

Chapter 14

Smokeless Tobacco Use in the Western Pacific Region

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Description of the Region

The World Health Organization (WHO) Western Pacific Region extends from China and Mongolia in the north and west to New Zealand in the south and French Polynesia in the east. The region consists of 37 member states and areas, and today is home to over 1.6 billion people, nearly one-quarter of the world's population.¹

The Western Pacific Region is characterized by great diversity and disparity. Both the most populous country (China, with approximately 1.3 billion people) and the least populated territory (Pitcairn Islands: population, less than 50) belong to this region^{1,2} (see Table 14-1 for country land areas and populations). This region includes high-income countries as well as some of the world's lowest income countries. Over a thousand languages are spoken within the region, and most of the world's religions are represented. Ethnically, politically, economically, and socioculturally diverse, the Western Pacific Region simultaneously poses great challenges and offers substantive opportunities in tobacco control.

Table 14-1. Population and land area for selected Western Pacific Region countries

Country/Area*	Area (km ²)	Population (thousands)
Australia	7,422,667	22,268
Cambodia	181,256	14,138
China	9,580,964	1,341,335
Cook Islands†	236	11
Fiji	18,319	861
Macau	26	544
Malaysia	330,244	28,401
Micronesia, Federated States of	703	111
Mongolia	1,378,000	2,756
Northern Mariana Islands†	464	51
Palau†	459	21
Papua New Guinea	457,200	6,858
Philippines	299,875	93,261
Singapore	683	5,086
Solomon Islands	28,316	538
South Korea	99,554	48,184
Tuvalu†	26	11
Vanuatu	12,000	240
Vietnam	331,502	87,848
Total	20,142,494	1,652,523

*Unless otherwise indicated, data are from: *World Population Prospects: The 2010 Revision* (2).

†For data on Cook Islands, Northern Mariana Islands, Palau, and Tuvalu: *The World Factbook* (63).
Abbreviation: km = kilometer.

Within the Western Pacific Region, several subregional groupings exist, based primarily on political and trade alliances. These include the Association of South-East Asian Nations (ASEAN), the Pacific Islands Forum, and the Asia–Pacific Economic Cooperation (APEC) forum. Western Pacific Region countries also belong to associations with countries outside the region. For instance, American Samoa, the Commonwealth of the Northern Mariana Islands, Guam, Palau, the Republic of the Marshall Islands, and the Federated States of Micronesia are linked to the United States through the Compact of Free Association,³ whereas 14 countries within the Western Pacific, former colonies of the United Kingdom, are members of the British Commonwealth.⁴

Western Pacific countries are highly impacted by forces of economic globalization, and the high priority placed on international trade in the region presents both benefits and obstacles to effective tobacco control. For example, governments may be reluctant to impose trade restrictions on tobacco products, and this position, driven by economic rather than public health goals, could undermine tax policies and other measures to raise tobacco prices. For example, under the ASEAN Free Trade Agreement (AFTA), tobacco products made in ASEAN countries with at least 40% of the raw materials from the ASEAN subregion are subject to a tariff-reduction scheme mandated in the agreement, thus encouraging use of these products.⁵ Moreover, the tobacco industry and its allies are quick to seize opportunities to expand their markets under the banner of globalization. In 2001, when China joined the World Trade Organization, the entry of foreign cigarette brands into the Chinese market was one of the key points negotiated by the major world economies with China. China, Japan, and Vietnam continue to hold a majority stake in their domestic tobacco industries, and in Cambodia, Laos, Vietnam, and the Philippines, tobacco agriculture and manufacturing provide jobs and funnel investment dollars to the local economies, making governments reluctant to enact legislation and policies to reduce tobacco consumption.⁶

The Western Pacific Region is the first—and to date, the only—WHO Region to achieve a 100% ratification rate for the WHO Framework Convention on Tobacco Control (FCTC). Globalization is facilitating the diffusion of ideas and examples of successful national tobacco control strategies throughout the Western Pacific and is mobilizing support for implementation of the FCTC.⁷

Prevalence of Smokeless Tobacco Use

Smoking remains the predominant form of tobacco consumption in the Western Pacific Region, which is home to one-third of the world's smokers.⁸ It is estimated that two people in the region die every minute from a tobacco-related disease.⁹ The Western Pacific has the largest number of male smokers and one of the highest rates of male smoking in the world, and the uptake of tobacco use by women and young people is steadily increasing.⁸

Prevalence data on the use of smokeless tobacco (ST) in the region are scarce. Based on available data, ST use is many orders of magnitude less prevalent than smoking. However, anecdotal reports indicate that commercial ST products produced by national and multinational tobacco companies are becoming more visible and that advertising for these products is increasing. Regrettably, at present no regional mechanism systematically tracks this trend. In addition, the practice of adding tobacco to the traditional

areca nut/betel quid has begun in certain areas, especially in the Pacific Islands, Cambodia, Vietnam, and the Philippines; available data on use of this form of ST are reviewed separately, below.

Because surveys use different sampling, methods, questions, and definitions, caution should be exercised in comparing prevalence information from different surveys as statistical tests were not conducted on these comparisons. In particular, the surveys' definition of current use varies: Some surveys define it as any use within the past 30 days, while other surveys ask about different time periods; some surveys ask about daily use and use on some days, and still other surveys ask about "current" use without defining the term further. For the Western Pacific region, current use by youth tends to be defined as any use in the past 30 days. For adults, some surveys define current use as use every day, while other surveys include use every day and use on some days in their definition of current use.

Regional Data: Youth

The Global Youth Tobacco Survey (GYTS) provides an overview of the magnitude of non-cigarette tobacco use among youth; this includes use of bidis, hookahs (i.e., waterpipes), and ST products.¹⁰ In addition to cigarette smoking, almost all participating countries report other tobacco use by youth. Consumption of other tobacco products appears highest among the Pacific Island countries, where it equals or surpasses smoking prevalence.¹⁰ GYTS data specifically on ST use is only available for four countries: Cook Islands, Macau, Malaysia, and South Korea (Table 14-2).

Table 14-2. Percentage of adolescents aged 13–15 years who currently used smokeless tobacco in the Western Pacific Region, from the Global Youth Tobacco Surveys, 2008–2010

Country	Year	Total (%)	Boys (%)	Girls (%)
Cook Islands	2008	8.7	10.5	7.3
Macau	2010	2.1	2.2	2.1
Malaysia	2009	4.0	4.5	3.2
South Korea	2008	6.2	7.2	5.0

Source: Global Youth Tobacco Survey, 2008–2010 (10).

Regional Data: Adults

Regional data on overall ST use among adults in the Western Pacific Region are scarce, representing a major gap in tobacco surveillance. Prevalence estimates on ST use have been reported for 8 of the 37 countries and areas in the region (Table 14-3; Map 14-1). Higher prevalence rates of current ST use among men than women in Australia, China, the Federated States of Micronesia, Mongolia, and the Philippines contrast sharply with the situation in Cambodia, Malaysia, and Vietnam, where female consumption markedly surpasses male use rates.¹¹

Table 14-3. Percentage of adults who currently used smokeless tobacco in the Western Pacific Region, 2002–2010

Country	Year	Age group (years)	Total (%)	Men (%)	Women (%)
Australia*	2004	12+	0.6	0.8	0.4
Cambodia†	2010	15+	7.3	0.7	12.7
China‡	2009	15+	0.4	0.7	0.0
Malaysia†	2006	18+	0.6	0.5	3.1
Micronesia, Federated States of (subnational)§	2002	25–64	11.4	22.4	3.0
Mongolia§	2009	15–64	1.7	2.8	0.5
Philippines‡	2009	15+	1.9	2.7	1.2
Vietnam‡	2010	15+	1.3	0.3	2.3

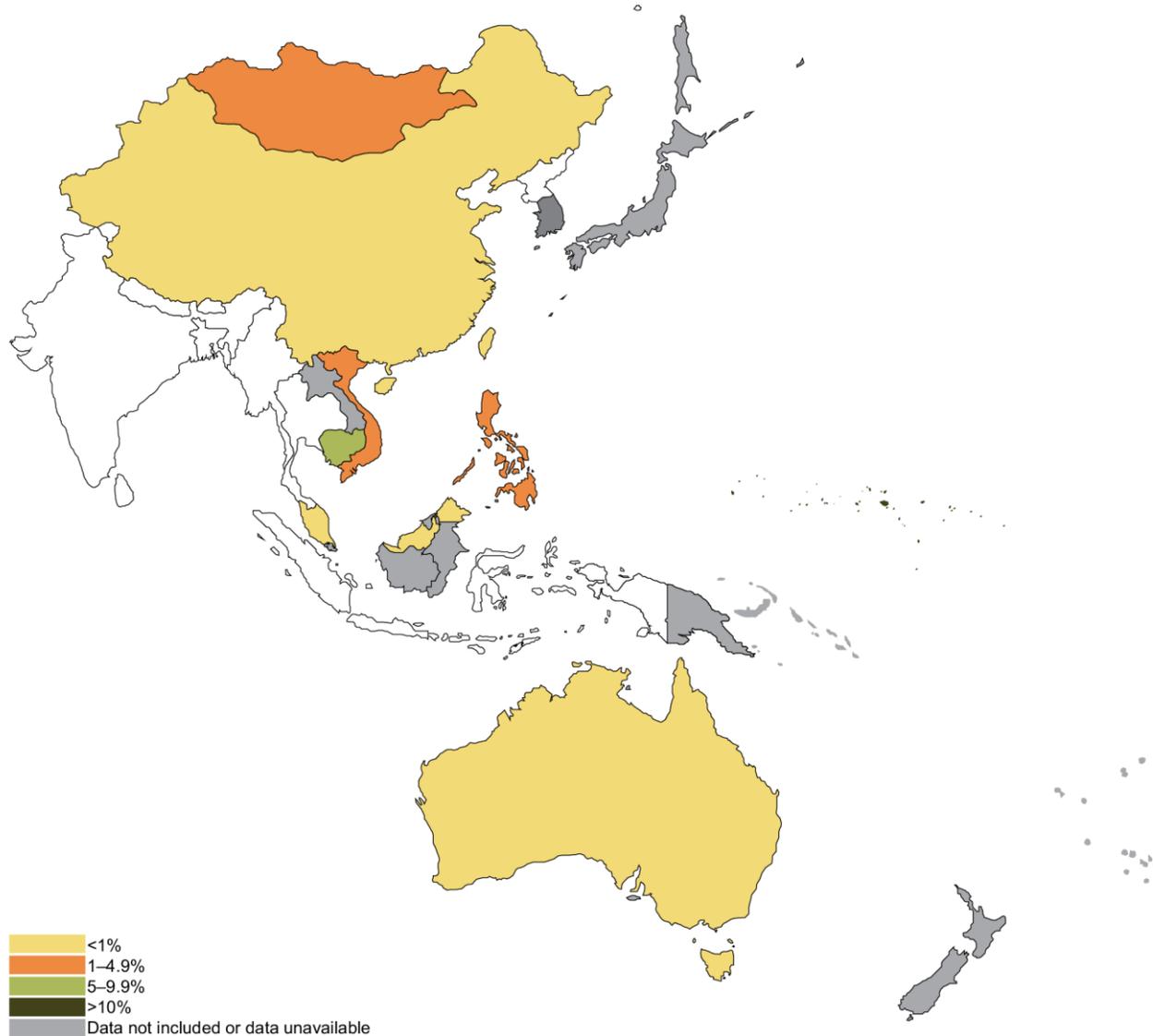
*National Drug Strategy Household Survey (NDSHS) (64).

†Individual country surveys from: *WHO Report on the Global Tobacco Epidemic, 2011* (11).

‡Global Adult Tobacco Survey (65).

§WHO STEPS from: *WHO Report on the Global Tobacco Epidemic, 2011* (11).

Map 14-1. Prevalence of smokeless tobacco use among adults in the World Health Organization's Western Pacific Region



Sources: National Drug Strategy Household Survey (64); Individual country surveys from: *WHO Report on the Global Tobacco Epidemic, 2011* (11); Global Adult Tobacco Survey (65); WHO STEPS from: *WHO Report on the Global Tobacco Epidemic, 2011* (11).

Chewing Tobacco With Areca Nut/Betel Quid

The literature on ST use in the Western Pacific focuses primarily on chewing tobacco mixed with areca nut/betel quid. Historically, the use of areca nut/betel quid is well documented across South-East Asia and the Pacific, with evidence of areca nut use occurring during previous centuries in Guam, the Northern Mariana Islands, the Solomon Islands, and Cambodia.^{12–14} However, use of areca nut/betel quid does not involve tobacco use in all cultures. For instance, almost 15% of men over the age of 18 in Taiwan¹⁵ and 64.5%–82.7% of adults in Hunan province, China¹⁶ chew areca nut/betel quid, but tobacco is not added to the quid. Likewise, users in island countries within Melanesia (Fiji, Papua New Guinea, Solomon Islands, Vanuatu) are unlikely to add tobacco to their chew.¹⁷

Where areca nut/betel quid is consumed with tobacco, national and subnational published studies indicate that prevalence and patterns of consumption vary both across and within countries. For instance, among Asian countries, older women are much more likely to chew tobacco with betel quid. In contrast, in the Micronesian islands, the use of areca nut/betel quid with tobacco is observed even among the very young, and males have higher consumption rates than females.¹⁷

Cambodia, Malaysia, and Vietnam

A national survey conducted in 2009 in Cambodia (n = 13,988) revealed current tobacco use prevalence rates of 49.0% among men and 20.5% among women, with men predominantly smoking cigarettes and women predominantly chewing tobacco as a component of betel quid. The likelihood of women using chewing tobacco increased markedly with age, lower income, rural residence, and less education. It is estimated that 43.4% of all older women (>48 years) and almost half of all rural women (48.0%) chewed tobacco at the time of the survey.¹⁸ The higher consumption among older women seen in Cambodia parallels that seen in reports from Malaysia^{19,20} and Vietnam.²¹ In Malaysia, older women in indigenous groups use betel quid with tobacco at a particularly high rate. The most common reasons women gave for starting to use tobacco were “the influence of older relatives (31.9%), the need to alleviate morning sickness during pregnancy (17.0%), and the wish to experiment (13.9%)”.¹⁸ Rural women were more likely than urban women to believe that tobacco use would alleviate morning sickness (17.8% versus 7.5%, respectively).¹⁸

Palau

Ysaol and colleagues surveyed 1,110 Palauans in 1996 and reported that 55% of those aged 5–14 years and 86% of those aged 35–44 years chewed areca nut/betel quid. Eighty percent of users cut up cigarettes and added the tobacco to the betel quid, and 24% added other tobacco.²² More recently, the Palau Youth Tobacco Surveys from 2001, 2005, and 2009 documented markedly elevated rates of chewing areca nut/betel quid with tobacco, although the prevalence appears to decrease over time. In 2009, 54% of high school youth reported current consumption of betel quid with tobacco, compared to 61% in 2005 and 68% in 2001. Among elementary school students, 37% reported current use of betel quid with tobacco, compared to 43% in 2005 and 54% in 2001. Approximately 1 in 10 of these elementary school students started using before the age of 9 years²³ (Roman Oseked, Palau Department of Health, personal communication, 2011).

Federated States of Micronesia

In Pohnpei, one of four states in the Federated States of Micronesia (FSM), a 2002 survey using the WHO STEPwise Approach to Surveillance (STEPS)²⁴ found that approximately 29.9% of adults reported chewing areca nut/betel quid at the time of the survey, with a significantly higher rate among men (43.5%±5.9) than among women (16.0%±3.0).²⁴ Overall, the highest proportions of areca nut/betel quid chewers were in the youngest age group, 25–34 years (67% of men, and 28% of women), with these proportions declining thereafter with increasing age. Over three-quarters of the survey participants who reported current daily use of chewing areca nut/betel quid added tobacco to the betel quid, and the percentages were similar across age groups and sexes.

The 2007 GYTS for Micronesia, the first national survey on youth tobacco use in the country, revealed that a greater percentage of males than females had ever tried smoking and currently smoked. (Table 14-4). Youth in the FSM were more likely to use other tobacco products than to smoke, and close to half of youth (52.6% of males and 43.5% of females) had ever used tobacco with betel quid.

Table 14-4. Youth tobacco consumption, Federated States of Micronesia, 2007

	Ever smoked cigarettes, even one or two puffs % (CI)	Ever smokers who began smoking before age 10 % (CI)	Current cigarette smokers % (CI)	Currently use other tobacco products % (CI)	Ever chewed areca nut % (CI)	Ever used tobacco with areca nut % (CI)
Boys	56.2 (49.7–62.6)	26.3 (21.8–31.3)	36.9 (29.9–44.5)	41.8 (34.6–49.3)	67.0 (60.4–73.7)	52.6 (46.0–59.1)
Girls	34.7 (29.9–39.7)	20.5 (14.9–27.5)	19.8 (15.9–24.5)	32.1 (27.3–37.4)	55.6 (49.9–61.3)	43.5 (40.1–47.0)
Total	45.6 (41.4–49.8)	24.3 (21.0–28.0)	28.3 (23.9–33.2)	37.0 (32.2–42.1)	61.4 (56.4–66.4)	47.6 (44.0–51.2)

Note: CI = confidence interval. Confidence interval is 95%.

Source: Global Youth Tobacco Survey (2007), as provided by Maryann Eperiam, Federated States of Micronesia Substance Abuse and Mental Health Program.

Guam

The prevalence of areca nut/betel quid consumption with tobacco is relatively low among youth in Guam, although there are indications that the practice may be increasing. In 2008, Guam's Department of Mental Health and Substance Abuse commissioned a telephone-based survey that employed randomized digit dialing and found that 6% of youth overall reported chewing betel quid, and 24% of ethnic Micronesian youth reported chewing betel quid regularly. Forty-four percent of young betel quid chewers mixed tobacco with their chew. Among adults, 17% were current users of betel quid, and three in five of these chewed it with tobacco.²⁵

Commonwealth of the Northern Mariana Islands

A 2005 survey conducted on a convenience sample of 309 high school students on the island of Saipan in the Commonwealth of the Northern Mariana Islands (CNMI) revealed that 63.4% chewed areca nut/betel quid regularly, but no information was available regarding the addition of tobacco to the areca nut. Among these students, 24.9% were also smokers.²⁶ Twenty-four percent of adults participating in

the 2009 Behavioral Risk Factor Surveillance System (BRFSS) survey reported chewing areca nut/betel quid, and 68% of these reported adding tobacco to their chew.²⁷

Prevalence of Using Other Types of Smokeless Tobacco

It is likely that other types of ST are used in the region, but data on prevalence are not readily available. Guam's 2008 randomized telephone survey revealed that 4% of youth respondents²⁵ and 5% of adult respondents²⁸ reported using other forms of tobacco such as snuff, dip, or chewing tobacco. The 2009 BRFSS survey in CNMI revealed a 14.5% prevalence of chewing tobacco and/or snuff use among adults.²⁷ Among CNMI high school students, 17.5% either chewed tobacco or used snuff.²⁶

In Japan, the Swedish company Swedish Match initiated consumer testing for a brand of tobacco gum called "Firebreak" in 2003, and in 2006 the product was launched in Sweden²⁹; however, specific data on the prevalence of use of this product could not be found. In Kiribati, young people are using a novel form of ST, mixing tobacco from cigarettes with immature green coconuts (Kireata Ruteru, personal communication, 2011).

Types of Smokeless Tobacco Products and Patterns of Use

Chewing areca nut/betel quid with tobacco (Figure 14-1) is the form of ST use in the Western Pacific for which the most data are available. These data show significant geographic variation, both within and among countries.

Figure 14-1. Areca nut being sold in markets in the Solomon Islands



Source: Photos courtesy of James Rarick, World Health Organization Western Pacific Regional Office, 2011.

Areca nut is chewed by itself or in combination with the leaf or fruit of a pepper plant (*Piper betle*) and lime powder, the mixture being popularly known as "betel quid." The commonly used phrase "betel nut" originated from the association of chewing areca nut with the *P. betle* leaf. In the Western Pacific, fresh nuts are consumed in both the fully ripe and unripe stages.¹⁷ In Taiwan and Palau, unripe nuts are used in the betel quid. In Guam, changnga (white) areca nuts are preferred when immature and soft, whereas the ugam (red) variety is used when the fruit is at the fully mature and hard stage.^{30,31}

The fine white lime powder (calcium oxide or quicklime) used in betel quid chewing is usually what remains after burning coral rock, sea coral, or shells.³¹ This lime powder must be kept in sealed containers to stay dry. As an alternative, water may be added to produce slaked lime (calcium hydroxide) for use in the quid. The type of lime and the specific techniques used to reduce the source material vary by region. Builders' lime that is commercially produced may also be used.³²

The areca nut, lime, and other ingredients may be wrapped in a fresh *P. betle* leaf, or the ingredients may be placed in the mouth separately. Tobacco (either loose tobacco or as a portion from a cigarette) and other flavorings (spices such as cardamom and even garlic) may be added to the betel quid to enhance the flavor and heighten the physiologic effects.¹⁷ In some Micronesian islands, the quid is dipped in vodka before being consumed (Kerio Walliby, FSM Department of Health, personal communication, 2011). Unwrapped quid is preferred in Papua New Guinea and the Solomon Islands, whereas wrapped quids are more frequently encountered in Cambodia, Palau, and FSM. Quid preferences in Guam appear to be linked to ethnicity: Chamorros (the indigenous people of Guam) are more likely to chew the mature nut with *P. betle* leaf, but without lime or tobacco, and to swallow the nut/quid, whereas other Micronesians are more likely to chew fresh nuts with *P. betle* leaf, lime, and tobacco and to spit out the nut/quid.³³ Consumption of areca nut/betel quid with or without tobacco is often accompanied by smoking and alcohol use.²⁴

The extensive literature on the cultural importance of areca nut/betel quid chewing in Asia–Pacific societies documents the long history of areca nut/betel quid consumption. Areca nut is believed to have medicinal uses—as an effective antiparasitic agent, a digestive aid, and an analgesic, among others.^{31,34} Use is often culturally or socially ritualized, and usually reserved for older people and high-ranking members of the community. Interviews with key informants conducted by the Secretariat for the Pacific Community (SPC) in 2005 in several Pacific island countries highlighted the rising prevalence of areca nut/betel quid consumption among younger people and the increasing practice of adding tobacco to the quid.¹⁷ Focus groups conducted among Chamorro and other Micronesian youth in Guam indicated that young people may initiate use in the mistaken belief that chewing tobacco with areca nut/betel quid is part of traditional Micronesian culture (Caleb Otto, Palau Department of Public Health, personal communication, 2011).

The growing popularity of chewing areca nut/betel quid with tobacco has spurred the emergence of local sales of areca nut and prepackaged betel quid as a cottage industry in several Asia–Pacific countries. For example, in Palau, it is possible to purchase premade quids from local vendors, and the ingredients for a quid are increasingly becoming available at convenience stores and neighborhood shops throughout Micronesia (Caleb Otto, personal communication, 2011). Because betel quid is largely sold through these local channels, average pricing information is not readily available.

Sales of areca nut have become a principal income generator, especially for people outside or on the fringes of the formal economy in countries such as Papua New Guinea and FSM. The 1996 Mapping Agricultural System in Papua New Guinea estimated that 1,227,234 people received income from local trade in areca nut in Papua New Guinea; the total income from areca nut was US\$7,094,993, or 9.5% of the total income from agricultural products.³⁵ Domestic areca nut sales in FSM increased from approximately 18,000 lbs. sold in 1999 to about 500,000 lbs. sold in 2004.³⁶

Sales and distribution of areca nut through exports also constitute a growing revenue source for governments. For example, in 2007, FSM earned over US\$2.2 million from exporting areca nut to Guam, CNMI, and the Marshall Islands.³⁶ In addition, migration of Pacific Islanders to the United States, Australia, and New Zealand is creating demand for areca nut/betel quid in these countries, and consequently opening up new markets for exports. Internet sales are likewise increasing.³⁷ The extent of non-commercial export of areca nut/betel quid through the postal system or personal luggage is unknown as of this writing, although residents in Micronesia readily acknowledge that this occurs frequently.

Toxicity and Nicotine Profiles

Nine closely related alkaloids are responsible for the stimulant effect of areca nut. Alkaloid levels are highest in the unripe fruit, which may be why some cultures prefer the unripe nuts for consumption: They give a better “buzz.”³⁰ The International Agency for Research in Cancer (IARC) considers areca nut a Group 1 carcinogen.³¹ Arecoline, a major areca nut alkaloid, is considered the most important carcinogen in the areca nut. Areca nut extract (ANE) is highly cytotoxic and genotoxic to cultured human oral mucosal epithelial cells and fibroblasts (connective tissue cells). Researchers from Taiwan have published studies on the toxicologic profile of betel quid without tobacco.³⁸ However, toxicity information on the combination of areca nut/betel quid with tobacco as used in the Western Pacific represents a data gap for the region.

Health Problems Associated With Product Use

Data on health effects of chewing tobacco with areca nut/betel quid in the Western Pacific Region are minimal. Most studies concentrate on the effect of areca nut/betel quid, and health effects from the tobacco added to the quid are largely inferential in nature.

Oral Health Issues

In a 2005 study in Saipan, CNMI, high school students who reported regular areca nut/betel quid and tobacco use (both smoking and chewing) underwent oral examinations. Oral leukoplakia was found in 12.9% of the students; 8.8% had oral submucous fibrosis (OSF), and one-third of these already showed a restriction in mouth opening.²⁶ Ikeda and colleagues reported that the prevalence of leukoplakia in selected Cambodian populations was 2.2% among men and 0.6% among women.³⁹ Several studies have reported a particularly high prevalence of oral leukoplakia in Papua New Guinea (4.6%–17%), with the rate in the Papua New Guinea lowlands being among the highest in the world.^{40–45} Although leukoplakia can result from multiple causes, regular use of areca nut/betel quid with tobacco in the study populations likely contributed to its prevalence in these groups.

Head and Neck Cancer

In 2004, the IARC linked the use of betel quid without tobacco to oral cancer, and use of betel quid with tobacco to head and neck cancers (see chapter 4).³¹

Cancer surveillance and cancer research are not well developed in many of the Pacific islands, but where studies exist, they demonstrate that head and neck malignancies occur at elevated rates in countries and areas where areca nut/betel quid consumption and tobacco and alcohol use are prevalent. The Guam Cancer Registry for 2003–2007 ranked oral cancer as 10th in cancer incidence for Guam, with ethnic Micronesians having the highest incidence rate⁴⁶ compared to indigenous Chamorros, Caucasians, or people of Filipino or other Asian descent. Micronesians living in Guam also have the highest prevalence of using chewing tobacco with areca nut/betel quid.⁴⁷ In Papua New Guinea in 1964, Atkinson and colleagues reported a disproportionately high incidence of oral cancer (17.8%), with a distinct geographic variation that closely matched areas of areca nut use.⁴² A case-control study of cancer in Papua New Guinea in 2007 identified betel quid as an independent risk factor for the development of oral cancer.⁴⁸ Given the available data, it is challenging to separate out the effects of areca nut and/or betel quid alone, as well as concurrent smoking, from chewing tobacco on cancer incidence. This is an area for further research.

Reproductive Outcomes

In a 2008 study among native people in Taiwan, Yang and colleagues found that betel quid chewing during pregnancy was associated with lower birth weight and reduced birth length.⁴⁹ Ironically, one of the main reasons pregnant women chew areca nut/betel quid is to prevent morning sickness: 80% of the women thought that chewing areca nut/betel quid would not have any effect on the fetus.⁵⁰ Similarly, in Cambodia, almost one in five (17%) rural women started chewing tobacco as a component of betel quid to relieve morning sickness.¹⁸ These findings highlight the critical need for educational outreach to avert the adverse reproductive outcomes of areca nut/betel quid and tobacco consumption.

Other Health Effects

The cardiovascular and pulmonary effects of areca nut/betel quid consumption and the cardiovascular effects of ST use are recognized in the global literature, but the regional data are minimal. Likewise, the association with diabetes⁵¹ has not been studied extensively in the Western Pacific. The potential for facilitating the spread of communicable diseases, particularly tuberculosis, through the indiscriminate spitting of excess saliva, has been raised as an adverse health effect, but definitive data are lacking.

Marketing and Production Practices of Industry

At present, sales and marketing of areca nut/betel quid occur through small cottage vendors (Figure 14-2). However, in Guam, a community-based participatory research project on tobacco points of sale revealed that over 56% of manufactured tobacco retail outlets advertised tobacco products less than a foot from displays of candy and other items popular with children and youth⁵² (Figure 14-3). These components can be purchased and used to prepare custom homemade ST products. Since areca nut and betel quid have been used historically for medicinal purposes, using these substances is seen as a cultural practice by some, limiting the need for extensive marketing outside of local channels. Furthermore, the sale and distribution of areca nut also contribute to government revenue sources, as described above, and therefore exports of these ST products, to meet the demands of migrants, have grown.

Figure 14-2. Pre-wrapped betel quids (areca nut, lime, tobacco, and betel leaf) on sale in a public market



Source: Photo courtesy of James Rarick, World Health Organization Western Pacific Regional Office, 2011.

Figure 14-3. Wrapped fresh betel quids sold alongside cigarette lighters and candy in a Guam store



Source: Photo courtesy of the Community Research for Action Team–Guam (CREATE–GUAM) project at the University of Guam Cancer Research Center, 2011.

In Taiwan, areca growing and the sale of betel quid are rapidly growing businesses and appear to parallel the expansion of the cigarette market. Although international tobacco companies have not begun marketing the product, Taiwanese betel quid producers have set up neon-lit roadside kiosks around the country, where scantily clad young women, known as “Betel Quid Barbies,” sell betel quid and cigarettes to motorists.¹⁵ Online and through other popular media, the “Betel Quid Barbie” has generated global interest as a sex symbol. This marketing strategy resembles cigarette promotions that associate the product with sexually suggestive messages and models.

Current Policy and Interventions

Existing measures to control ST use in the Western Pacific involve both supply- and demand-reduction strategies. Compared to policies and interventions to reduce smoking in this region, actions to control ST use in the Western Pacific are rudimentary.

Supply-Side Interventions

In 1986, the government of the Australian state of South Australia became the first government in the world to ban ST; the ban became national in 1991.⁵³ New Zealand has also banned smokeless tobacco.⁵⁴ Taiwan prohibits the manufacture of all types of ST products. Hong Kong, Japan, Singapore, and Taiwan also ban importation of ST products, but these bans have no impact on the consumption of areca nut/betel quid with tobacco because the tobacco used is often taken from cigarettes. In March 2010, the Marshall Islands became the first Pacific island country to ban importation, distribution, and sale of areca nut/betel quid, with violations punishable by a fine of up to US\$100 and 30 days in jail.⁵⁵

Unfortunately, the existing policy interventions are weak and lack consistency and comprehensiveness. For example, Australia’s ban on all ST products contains a clause that allows personal users to seek a permit to import chewing tobacco and oral snuff in quantities less than 1.5 kilograms if the importer is over age 18 and can show that the tobacco products are only for personal use.⁵⁶ The ban on importation of areca nut in the Marshall Islands applies only to commercially imported nuts; individuals are permitted to bring in indefinite quantities of areca nuts for personal consumption, although lawmakers are considering closing this loophole in the law.⁵⁷

Demand-Side Interventions

Because cultivation, sale, and distribution of areca nut/betel quid with tobacco most often occur as part of the informal economy, regulation through taxation (other than taxing cigarettes) is challenging. In 2008, the rate of taxation on cigarettes was relatively high—for example, the tax on a pack of cigarettes accounted for an average of US\$1.46 of the pack’s total cost of US\$3.42 in this region.⁵⁸ As of 2012, demand-side interventions involve regulating consumption in public places, banning advertising and promotion, and enlarging cessation programs to include measures that address the use of areca nut/betel quid with tobacco. In FSM, CNMI, and Guam, chewing areca nut/betel quid with or without tobacco is prohibited in certain public places, such as hospitals. Both the University of Guam and Guam Community College are 100% tobacco-free campuses, and neither permits chewing tobacco within campus grounds.⁵⁹ Guam Community College also bans betel nut from its campus.⁶⁰ Hong Kong, Singapore, and Taiwan prohibit advertising and promotion of ST products.

In many countries, health systems are not optimally set up to take measures to prevent areca nut/betel quid and tobacco use, to screen and diagnose health consequences, or to assist chewers to quit. For instance, in the U.S.-affiliated Micronesian islands, where health care depends on external aid from the United States, health care guidelines and clinical practice standards are often patterned after U.S. mainland templates, and tobacco control is focused predominantly on smoking. This has led Pacific island stakeholders to note that tobacco control in Micronesia is not “Pacific’ly correct,” in that it fails to consider the sociocultural and political context of the region as it relates to other forms of tobacco use.⁶¹ Even in Western Pacific countries that have ratified the WHO FCTC, tobacco control remains skewed toward interventions that address smoking. The tobacco industry in Western Pacific countries has reacted to declining smoking rates by increasing its market share for ST products within the region. To complement gains made in smoking prevalence reduction, proactive ST interventions targeted to the various forms of ST use in the region are urgently needed.

In part, policy inconsistencies may stem from ambivalence regarding areca nut/betel quid use in contrast to tobacco use. This ambivalence arises partly from the long-held popular notion that chewing areca nut/betel quid is symbolic of cultural identity, and partly from a general lack of awareness of the negative effects of areca nut/betel quid chewing. However, the scientific evidence has irrefutably established the harmfulness of areca nut and betel quid without tobacco; the addition of tobacco magnifies the adverse health impacts. Thus, policy interventions to counter ST use in the Western Pacific should also address areca nut/betel quid use. This will require broad, sustained outreach to educate populations about the harmfulness of areca nut/betel quid use, and intensive social marketing to dissociate areca nut/betel quid consumption from notions of cultural belonging. It will also require reconsidering the promotion of areca nut as a cash crop, which will likely provoke similar arguments relating to trade and profit over health that the tobacco control community encountered during the inception and development of the WHO FCTC.

Summary and Conclusions

This overview highlights ST use as an emerging issue within the Western Pacific Region and pinpoints key gaps in information and knowledge that contribute to the lack of action to control the problem. Existing data are scarce and fail to provide an accurate and comprehensive picture of the magnitude of ST use and its attendant health, economic, and social consequences. Of the few countries that have ST data, prevalence rates among men vary from 0.3% in Vietnam to 22.4% in Micronesia, and among women, from 0% in China to 12.7% in Cambodia. Without an effective surveillance system, there is no reasonable way to gauge changes in prevalence over time within countries and across the region, and to measure the effectiveness of policy and program interventions.

Although areca nut is known to contain carcinogenic compounds, detailed toxicologic data are incomplete, with most of the studies conducted on areca nut and betel quid without tobacco. The inadequacy of quantitative information on prevalence, epidemiology, and impact is compounded by the insufficiency of qualitative data on the sociocultural aspects of chewing tobacco with areca nut/betel quid that are needed to develop population-based behavioral strategies. Addressing the multiple data gaps should be the first step toward developing an effective and coordinated response to controlling ST use in the Western Pacific.

Some countries, including Australia and New Zealand, have instituted bans on ST, and others, such as Taiwan, have specifically banned manufacturing and importation of ST products. Still others—Japan, Hong Kong, and Singapore—have banned the importation of ST products. However, these measures have no effect on the consumption of areca nut/betel quid with tobacco, because the tobacco used is often taken from cigarettes and other sources. Since areca nut/betel quid can have a cultural meaning and perceived medicinal benefits, education efforts may be necessary to supplement policy efforts and increase awareness of the harmful effects of these products.

As implementation of the WHO FCTC proceeds within the Western Pacific and smoking reductions accelerate, the urgency to address ST will grow.⁹ Already the tobacco industry is redirecting its strategies to circumvent tobacco tax increases and smoke-free public laws by increasing its market share for smokeless products within the region. Interventions to address the unique forms of ST use in the Western Pacific are needed proactively to preserve and complement gains made in reducing smoking consumption.

The WHO Western Pacific Regional Office, in partnership with the region's countries and areas, initiated a process of assessment and dialogue that resulted in the *Review of Areca (Betel) Nut and Tobacco Use in the Pacific*,¹⁷ which defined a comprehensive platform for action to address the trend toward increasing use of tobacco with areca nut/betel quid in the region. For four domains—social determinants, risk factors, immediate conditions, and end-stage disease, the platform called for actions in six areas: policies and legislation, education and advocacy, governance and local reinforcement, clinical services, surveillance and research, and partnerships and alliances.

The platform calls for a balanced, comprehensive mix of legislation and policies that incorporate both supply- and demand-reduction strategies, and steps governments can take to curb ST use and deal with its negative effects. It recommends the following:

- *Supply-side interventions*: restrictions on sales and importation of betel nut and ST products; prohibition of sales to minors; anti-smuggling policies; re-assessment of agricultural policies regarding promotion of betel nut; and
- *Demand-side interventions*: establishment of tobacco-free public places (schools, hospitals, etc.); inclusion of ST use within cessation approaches; extensive screening and monitoring for oral cancer and funding for cessation services.

The platform also recommends investments in surveillance and knowledge-management capacity building while fully exploring practical approaches, such as integrating questions on chewing tobacco with betel nut and other forms of ST use into the Global Tobacco Surveillance System and other existing surveillance mechanisms. Furthermore, this platform calls for health systems interventions to prevent ST use and include areca nut/betel quid use in tobacco cessation programs. It also calls for screening and diagnosis of health consequences to be incorporated into oral health, non-communicable disease control, and other related health programs. The *Review* also addresses public awareness, education, communication, and advocacy strategies, and working through alliances and partnerships. The Platform for Action has been built into the WHO Western Pacific Plan to operationalize the WHO FCTC,⁶² which was adopted unanimously at the 61st Regional Committee Meeting in Malaysia in October 2010. These actions will go a long way toward addressing the gaps and challenges identified in this chapter.

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