing out the harmful chemicals, toxins, tar and smoke in "cigarette smoke," as well as the increased risk of lung disease, cancer and death attributed to smoking[11]. In another page of this website entitled "Why Chaini Khaini," the manufacturer claims that their filter-enclosed khaini packet "does not allow tobacco leaves to come in contact with the oral organs. Thus the inner skin of the mouth remains unaffected and unharmed." Lastly, in its main page the website claims "It is a medically proven fact that snus (Chaini Khaini) is much less harmful than smoking."

Contrary to claims of harmlessness, smokeless tobacco is harmful regardless of preparation. The World Health Organization (WHO) published an extensive review of the available literature on smokeless tobacco in 2004 (updated in 2007), including animal studies displaying the carcinogenicity of smokeless tobacco products and observational (both cohort and case-control) studies in populations around the world. These studies provide compelling evidence for the association between smokeless tobacco and head & neck cancers, esophageal cancer and precancerous oral lesions such as leukoplakia and erythroplakia[1].

Studies of the health effects of betel quid are complicated by the frequent addition of tobacco to betel quid preparations; however, a literature review published by WHO similar to that referenced for smokeless tobacco found sufficient evidence for the carcinogenicity of betel quid preparations without tobacco, with emphasis on the role of areca nut in cancers of the oral cavity[3]. This evaluation was based on human and animal studies. Beyond carcinogenicity, this review found evidence that betel quid chewing is associated with excess dental wear, brown to black staining of teeth, and potentially associated with submucous fibrosis. Interestingly, early studies of dental caries found low caries prevalence among betel quid chewers and some have postulated that the characteristic tooth stain acts as a physical barrier to dental caries[12], but other studies have found no difference in caries prevalence between chewers and non-chewers in Asian populations (summarized in WHO, 2007)[3].

Southeast Asia is a region with a preponderance of different smokeless tobacco and betel quid preparations, historically made by user or small-scale vendors, but increasingly manufactured by large companies. There is a much higher prevalence of smokeless tobacco and betel quid use in Southeast Asia compared to the U.S., compounded by poor knowledge among users of the health risks of these preparations. Providers should make special efforts to ask recent immigrants from Southeast Asia about use of smokeless tobacco and betel quid preparations, and to educate users of the harmful effects of their use. Since smokeless tobacco and betel quid preparations often have myriad different names, and users may not be aware that the product they use contains tobacco or areca nut, it is in a provider's best interest to use open-ended questions to probe about substance use among Southeast Asian populations.

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