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Areca nut and betel quid chewing among South Asian immigrants to Western countries and its implications for oral cancer screening

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Abstract

The South Asian community is the largest and one of the fastest growing minority groups in Canada, according to the 2006 census. These immigrants bring to Canada talents and skills that can promote Canada's economy and cultural diversity, but they also bring lifestyle habits that may lead to serious health issues. Chewing areca nut and betel quid (*paan*, with and without tobacco) is a known risk factor for oral cancer. This habit is common in the Indo-Canadian population, as evidenced by its sales in local Indian markets and restaurants. In this article, we present an overview of the sociocultural beliefs, knowledge and practices regarding betel quid/areca nut chewing, and discuss its implications for oral cancer screening among this immigrant population.

Keywords

betel quid/areca nut chewing; cancer screening; oral health; rural immigrants

Global usage of betel quid and areca nut

Globally, areca nut is among the most common addictions following tobacco, alcohol and caffeine. Its usage is very popular in India, Taiwan and parts of Southern China[1]. Its chronic use contributes significantly to the high incidence of oral cancer in these countries. With increasing immigration of Indians to the Western world, health professionals in the west should be aware of the habit and its consequences and so be prepared to face the challenges associated with the habit and resulting disease.

Studies from the US and UK have reported the persistence of areca nut chewing among immigrants from South Asia, resulting in increased rates of oral cancer in these new settlements[2–7]. Awareness of this practice should help health professionals to understand the relevance of oral cancer screening in this population.

Chewing habits and risk for oral cancer among South Asian immigrants

Areca nut is present in a number of chewing products, for example, *paan* (betel quid), *gutka* and paan masala (Table 1). These products contain lime, area nut and tobacco. Betel quid consists of a mixture of areca nut (with or without tobacco), slaked lime, catechu and several condiments according to taste, wrapped in betel leaf. While areca nut chewing may cause oral submucous fibrosis, its use along with tobacco can cause leukoplakia, which is also a premalignant lesion. Use of other condiments and ingredients in betel quid can cause lichenoid lesions[8], the premalignant potential of which is not known.

In the last few years small attractive and inexpensive sachets of betel quid substitutes have become widely available, are aggressively advertised and marketed and are consumed by the

very young and old alike. These products have higher genotoxic and carcinogenic potential compared with conventional quids[9]. Chewing of these products usually starts at an early age (at approximately 13 to 15 years) and, by adulthood, most users are addicted to the habit[10]. Older adults are not alarmed by the fact that young children are indulging in this habit as they consider it a part of their normal life[10]. However, this practice often leads to addiction and, once the habit is formed, it persists after immigration.

Betel quid substitutes contain both carcinogens and genotoxic agents which have role in multistage progression of oral cancer[11]. Smokeless tobacco contains nitrosonornicotine and 4-(methylnitrosamino)-1-(3-pyridyl)-1-butanone; areca nut contains arecoline and 3-(methylnitrosamino) propionitrile, while lime provides reactive oxygen radicals, each of which has a role in oral carcinogenesis[9].

Chewing betel quid without tobacco is an independent risk factor for developing oral cancer[12]. When betel quid with tobacco is consumed with alcohol and smoking the relative risk increases 11-fold[13]. The risk of such interactions may be underestimated in some South Asian communities. For example, Sikhism and Punjabi religious beliefs prohibit alcohol and tobacco use[14]; however, there are reports of alcohol[15] and tobacco consumption among them[16].

Betel quid chewing seriously affects oral and periodontal health with higher oral hygiene index scores, increased periodontal pocket depth and bleeding causing poor oral hygiene[17,18]. There is not enough evidence to suggest that poor hygiene alone in absence of habits and other risk factors has a role in etiology of oral cancer.

It is important, however, to remember that the South Asian community is not homogenous, for it has people from diverse cultures who have distinct beliefs and practices. The extent of areca nut chewing varies among different religious groups and among first and second generation immigrants. A study from Leicester, UK, reported that areca nut chewing was most common among first generation Asian immigrants with the highest prevalence among Jains (28%) and Muslims (23%), followed by Hindus (18%). In second generation Asian immigrants, this practice was highest among Muslims (17%), followed by Hindus (13%) and Jains (12%)[15].

It is interesting that the proportion of individuals chewing areca nut was reduced in generations subsequent to immigration. However it is a concern that the traditional habit of spitting out the contents of betel quid has also changed, and it is now being swallowed in Western countries. This change in habit may increase the risk of hypopharyngeal and esophageal cancer[19].

Sociocultural reasons for chewing areca nut

Four factors form the foundation for the popularity of chewing areca nut and betel quid chewing: social acceptability, religious beliefs, perceived health benefits and addiction.

Areca (betel) nut is regarded by many Indians as a fruit of divine origin. It is considered an auspicious ingredient in Hinduism and is used along with betel leaf in religious ceremonies and when honoring individuals. Among the followers of the Hindu religion, areca nut (*Supari*) is considered a vital ingredient in the food for God (*Bhagwan*). In the absence of idols and other sacred images, the fruit (whole nut without its husk) is used while offering prayers. It is believed that God blesses the fruit which is then distributed to the followers[20,21]. With the religious and health beliefs regarding areca nut being so prevalent in many Indian cultures, areca nut is very commonly offered at important social gatherings and weddings[21].

In addition to its religious connotations, areca nut is regarded by many people in South Asia as good for health, and it is used as a traditional ayurvedic medicine. It is used as an astringent,

mouth freshener after meals; a taste enhancer, purgative and intoxicant; and for indigestion, impotence and gynecological problems, parasitic intestinal infection and for prevention of pregnancy-related morning sickness[22].

Areca nut is often chewed in a betel quid and is used as a mildly euphoric stimulant because it contains relatively high levels of psychoactive alkaloids. Chewing also increases the capacity to work, causes a hot sensation in the body and heightens alertness. It is also used among the poor to avoid boredom and to suppress hunger[20,22,23]. A study in the United Kingdom (UK) reported that 42% of South Asian immigrants (from Bangladesh) chewed areca nut because it gave them a refreshing feeling and 35% because of its good taste; 29% used it as a snack, and others used it because it helped to relieve stress and was believed to strengthen the teeth and gums[24].

Lack of awareness about areca nut as a risk factor for oral cancer

South Asian communities are generally not aware that areca nut chewing can cause oral cancer and that ceasing its use would reduce the likelihood of developing oral cancer[15,25]. A study in the UK showed that many Bangladeshi adolescents living in East London were unaware of the association between areca nut chewing and oral cancer[24].

Reports also suggest that many shopkeepers selling these chewing products are not aware of any health risks and there are no restrictions placed on sale of these products to minors[2]. Those shopkeepers aware of health risks continue selling these products because it has become a multimillion dollar industry[23].

Oral precancerous lesions in South Asian immigrants

Globalization and increased movement of people across boundaries has resulted in changes in the patterns of oral diseases. Historically, oral submucous fibrosis (a premalignant condition) was endemic and limited to South Asia and some parts of China and Taiwan. But with increasing numbers of South Asian immigrants in Western countries this pattern is changing. There were no case reports of oral submucous fibrosis in South Asian immigrants until the mid-1980s. Interestingly, this time period coincides with increased immigration from South Asia to these countries. Most reports have come from the UK, although there are some case reports from Canada, Germany, France, Australia and South Africa (Table 2). There is also a Canadian report of a child of Indian origin who developed oral pre-cancer at the age of 4 years, possibly due to early exposure to areca nut, as its consumption is socially accepted in the South Asian community at any age[26]. Therefore, the practice of areca nut chewing and the presence of oral precancerous lesions are spreading from South Asia to the Western countries, with the potential of becoming a major public health issue.

Oral cancer rates among South Asians in many countries such as the UK[36,37] and USA[38] are higher than in the general population, and this may be attributable to the continuation of habits among South Asians after migration.

A descriptive study is in progress of oral cancer cases from the British Columbia (BC) Cancer Registry from 1980 to 2006, and our initial results suggest that age-adjusted incidence rates among South Asians are higher than the general population, at 5.63 (95% CI; 2.02–9.63) for South Asian men as compared with 4.32 (95% CI; 3.86–4.78) in the general male population and 4.41 (95% CI; 1.17–7.79) for South Asian women as compared with 2.73 (95% CI; 2.37–3.08) in the general female population (authors' pers. data; 1980–2006). This translates to relative risks of 1.33 and 1.66 for South Asian men and women, respectively, as compared with the BC general population.

Although South Asian immigrants maintain higher rates of oral cancer as compared with the general population, these rates are still below the oral cancer rates in their home countries (for men, the age-adjusted incidence rate is 12.8 and for women, it is 7.5)[39]. These comparisons need to be interpreted with caution, however, because there are no national cancer registries and the incidence varies among different regions/ states in India.

Our observation that oral cancer frequently occurs in the cheek and gums of South Asians (authors' pers. data; 2006) is also consistent with this risk behavior. This finding has been reported elsewhere[40,41].

Implications for oral cancer screening in South Asian Immigrant communities

Oral cancer is commonly found in India and this elevated risk is also brought to the west by its immigrants. A special report on Indian immigrants from census data suggests that the majority of immigrants from India to Canada come under family class immigration and not as business and independent skilled labor worker class[42]. Many of the Indian immigrants do not have proficiency in either of the Canadian official languages (English and French). Immigrants from India often choose to live on the outskirts of cities because the majority were engaged in agricultural and manufacturing industries. Data available for South Asian immigrants to BC showed that only 24% reported Vancouver as their intended destination, while the majority of Indian immigrants preferred to stay in the outskirts of Surrey and Abbotsford[42]. Few physicians are aware of the habits of betel quid chewing that may be practiced among immigrants living in rural and remote areas.

South Asian immigrants do not feel culturally safe and comfortable with visits to doctors and dentists of a different ethnic background and communication may be limited and sometimes ineffective[43]. Culturally insensitive behavior from the healthcare provider may offend immigrant patients, hampering healthcare delivery.

The concept of screening an otherwise healthy individual for asymptomatic disease is not a concept well understood by many South Asian immigrants[44]. In addition, those practicing potentially harmful oral habits may be less likely to participate in oral cancer screening initiatives; hence, special efforts may be required to reach these individuals. The screening examination provides an excellent opportunity for education about risk behaviors, including areca nut chewing, and interventions to help change such behaviors. Early signs of oral submucous fibrosis include blanching of oral mucosa, rigidity and fibrosis of tissues, restricted mouth opening and loss of cheek elasticity[45] should be examined for while screening patients in this population.

Future strategies

In some of the South Asian communities, areca nut and betel quid (paan) chewing is a routine daily practice and an important component of social life and cultural identity. South Asians are now one of the largest minority groups in Canada with approximately 1 262 900 people, according to census reports[46]. It is important to study risk behaviors, beliefs, knowledge levels and oral health practices in this population. Further research is required to understand in depth the beliefs of people as they relate to this habit; as well as to enquiring into potential barriers and facilitators for participation in oral cancer screening, and discovering what educational messages should be made for health promotion and education among this community. This information is critical to developing and implementing health education programs appropriately targeted to the needs of the South Asian community. Healthcare providers must also be aware of these risk behaviors and alert to the presence of oral precancerous lesions, such as oral submucous fibrosis, that are becoming important clinical findings in many Western countries.

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Table 1

Areca nut chewing: its contents and practice

Local or common name	Content	Habit as practiced
Mawa	A thin shaving of areca nut with tobacco and slaked line, sold in cellophane papers.	Before consumption, the cellophane pouches are rubbed to mix the contents, which are kept in the mouth in the vestibule and chewed slowly.
Paan	Also known as betel quid, has 4 main ingredients: tobacco, areca nuts and slaked line wrapped in betel leaf. May also contain cardamom, coconut, cloves and sugar.	All ingredients are chewed slowly. The contents with the juices are either swallowed or spat out of the mouth.
Gutkha	A powdered mixture of tobacco, areca nut and slaked lime with spices and flavoring agents.	The powder is placed in the mouth and slowly chewed. Contents are usually swallowed
Paan masala	A powdered mixture of areca nut and slaked lime with spices and flavoring agents.	The powder is placed in the mouth and slowly chewed. Contents are usually swallowed.
Khaini	Tobacco leaves mixed with lime.	The dried tobacco leaves are hand-mixed with lime and made into a bolus that is placed in the mouth, either in the vestibule or below the tongue.

Table 2

Review of cases with oral precancerous lesions among South Asian immigrants[3,4,6,7,15,25,26–35]

Country [reference number]	Year of study	Ethnic group of patients
Canada [26–28]	1985, 1987	Indian
United Kingdom [6, 7, 15, 25, 29–31]	2007, 2006, 1999, 2000, 1984, 2001, 2002	Bangladeshi, Indian, Pakistani
Germany [32]	2006	Indian
Australia [33]	1992	Indian
France [34]	1986	Indian
South Africa [35]	1984	Indian
USA [3,4]	2005, 2006	Bangladeshi