REPORT
ON
ORAL TOBACCO USE AND ITS IMPLICATIONS IN SOUTH-EAST ASIA

WHO SEARO 2004
Acknowledgement

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Executive Summary

Oral use of smokeless tobacco is widely prevalent in the South East Asia Region; the different forms include chewing, sucking and applying tobacco preparations to the teeth and gums. Smokeless tobacco products are often made at home but can also be purchased. Smokeless tobacco use in South Asia raises various concerns. It is commonly used and increasingly so, especially as new forms of smokeless tobacco have been emerging over the last few decades, enticing new consumers. Increasing use has been reported not only among men, but also among such vulnerable groups as children, teenagers, women of reproductive age and by immigrants of South Asian origin wherever they have settled. In India, per capita smokeless tobacco consumption has increased among the poor between 1961 and 2000 in both rural and urban areas. Lately; a European company has begun marketing one of its smokeless tobacco products in India.

In Southeast Asia over 250 million people use Smokeless tobacco products; about 17% of total population in Southeast Asia uses oral tobacco; of which 95% belong to India (82%) and Bangladesh (13%) The global youth tobacco survey revealed high (10-20%) prevalence of smokeless tobacco use among young on students (13-15 year)in Southeast Asia Among disadvantaged youth group high (45%-71%) prevalence of tobacco use was reported in Southeast Asia .

About 35–40% of tobacco consumption in India is in smokeless forms, mostly of the species *Nicotiana rustica*, while most smoking tobacco is *N. tabacum*. Samples of *N. rustica* have been found to contain higher concentrations of tobacco-specific nitrosamines than *N. tabacum*.

Many of the risks to health and life caused by tobacco consumption develop over a long period, and take decades to become fully evident. But tobacco use also inflict immediate harm on users and their families, damage is wreaked little by little each day. Scarce family resources are spent on tobacco products instead of on food, or other essential needs. Even a small diversion of resources of poor families who live at or below the edge of poverty can have a significant impact on their health and nutrition. This has been shown in many studies from Southeast Asia. Disadvantaged adolescents use tobacco at the cost of their meals. They spent four times on gutka purchase as compared to their protein (eggs).

Tobacco spit creates environmental pollution. Red splotches on the pavement everywhere in Southeast Asian Countries as are evidences of the copious spitting that is so deeply culturally ingrained in Southeast Asia. It is always nostalgic to see these stains in public places. One of the responsible factors for the discord between travelers and South east Asians (Indians) is the spitting habits.

Smokeless tobacco use in South East Asia may be considered as a potent contributor to mortality. The evidence from three cohort studies in India indicates that the age-adjusted relative risk of mortality for users of smokeless tobacco, is elevated compared to that of non-tobacco users.
The major health consequences associated with smokeless tobacco use in Southeast Asia include cancers of several sites (e.g. the upper respiratory and digestive tracts), and poor reproductive outcomes. There are some research results on the impact of smokeless tobacco on blood pressure and cardiac disease. In addition, use of areca nut, often chewed with tobacco, can predispose to diabetes mellitus and aggravate asthma.

In India, the number of newly diagnosed tobacco-related cancers has been estimated at approximately 250,000 out of a total of 700,000–900,000 new cancers diagnosed each year. Tobacco-related cancers account for about one-third of all cancers in Bangladesh, India and Sri Lanka. Significant dose–response trends were observed for frequency of chewing per day in many studies, and for duration of habit in some of them. Retention of the quid overnight, showed a 36-fold increased risk. In a case series study from Bangladesh, the site of origin of the majority of the lesions corresponded with the site maximally exposed to betel quid, usually in the buccal mucosa. A case series study from Myanmar indicated a clear association of oral cancer with betel-quid.

Adverse reproductive outcomes from smokeless tobacco use during pregnancy have been well documented. Many studies, including that of WHO too in SEA Region study clearly pointed out towards significantly higher percentage of lower gestation period and lower birth weight and increased male fetus wastage among smokeless tobacco users.

WHO predicts that 30 million people will die of tuberculosis and 300 million will be infected by 2008. Tuberculosis is transmitted by air in coughing, sneezing, talking, or spitting, with spitting practices there is always increased chance of spread of communicable disease. Use of oral tobacco enhances the frequency of public spitting and thus increases the chances of communicable disease. There is need to initiate such case controlled studies for oral tobacco use, Spitting and spread of communicable disease. Spitting in public is one of the important public health hazards. Oral tobacco use enhances the frequency of public spitting as everyone is to spit after taking oral tobacco. It increases the chance of airborne communicable diseases in developing countries. Spread of TB is one of them. Non-spatters have all rights to protect themselves from the hazard of public spitting. Singapore is one of the best example where communicable and non communicable disease has been reduced after this law is enforced.

Many tobacco products are advertised; of them Gutka is main. The GYTS study revealed that 8 out of 10 students were exposed to gutka advertisements in all sorts of media. Some of the member countries has put forward tobacco control legislation and have ratified FCTC, still some more countries need to do the same in the region. Issues of enforcement will have to be tackled next, and this will require the strong voice of prominent and knowledgeable citizens, including health professionals.

In Southeast Asia, especially there is evidence of demonstrable feasibility and efficacy of anti-tobacco education for the community in high tobacco-chewing areas through controlled intervention studies. WHO has taken initiative for Community cessation Intervention and Clinical Cessation Intervention which has shown that it is feasible, cost effective and
sustainable. More cessation clinics should be established in the region to help over 250 million smokeless tobacco users to quit.

There is widespread belief that smokeless tobacco use is less harmful than smoking. There needs to have an end of this belief. This may be achieved by sustainable public education system with sufficient scientific proofs and simple logics. ‘Smokeless tobacco use’ is not given a priority during planning and management of comprehensive tobacco control. In developing countries policy makers need to be appraised that smokeless tobacco use is equally implacable for society, environment and health of individual and community.

Due to lack of information many thousands pregnant women continue with smokeless tobacco use during pregnancy. In group discussion with community people it was revealed that smoking is supposed to be dangerous for pregnancy so both females and male smokers switch over to smokeless tobacco during the pregnancy. There is a paucity of educational materials on smokeless tobacco. Keeping in mind the high quality of tobacco advertising that commands the attention of the public, skilled commercial artists should be motivated to work with health professionals and health authorities in preparing such materials which must be attractive, with simple language and unequivocal meaning, incorporating messages about all forms of smokeless tobacco and smoking. Anti-tobacco education must be imparted through schools, hospital outreach programmes, existing government health programmes such as maternal and child health programmes and routine home visits, using suitable materials.

Quality control, both in respect of product information, proper warning is needed. Government should initiate a sustainable system which looks into these issues. Many tobacco (processed) products does not carry proper information in SEA countries. There is dire need of establishment of proper testing laboratory in the region.
Chapter 1

Oral tobacco products

The term ‘smokeless tobacco’ is used to describe tobacco that is consumed in un-burnt form. Oral use of smokeless tobacco has existed for thousands of years in South America and has gained popularity in other areas as well. Smokeless tobacco can be used orally or nasally. In the nasal use, a small quantity of very fine tobacco powder mixed with aromatic substances called dry snuff, is inhaled nasally. This form of smokeless tobacco use although still practised, is not very common in South East Asia Region.

Smokeless tobacco is used orally in two ways: preparations are either placed in various parts of the mouth and sucked (dipping) or they are chewed. Smokeless tobacco products are made from dark or burley tobacco leaves, which are brown with golden highlights. These leaves are aged from one to three years to prepare chewing tobacco and for longer periods to produce snuff.

Oral use of smokeless tobacco is widely prevalent in the South East Asia Region; the different forms include chewing, sucking and applying tobacco preparations to the teeth and gums. Smokeless tobacco products are often made at home but can also be purchased. Recently, a variety of smokeless tobacco products have been produced industrially on a large scale, commercially marketed and are available even in small plastic and aluminium foil packets. Tobacco used for these purposes is prepared by harvesting the tobacco leaves when they turn yellow and brownish spots start appearing, leaving the leaves in the field for uniform drying, tying them into bundles moistened with water or molasses and storing them for fermentation for a couple of weeks. The bundles are then separated and dried again, and the leaves are cut into various sizes. Smokeless tobacco contains several carcinogenic compounds.

Tobacco is chewed in multiple forms in Southeast Asia, betel quid, leaf alone, leaf with lime and tobacco and areca nut preparation and tobacco water. Generally sun- or air cured smokeless tobacco can be used by itself in unprocessed, processed or manufactured form.

With globalization, the moist Swedish snus is being marketed in large cities in India under the brand name ‘Click’, as a more convenient tobacco product to use than cigarettes. Many shops and billboards carry attractive advertisements for this product.

Chewing Tobacco

Betel Quid Tobacco

Betel quid with tobacco: Betel quid chewing, commonly known as betel quid-quid chewing, is often erroneously referred to as ‘betel quid-nut chewing’. This habit is of great antiquity, and literary sources indicate that it has existed for over 2000 years. Historical evidence from stone inscription exists from the year 473 AD. Some scholars believe that pan chewing was introduced from the South Sea Islands, Java and Sumatra, through maritime trading contacts.
In Hindu (the predominant religion in India) culture, *pan* chewing is described as one of the eight *bhogas* (enjoyments) of life.

Betel quid consists of four main ingredients - betel quid leaf (*Piper betel*), areca nut (*Areca catechu*), slaked like [Ca(OH2)] and catechu (*Acacia catechu*). Condiments and sweetening agents may be added as per regional practices and individual preferences. Some time after its introduction, tobacco became an important constituent of betel quid, and currently most habitual betel quid chewers include tobacco. Betel quid chewing induces euphoria, increases salivation, and is said to possess anti-helminthic properties.

**Betel Quid Tobacco**: Tobacco is the most important ingredient of betel for regular users in Bangladesh, India, Myanmar and Nepal. Various tobacco preparations are used in betel quid.

**Tobacco Leaf**: In India, Kerala, raw tobacco is included in betel. It is marketed in bundles containing several strands, each about 115 cm long and 5 cm thick. A regular user consumes one 15-cm piece of the strand per day. In Bangladesh and Myanmar a large number of betel quid chewer in rural and urban area and low income group people use tobacco leaf.
Figure 2 Plain tobacco leaves used in betel quid, commonly in Myanmar; Photograph

Myanmar

**Tobacco Preparations: Leaf** In India, Karnataka), *kaddipudi* (‘powdered sticks’) this is the cheapest form of tobacco, made by crushing the stalks and petioles of the tobacco plant into a fine powder. It is used either as the powder or in a processed form, as bricks and blocks made with *jaggery* (sugar molasses) and water.

**Hogesoppu** Tobacco Leaf used frequently use by women in Karnataka, India either or with betel. One fourth of betel chewers in Bangladesh and most of rural and low income group betel chewers in Myanmar uses tobacco leaf in tobacco quid.

**Gundi** is a mixture of cured tobacco, coriander seeds and other spices. Each constituent is fried separately, powdered coarsely and mixed and the product is scented with a resinous oil. *Gundi* is known as *kadapan* in Orissa and Bengal; it is also used in Gujarat.

**Zarda**

*Zarda* is prepared by cutting tobacco leaves into small pieces and boiling them in water with slaked lime and spices until the water evaporates. It is then dried, and colouring and flavouring agents are added. *Zarda* may be chewed by itself, with areca nut or in betel quid quid. It is available in small packets or tins.

In India it is used in two forms pilapatti and kalipatti. Pilapatti is supposed to be milder in form whereas kalipatti is supposed to be harder. Pilapatti look yellow in colour and granules are fine whereas kalipatti look black and granules are loose.

Many brands are available some of them are Baba, Bharat, Gopal, Baba 120,Baba 600,Betel quid Parag, Madhuban, Ratna (India) Jehangir Surabhi 56,Nurani Bawa,Guru Zafrani Patti 66,Ratna Patti Zarda,1 No. Shanti Puri Zarda,Mala Moti Zarda,Gurudev, Nurani Red Leaf,Samrat Babor Red Leaf,Alams Sahjadi Sukhas Zarda, Akiz (44),Ezma Sobha,Noorani Shahjadi,Baba Pack Patti,Viza patta 11 No, Emperor Shahzehan,14 Akimpuri (Bangladesh) No 45 zarda, Euro Star, Halchal No 92, London,81 Zarda (Myanmar).

It is often used by men and women, of middle and upper socio-economic groups as an ingredient in betel quid in India, Nepal, Myanmar and Bangladesh. Price of different range has wide range of variation in price. Price of zarda made in Myanmar ranged from 250 -to 400 kyats ($1=845 kyat April 30, 2004) for 50 gms.
Figure 3 Zarda products made in Myanmar

Figure 4 some of the zarda brands made in Bangladesh.
Most of the preparations are dried but some are wet and called vizapatta in Bangladesh. *Pattiwala* is a sun-dried, flaked tobacco which may be used with or without lime.

**Qiwam (kimam)**

*Kiwam* is a thick tobacco paste; it is also available as granules or pellets. To prepare *kiwam*, the midribs and veins of tobacco leaves are removed, and the remaining matter is boiled in water. Powdered spices (saffron, cardamom, aniseed and musk) are added, and the mixture is stirred and allowed to macerate until it becomes a paste, from which granules and pellets are made. It is used in India, Bangladesh, Nepal. Upper socio-economic group in the population in India and Bangladesh.

Paste is placed in the mouth and chewed. Also used in betel quid. 
**Hnatsay (Honey Soaked Tobacco)**

**Hnatsay:** is one of the special products used in Myanmar. The tobacco is mixed with honey or alcohol which is available in the market. It is used with betel quid. Muslims betel shopkeepers do not keep it as it is prohibited by as alcohol is prohibited by Islam. It is either branded or without any brand name. One of the brand names is known as Nayyrizara. Different types of scents are added to it to give different flavors. It is available in either plastic bags or plastic glasses as in the picture.

The product was obtained from KO KHIN MAUNG+ KO HLA THEIN BETAL NUTS AND TOBACCO PRODUCTS WHOLESALE SHOP, NO 145, 24th STREET, YANGON, Telephone 273400, 251780(O) 200134®. The price for one plastic bag varies from 65 to 100 kyats ($1=845 kyat April 30, 2004)

![Hnatsay (Honey Soaked Tobacco)](image)

**Figure 7 Hnatsay (Honey Soaked Tobacco)**

**Preparation of betel quid:** Betel can be purchased in a prepared form from innumerable vendors and kiosks. Depending on the size of the leaf and regional preferences, whole, partial or multiple betel quid leaves are smeared with lime and catechu. A few pieces of areca nut preparation and the preferred tobacco are added. According to personal choice, cardamom, clove, camphor, other condiments, herbal medicines, gold dust and even aphrodisiacs may be added. The preparation is then folded into various ornate shapes and given to the customer.
A regular user requires a steady supply of betel. Affluent people in urban areas buy prepared pans from kiosks and carry them in a container. Most other people buy the main ingredients of their choice in retail shops and make betel themselves as needed. In rural areas, the ingredients are carried in a cellophane wrapper and prepare betel as and when required.

Regional differences in the choice of material and the way in which betel is chewed abound. For example, in Kerala, raw areca nut tobacco and shell lime are preferred. Typical users smear one or two betel quid leaves with shell lime and place them in their mouths. While chewing, few pieces of raw areca nut are cut and added to the ‘chew’. About 5 g of tobacco from a strip are then snapped off by hand or cut with a knife and added to the bolus in the mouth. Thus, in contrast to pan prepared by vendors, the ingredients are placed individually in the mouth and chewed. The bolus is kept in the mandibular groove. On average, a person may chew five to ten times a day.

Betel chewing produces excess saliva which, if the betel does not contain tobacco, is generally swallowed. When betel is chewed with tobacco, saliva is spat out from time to time. The bright red colour produced during the chewing of betel is due to the formation of o-quinone from water-soluble polyphenols, notably leucocynidins, at the alkaline pH of 8-9 via secondary reactions.

**Betel quid masala (betel quid)**

Pan masala: Pan masala is a commercial preparation containing areca nut, slaked lime, catechu and condiments, with or without powdered tobacco. This preparation has been marketed since 1975, and recently there has been an advertising blitzkrieg on the television and in the press. Although advertising of tobacco products on radio and television is banned, there is not restriction of the advertisement of pan masala without tobacco; however, the brand names of pan masala with and without tobacco are identical. Aggressive advertising, targeted at the middle class and youth, is believed to have enhanced the sales of this product.

Pan masala contains almost all of the ingredients that go into making of a pan, but are dehydrated to the final product is not perishable. It comes in attractive foil packets (sachets) and tins, which can be stored and carried conveniently. Carrying a pan masala tin has even become a status symbol, and offering pan masala is accepted as implying hospitality and equality.

Pan masala is very popular in urban areas of India and is fast becoming popular in rural areas. Although the actual prevalence of this habit is not known, its popularity can be gauged by production figures: according to commercial estimates, the Indian market for pan masala is now worth several hundred million, US dollars. The introduction of 4-g aluminium foil sachets seems to have boosted sales tremendously. One leading brand registered a 40-fold increase in sales within one year following the introduction of such sachets. Currently, 500-600 million sachets of one popular brand are sold annually. Various branded products are available: of them some common brands are Manikchand, Mahak, Betel quid Parag #1, Vimal, Crane, Rajdarbar, Kuber, Yamu, Badshah, Tulsi, Rahat, Betel quid King, Jubilee, Kanchan. It is used in India, Sri Lanka, Bangladesh, Myanmar, Thailand, and Indonesia. Often by men but
more commonly by women. Product constituents are: tobacco; areca nuts, slaked lime, betel quid leaf. “Chewing tobacco” is sometimes used, and flavoring agents such as menthol, camphor, sugar, rosewater, aniseed, mint, or other spices are sometimes added in different regions. A *quid* is placed in the mouth (usually between the gum and cheek) and gently sucked and chewed. Betel quid masala is sometimes served in restaurants after the meal.

It is commercially prepared, vendor prepared or assembled at home. *Areca nut* is boiled, roasted, or sun-dried. *Tobacco* may be used raw, sun-dried, roasted, then finely chopped, powdered and scented. Alternatively, the tobacco may be boiled, made into a paste and scented with *rosewater* or *perfume*. To assemble, *slaked lime* and *catechu* are smeared on a *betel quid leaf*. The betel quid leaf is folded into a funnel shape and tobacco, areca nut and any other ingredients are added. The top of the funnel is folded over, resulting in a *quid*, which is placed in the mouth for use.

![Figure 8 Branded Panmasala](image)

**Tobacco and slaked lime (khaini):**

Use of a mixture of sun-dried tobacco and slaked lime⁴¹, known in some areas as *khaini*, *Sada, Surti* in India and Nepal, Khaini in Bangladesh, is widespread in Maharashtra and several states of North India,⁸⁴ Bangladesh and Tarai belt of Nepal. A regular *khaini* user may carry a double-ended metal container, one side of which is filled with tobacco and the other with slightly moistened slaked lime. A small quantity of tobacco is taken in the palm and a little slaked lime is added. The ingredients are then mixed vigorously with the thumb to make them alkaline (pH 8.3) and placed in the mouth. In India (Maharashtra and Gujarat), *khaini* is placed in the premolar region of the mandibular groove, whereas in Bihar and Uttar Pradesh, it is generally held in the lower labial groove. In eastern India (Singhbhum district, Jharkhand) this product is often kept on the dorsum of the tongue.

The average weight of this mixture for a single use is about 0.2 g. There is wide variation in the frequency of *khaini* use, ranging from 3 to 30 times per day. *Khaini* is generally not chewed as such but is retained in the location and sucked slowly for 10-15 min. Occasionally, it is left in the groove overnight.

It is available in different brand names, some of them are *Raja, Kuber, Chaini*. It is used in India; (Bihar, Western and central states of India;¹² Maharashtra)¹⁰-¹¹, Bangladesh, Nepal. In India the habit is more common among men¹¹ women¹¹ and youth⁹.
It is mostly prepared manually by user. They mix tobacco and lime on their hands and keep in the mouth. Placing in right, left and central upper or lower depends upon the region, in a similar manner to moist snuff. The product is kept in the mouth for 10 to 15 minutes and sucked from time to time. This is more common among men but often used by women as well.

![Branded Khaini](image)

**Figure 9 - Branded Khaini**

3. **Tobacco, areca nut and slaked lime preparations** are chewed in parts of North India, Nepal and Bangladesh and Myanmar where they are known by different names:

**Mainpuri tobacco** is a very popular preparation in the Mainpuri district of Uttar Pradesh and in nearby areas. It contains tobacco with slaked lime, finely cut areca nut, camphor and cloves. In a study of 35,000 individuals in the Mainpuri area, 7% of the villagers used this product.

**Mawa**

*Mawa* is a preparation containing thin shavings of areca nut with the addition of some tobacco and slaked lime. Small pieces of sun-cured areca nut and mixed with tobacco flakes and slaked lime (liquid calcium hydroxide). The mixture is rubbed together to combine. The resulting mixture is about 95% areca nut.

It has become popular in Gujarat, India, especially among the young and also in a few other parts of India. It is placed in the mouth and chewed for 10 to 20 minutes. A person may chew as many as 5-25 times a day. The prevalence of this habit has increased tremendously in recent years. Its magnitude can be assessed from the fact that the Bhavnagar city administration appealed to people not to litter the streets with the cellophane wrappers of *mawa*, as they clogged the city drains!
Dohra

Dohra: ‘Dohra’ is a mixture of tobacco, areca nut and other ingredients like catechu (Kattha), Pipermint, Ilayachi. It is wet. It is mainly produced in Jaunpur district of Uttar Pradesh. It is very popular in Jaunpur and its nearby districts. It is marketed without any brand name and the name of manufacturer. About 200 mg product is kept in plastic bag and rubber band applied. One packet is sold in rupees two only. Dohra is marketed in two ways; in one packet or in two packets. One packet is tobacco mixed and in two packets one contains mixtures other than tobacco and second one contains tobacco (Zarda). Users use tobacco (Surti / Zarda) with it according to their level of addiction. It is estimated that more than 50% people Jaunpur area use Dohra. Manufacture, sale or use is not prohibited.
Gutkha

Gutkha is a dry, relatively non-perishable, commercial preparation containing areca nut, slaked lime, catechu and condiments and powdered tobacco (tobacco waste). The same mixture without tobacco is called pan masala. Both gutkha and pan masala come in attractive foil packets (sachets) and tins, which can be stored and carried conveniently. These preparations have been marketed since 1975, and in recent years there has been an advertising blitzkrieg on the television and in the press. Although advertising of tobacco products on radio and television is banned, there is no restriction of the advertisement of pan masala (without tobacco), however, the brand names of pan masala and gutkha are identical and the packaging nearly identical. Aggressive advertising, targeted at the middle class and youth, has enhanced the sales of this product. Offering pan masala is accepted as implying hospitality and equality. Pan masala is very popular in urban areas and its popularity has grown fast in rural areas. Although the actual prevalence of this habit is unknown, its popularity can be gauged by current commercial estimates valuing the Indian market for pan masala and gutkha at several hundred million US dollars. These products are typically consumed throughout the day.

Some common brand names are Manikchand, Moolchand, Tulsi, Shimla, Sikandar, Parag, Sir, Shikhar, Goa, Sikandar. Geographic location of use in Southeast Asia are India, Nepal, Bangladesh and Myanmar. It contains Betel quid nut, catechu, tobacco, lime, saffron, flavoring.

It is held in the mouth and chewed. Saliva is generally spit out, but sometimes swallowed. This is very popular among boys and young men due to targeted advertising and marketing. It is commercially manufactured. Tobacco, betel quid nut and catechu are mixed together with several other ingredients, flavored and sweetened. Product is sold in small brightly-colored packets, which appeal to children.
Chewing raw tobacco:

Small pieces of raw or commercially available finely cut tobacco is used for this purpose. Chewing of tobacco alone, however, does not appear to be very common in India. Among 10 000 dental out-patients in Lucknow, Uttar Pradesh, and 57 000 industrial workers in Ahmedabad city in Gujarat, 2.1% and 2.6%, respectively, chewed tobacco alone. It does not appear to be popular in rural areas. However use of raw tobacco leaf is also reported from some corner of Myanmar and Bangaldesh.
**Applying Tobacco:**

Several oral tobacco preparations such as *mishri, gudhaku, bajjar* and creamy snuff, are intended primarily for cleaning teeth. Such use, however, soon becomes an addiction.

**Red Tooth Powder**

It is commonly known as *Lal dantmanjan*. It is red coloured tooth powder. In India the misconception is widespread that tobacco is good for the teeth. Many companies take advantage of this misconception by packaging and positioning their products as dental care products. A laboratory test of five samples of red tooth powder that did not declare tobacco as an ingredient, found a tobacco content of 9.3-248 mg per gram of tooth powder (as dentifrice). This is commonly used in India. Many brands are available in Indian market. It is used by women and men, young, adults and kids.

![Lal dantmanjan product & advertisements](image)

Figure - 13 Lal dantmanjan product & advertisements
**Mishri (masheri or misheri)**

*Mishri* is a roasted, powdered preparation made by baking tobacco on a hot metal plate until it is uniformly black later on it is powdred. Women, who use it to clean their teeth initially, soon apply *mishri* several times a day. Generally, it is carried in a small metal container; it is taken out with the index finger and applied to teeth and gums. This habit is common in Maharashtra; in a survey of 100,000 individuals in this area, 22% were *mishri* users; the prevalence was 39% among women and 0.8% among men. *Mishri* use is also prevalent in Goa (India). It is applied to the teeth and gums, often for the purpose of cleaning the teeth. Users then tend to hold it in their mouths (due to the nicotine addiction). Predominantly women, more common in lower socio-economic groups.

![Figure 14 Woman applying Mishri to gums and teeth](image)

**Creamy snuff**

Creamy snuff: Commercial preparations of tobacco paste have been marketed in tubes like toothpaste. They are advertised as possessing antibacterial activity and being good for the gums and teeth. These products are thus used like a regular toothpaste, but users soon become addicted. This habit seems popular in children in Goa (India). Constituents are tobacco, clove oil, glycerine, spearmint, menthol, camphor. Often used to clean teeth. The manufacturer recommends letting the paste linger in the mouth before rinsing. It is primarily used by women. Creamy snuff is available in brand names Ipco (Asha Industries product) Denobac, Tona, Ganesh etc.

![Figure-15 Branded creamy snuff in tubes](image)
**Gul**

*Gul* is a pyrolysed tobacco product. It is marketed\textsuperscript{84} under different brand names and used as dentifrice.\textsuperscript{38,84} It is commonly practiced in India\textsuperscript{105,106} and Bangladesh.\textsuperscript{12} It is available in different brand names. This is highly addictive. An addicted person uses it many times in a day. It is used by men, women and youth in India\textsuperscript{7-11} and Bangladesh. Some common brands are: Shajadi Gul, Mujamal Hussain Musarraf Bahi Shahi Eagle, Md. Mustafa Asgar Ali Gul (Bangladesh) Chand, Tara marka and Gulbadan (India).

![Figure 16 Branded guls](image)

**Gudhaku**

*Gudhaku* is a paste made of tobacco and molasses. It is available commercially and is carried in a metal container. *Gudhaku* is applied to the teeth and gums with a finger, predominantly by women. *Gudakhu* (paste of tobacco and molasses) used commonly in Bihar, Orissa, Uttar Pradesh, and Uttaranchal; It is made manually by users themselves and also marketed in different brands.

In Eastern India (Singhbhum district, Jharkhand) 1\% of the men and 16\% of the women used *gudhaku*. It is often used in eastern regions of India.\textsuperscript{105,106} It is available in different types of packing, both branded and unbranded.
Tuibur / Hidakphu: Tobacco Water

Tobacco water (Known as *Tuibur* in Mizoram and *Hidakphu* in Manipur) is sipped and retained in mouth for 5-10 minutes and then spat out. In general, in one sip usually 5 -10 ml tobacco water is kept within mouth It is either sipped directly from bottle or through cotton soaked with Tobacco water . One, who uses tobacco water to clean one's teeth or to protect from insect bite initially, soon start sipping several times in a day and get addicted. Common practice is seen among Mizo community in India and use is the part of culture. Tobacco water (*Tuibur*) has been in use since 19th century; definite recording of use is available since 1907. Men and women alike sip tobacco water.\textsuperscript{105,106}

Figure 18-Marketing and use of tobacco water

*Courtesy: School of Preventive Oncology*
Chapter 2

Oral tobacco use prevalence

Smokeless tobacco use in South Asia raises various concerns. It is commonly used and increasingly so, especially as new forms of smokeless tobacco have been emerging over the last few decades, enticing new consumers. Increasing use has been reported not only among men, but also among such vulnerable groups as children, teenagers, women of reproductive age and by immigrants of South Asian origin wherever they have settled. In India, per capita smokeless tobacco consumption has increased among the poor between 1961 and 2000 in both rural and urban areas. Lately, a European company has begun marketing one of its smokeless tobacco products in India. This review attempts to highlight these issues and the concern for the health consequences.

Habitual betel quid chewing is commonly practiced by men and women in Bangladesh, India, Nepal and Sri Lanka. Other countries where many habitual betel quid chewers add tobacco to their quid include Indonesia, Thailand.

Table 1, Smokeless tobacco use projection in Southeast Asia

<table>
<thead>
<tr>
<th>Country</th>
<th>Prevalence reference used for projection</th>
<th>Percent Oral tobacco use</th>
<th>Population</th>
<th>Projected number of oral oral tobacco users</th>
<th>Percentage distribution of oral tobacco users</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bangladesh</td>
<td>Rahman (6)</td>
<td>25</td>
<td>137439000</td>
<td>34359750</td>
<td>13.3</td>
</tr>
<tr>
<td>India</td>
<td>NFHS</td>
<td>28.3 M, 12.4 F</td>
<td>531277078</td>
<td>150351413</td>
<td>82.1</td>
</tr>
<tr>
<td>Indonesia</td>
<td>WHO</td>
<td>1</td>
<td>212092000</td>
<td>2120920</td>
<td>00.8</td>
</tr>
<tr>
<td>Myanmar</td>
<td>WHO</td>
<td>15</td>
<td>47749000</td>
<td>4774900</td>
<td>01.8</td>
</tr>
<tr>
<td>Nepal</td>
<td>WHO</td>
<td>10</td>
<td>23043000</td>
<td>2304300</td>
<td>00.9</td>
</tr>
<tr>
<td>Sri Lanka</td>
<td>WHO</td>
<td>10</td>
<td>18924000</td>
<td>1892400</td>
<td>00.7</td>
</tr>
<tr>
<td>Thailand</td>
<td>WHO</td>
<td>1</td>
<td>62806000</td>
<td>628060</td>
<td>00.2</td>
</tr>
<tr>
<td>SEA Region</td>
<td></td>
<td></td>
<td>1529068247</td>
<td>257903276</td>
<td>16.9</td>
</tr>
</tbody>
</table>

In Southeast Asia over 250 million people use Smokeless tobacco products; about 17% of total population in Southeast Asia uses oral tobacco; of which 95% belong to India (82%) and Bangladesh (13%) (Table 1).

Bangladesh

One of the study reported that in Bangladesh, 20–30% of women in rural areas are estimated to use smokeless tobacco. In another study among 638 respondents 26% reported for chewing tobacco products. Among users 85% used daily and 15% occasionally.
Among 11409 respondents 2701 (23.6 %) reported for betel chewing with tobacco. Among 7282 respondents in urban area 1301 (17.9 %) reported for current betel chewing with tobacco while among 4127 respondents in rural area 1401 (33.9 %) reported for the same. Betel quid chewing in low, middle and high income group in urban area was reported 6.4%, 14.5%, and 30.3% respectively. Tobacco leaf use in betel quid was reported by one fourth and 3/4th used zarda or both (zarda and leaf) both in rural and urban areas. Mean frequency of tobacco leaf use was reported 7 times a day both in rural and urban areas. Among 7282 respondents 149 (2%) reported for current gul use while in rural area prevalence was low (20/4127) (0.5%).

WHO Report on Cross-sectional survey in selected population groups in Bangladesh, 2003, showed high prevalence of smokeless and smoking tobacco products (Table 2).

Over 58% used tobacco, over 41% used smokeless and over 49% smoked.

### Table 2, Modality of tobacco usage - Individual & Family, WHO, 2003

<table>
<thead>
<tr>
<th>Modalities</th>
<th>Individual (N= 777)</th>
<th>Family And=990</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cigarette</td>
<td>382 (49.2%)</td>
<td>391 (39.5%)</td>
</tr>
<tr>
<td>Treated tobacco leaf</td>
<td>326 (41.9%)</td>
<td>363 (36.7%)</td>
</tr>
<tr>
<td>Raw dried tobacco leaf</td>
<td>135 (17.4%)</td>
<td>186 (18.8%)</td>
</tr>
<tr>
<td>Hukka</td>
<td>6 (0.7%)</td>
<td>6 (0.6%)</td>
</tr>
<tr>
<td>Bidi</td>
<td>207 (26.4%)</td>
<td>225 (22.7%)</td>
</tr>
<tr>
<td>Powdered tobacco leaf</td>
<td>30 (3.9%)</td>
<td>46 (4.6%)</td>
</tr>
</tbody>
</table>

Among disadvantaged group (rickshaw pullers) prevalence of smokeless tobacco was reported high (45% betel tobacco, 42% gul applying) in Bangladesh.

In several studies of immigrant communities of Bangladeshi origin in the UK, over 80% of the adults surveyed, both male and female, chewed betel quid regularly. The majority of the women incorporated tobacco (as leaf or zarda) in the quid, while under half of the men did. Burnt tobacco leaves were used as dentifrice by 20% of the women studied. In a study in which 42% of adults used betel quid, an interesting finding was that the traditional method of betel-quid chewing was being replaced with readily available processed areca nut and tobacco products.

**Bhutan**

Tobacco consumption trend has changed from that of smoking to other forms like oral use. Sacks of Baba are on sale in Thimphu vegetable market. Many people, including young boys and monks chew Baba and scented khaini.
India

In some parts of India, such as the states of Bihar and Maharashtra, smokeless tobacco use is more common than smoking. Apart from regional preferences due to differing socio-cultural norms, the preference for smokeless tobacco is inversely related to education and income.\textsuperscript{38}

In countries of South Asia, particularly India, traditional values do not favour smoking by the young or by women, but there is no such taboo against using smokeless tobacco. Thus, most women who use tobacco use it in smokeless forms. Tobacco use, in whatever form, generally begins during adolescence.

Awareness of the hazards of smokeless tobacco use is very low in rural populations. On the other hand, many believe tobacco, smoked or smokeless, has medicinal value for curing or palliating common discomforts such as toothache, headache, and stomach ache. This leads to advice for initiating tobacco use from adults to other non-users, even children.

In India it has been estimated that roughly one-third of women and two-thirds of men use tobacco in one form or another.\textsuperscript{130} In prevalence surveys in eight rural areas of India, smokeless tobacco use was 3–53\% among men and 3–49\% among women (Table 3). Also, in these areas 2–26\% of men and 0–4\% of women practised both smoking and smokeless tobacco habits.\textsuperscript{13, 56, 57, 95, 125}

<table>
<thead>
<tr>
<th>Area</th>
<th>Male users (% total men)</th>
<th>Female users (% total women)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Chew or apply</td>
<td>Smoke</td>
</tr>
<tr>
<td>Mainpuri, Uttar Pradesh</td>
<td>21</td>
<td>41</td>
</tr>
<tr>
<td>Bhavnagar, Gujarat</td>
<td>9</td>
<td>56</td>
</tr>
<tr>
<td>Ernakulam, Kerala</td>
<td>14</td>
<td>45</td>
</tr>
<tr>
<td>Erikakulam, Andhra Pradesh</td>
<td>4</td>
<td>70</td>
</tr>
<tr>
<td>Singbhum, Jharkhand</td>
<td>17</td>
<td>50</td>
</tr>
<tr>
<td>Darbhanga, Bihar</td>
<td>28</td>
<td>24</td>
</tr>
<tr>
<td>Pune, Maharashtra</td>
<td>53</td>
<td>6</td>
</tr>
<tr>
<td>Goa</td>
<td>3</td>
<td>61</td>
</tr>
<tr>
<td>Mumbai (urban), Maharashtra</td>
<td>46</td>
<td>14</td>
</tr>
<tr>
<td>Trivandrum (urban), Kerala</td>
<td>27</td>
<td>56</td>
</tr>
</tbody>
</table>

* Prevalence <0.5\%; nr, not reported.

Source: Gupta et al\textsuperscript{13}

In a study from the Mumbai\textsuperscript{38} the prevalence of smokeless tobacco use was 57.1\% among women and 45.7\% among men. In suburb of Trivandrum, Kerala, where residents were mostly of lower socio-economic status, chewing habits was reported by 26.8\% men ($n= 25453$) and 26.4\% women ($n= 34441$) (Table 3).\textsuperscript{95}

Tobacco water use was reported by 872 (7.2\%) persons among 12185 adults surveyed in Aizwl district of Mizoram and 139(6.5\%) persons among 2137 adults surveyed in Churhandpur district of Manipur. Prevalence of tobacco water use was almost similar among male and females. Frequency of tobacco water use varied from 1-30 /day; in Aizwl and
Churchandpur districts 36.7% and 92.1% reported to be frequent tobacco water user (used more than five times a day) respectively.

Smokeless tobacco use varied from 7.2% to 59.4% in different states of India \(^ {44, 111}\) (Figure 19). In J & K, Goa, Himachal Pradesh, Haryana, Punjab, Kerala, Andhra Pradesh, Tamil Nadu, Delhi, Karnataka, Meghalay, Rajasthan and West Bengal smoking prevailed over smokeless tobacco use while in Maharashtra, Uttar Pradesh, Sikkim, Madhya Pradesh, Assam, Orissa, Bihar, and Arunachal Pradesh smokeless tobacco use prevailed over smoking (Figure 19). In Gujarat, Manipur and Mizoram. Proportion of smoking and smokeless tobacco use, among males was almost equal (28.3 vrs. 29.4) while among female proportion was 5:1 (12.4% vrs. 2.5) in rural and urban areas respectively. Smokeless tobacco use was associated with age sex (Figure 20) and education (Figure 21); increase with male sex and increasing age and lower levels of education.

![Figure 19: Current smokeless tobacco use and smoking by states, NFHS2, 1998-99](image)
The National Sample Survey Organization (NSSO) has provided tobacco use data for 1993-94. It was a proxy survey for youth group, by their parents and thus likely to be under-reported compared to the results of studies interviewing youth directly. Men smoked more (21.7%, rural 15.8, urban) than women (1.7%, rural, 0.5% urban); Men (11.2% rural and 6.3% urban) used smokeless tobacco (zarda and dokta) more than women (3.9%, rural, 2.0% urban).\textsuperscript{76}

Smokeless tobacco use among some professional group was reported high in India; school personnel in Bihar,\textsuperscript{100} in northeastern states of India,\textsuperscript{101} print media personnel in...
Bihar. Some of the northeastern states in India female school personnel than males reported significantly more for Gul use; Assam (13.5% vs 0.1%), Meghalay (25% vs 1.9%), Nagaland (6.2% vs 1.4%), Sikkim (46.5% vs 3.9%); in contrast in Mizoram Men than women reported significantly more for Gul use; in Arunachal Pradesh, Manipur and Tripura Gul use was reported low (Around 1%).

In a WHO study 132 35,288 respondents in Karnataka and 29,931 respondents (+10 years) in Uttar Pradesh were surveyed. Tobacco use in smokeless form was predominant among women and among men below 30 years of age both in urban and rural areas, but smoking was the predominant form of tobacco use among men above 30 years of age. The overall prevalence of current use of smokeless tobacco was observed to be 13.9% in Karnataka (13.4% among men and 14.4% among women) and 17.5% in Uttar Pradesh (24.3% among men and 6.6% among women). The overall prevalence of smokeless tobacco use was observed to be 13.9% in Karnataka (13.4% among males and 14.4% among females) and 17.5% in Uttar Pradesh (24.3% among males and 6.6% among females). Prevalence of use of smokeless tobacco was higher among females in Karnataka as compared to Karnataka males in the age-groups above 40 years. In Uttar Pradesh, the proportion of men using smokeless tobacco was higher than the respective proportion among women, in all age-groups. Prevalence of smokeless tobacco use increased with age in both sexes. Trends were similar in urban as well as rural areas. The prevalence of smokeless tobacco use was lower among educated persons, especially among women and in Karnataka. Clear-cut reducing prevalence trends with increasing education were not observed in all age-groups among men. Muslim men showed a higher overall prevalence in Karnataka, while a higher proportion of Hindu men used smokeless tobacco in Uttar Pradesh. A reverse trend according to religion was observed among women in the two States. Variations in prevalence rates according to family income did not follow any specific trend, but the prevalence was comparatively lower in both the States among women with family income above Rs. 5000 per month.132

Betel-tobacco quid was found to be fairly popular in Karnataka but had limited popularity in Uttar Pradesh. The prevalence rate of use of this tobacco modality was 14.2% (26.9% among males and 0.6% among females) in Karnataka and 2.0% (2.3% among males and 1.4% among females) in Uttar Pradesh. Prevalence increased gradually with increasing age. All age-groups showed a higher prevalence among rural areas as compared to urban areas in Karnataka, but the trends were variable in different age-groups in Uttar Pradesh. An inverse association of decrease in prevalence rates of betel-tobacco quid use with increasing educational levels was observed in different age-groups in Karnataka, and similar pattern was noticed only among females in Uttar Pradesh. Muslims showed a higher prevalence of pan-tobacco quid use in Uttar Pradesh. An inverse association of betel-tobacco quid use with increasing family income levels was observed in Karnataka but not in Uttar Pradesh.132

Indonesia

Tobacco is used as part of the mixture chewed with sirih (betel). Practised for the most part in rural areas, betel chewing involves the creation of a quid consisting of a mixture of betel and other ingredients such as areca nut, lime, gambier (a plant extract used for flavoring), and tobacco. It is regarded as a declining habit in the face of modernisation. The 1986 household
health survey of seven provinces found that betel nut chewing was predominantly a female practice. Whereas only 3.7 of males surveyed reported that they chewed sirih, the rate for females was 16.7%. Among women, the habit was most common in the higher age groups. Although 50.3% of women aged over 60 years chewed sirih, only 4.5% of those aged 25 to 29 years did so.11

Although the use of oral snuff is alien to Indonesia, there have been warnings that smokeless tobacco products are being promoted in many Indonesian cities and that such tobacco is damaging to health.

Betel quid and chewing tobacco were identified as smokeless tobacco products used by respondents (a small number) both in Jakarta and Sukabumi. Only about one percent (58 persons) of 5,899 tobacco users reported as those who had ever used betel quid and less than half percent (22 persons) had experienced in the use of chewing tobacco.133

Myanmar

The sentinel prevalence study of Tobacco use in Myanmar (2001) from Hinthada district from Delta Region and Pakkuku Township from Dry zone Region drawn on 6600 (2903 Male, 3697 female) sample size revealed the following facts.134

(1) Smokeless forms of tobacco use include chewing of betel quid with raw tobacco and chewing of raw tobacco.

(2) Among current tobacco users, two third reported smoking and one third chewing. Among chewers mostly chewed tobacco with betel (31%) and only 2% chewed raw tobacco.

(3) Among the respondents 21.2% (33.8% males and 11.2% females) reported for ever smokeless tobacco use. Similar prevalence was reported in urban and rural areas among males but among females slightly lower rates were reported in urban than rural. Ever smokeless tobacco use was reported nearly three times more among men as compared to women both in rural and urban areas. Lower prevalence rates of ever smokeless tobacco users were reported with higher level of education. Lowest rates of ever smokeless tobacco use were reported among highest income group although there was no significant difference within low and middle income groups.

(4) Current smokeless tobacco use was reported nearly three times more among men as compared to women both in rural and urban areas. Among the respondents current smokeless tobacco use was reported as 14.9% (23.8%, males and 8.0%, females). In current smokeless tobacco use all economic classes reported almost similar prevalence although it was reported lowest among higher education group. Mean frequency of tobacco chewing was 4 times per day. Smokeless tobacco use was reported similar in both urban and rural areas. Paradoxical to smokers there was no significant difference within education groups and income groups.

(5) The median age of initiation for smokeless tobacco use was around 25 years.
(6) Betel chewing was reported nearly three times more in males than females. There is no
difference between urban and rural. Within education groups, it was reported lowest among
high school and university graduates. Within income groups, it was reported lowest among
highest income groups.

(7) Current raw tobacco chewing was reported twice in rural than urban and twice in males
than females. Current raw tobacco chewing was mostly reported in the age group 55-69 years.
It was reported higher among illiterates and persons with middle school education only. No
one in university grade education reported for chewing.

(8) Among current smokeless users 57% reported tobacco use of more than 10 years and 43%
reported of 1-10 years.

(9) Similar to the findings of other studies conducted in various countries, parental tobacco
use as highly associated with ever and current tobacco use.

(10) Current use by either parent of any tobacco had highly significant association with ever
smokeless use (p=0.000) and with current smokeless tobacco use (p=0.05). Other significant
associations were; ever use of smokeless tobacco and knowledge of health hazards of tobacco
at p= 0.02. Knowledge of harmful effects of passive smoking and ever smokeless tobacco use
at p= 0.02.

Cultural as well as religious views in Myanmar do not regard tobacco use as immoral or
sinful. Tobacco use has been widely accepted as a social norm for many years. It is used as
well-wishing gift at various ceremonies and is usually served with green tea to house guests.
It is also included among the three essential things that should be offered to monks and
guests; namely tobacco, betel quid and green tea leaf (hsey, kwan and lephet).

Buddhism in Myanmar differs from Buddhism in Bhutan where Mahayana Buddhism
prohibits smoking. Tobacco use is a sin in Bhutan and all religious orders are strictly
prohibited from smoking. Buddhist teachings in Myanmar strictly prohibits drinking alcohol
but does not prohibit tobacco use indicating cultural and religious views as great challenges
for tobacco control in Myanmar.

Nepal

SEARO studies on economic of tobacco use from Nepal\textsuperscript{135} revealed that (1) Proportion of
smokeless tobacco use (10%) and Smoking (38.4%) has been reported as 1:3.8. Smokeless
tobacco products (STPs) such as Khaini and zarda were reported for wide consumption in
Nepal but their records are virtually non-existent. (2) According to Customs Department of
the Ministry of Finance, Government of Nepal indicated that in three years import of
smokeless tobacco product has increased by 87 times (Rs. in million) while Cigarette import
has increased by over 2 times.
Table 4 Import of cigarette and zarda products in Nepal

<table>
<thead>
<tr>
<th></th>
<th>In Millions</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>ZARDA&amp; KHAINI</td>
<td>CIGARETTE</td>
<td></td>
</tr>
<tr>
<td>1996-97</td>
<td>6.3</td>
<td>59.1</td>
</tr>
<tr>
<td>1997-98</td>
<td>192.3</td>
<td>79.9</td>
</tr>
<tr>
<td>1998-99</td>
<td>551.3</td>
<td>128.6</td>
</tr>
</tbody>
</table>

(3) Several reports in newspapers and magazines appeared smuggling of smokeless tobacco products such as Khaini, Jarda and Panparag from India to Nepal. Since the introduction of VAT in 1997 (Marasaini, M. K. 1999) tax/customs evasion smuggling across the border between India and Nepal (Kantipur, June 16, 1999) are reported to the increase. Smokeless tobacco products are sold on the way sides as cheap as in India (Deshantar Weekly, September 20, 1998). Organised smuggling is common on the border entry/exit points. A businessman in Nepal was fined Rs. 7.2 million for importing Khaini from India without paying VAT (Kantipur, July 8, 2001).

Srilanka

In WHO Sentinel Tobacco Use Prevalence Survey in Sri Lanka, 2001, the total sample population was 5886 of which 2899 (49.3%) were male and 2987 (50.7%) were female. Sector-wise the male distribution was 1374 (48.1%) rural and 1525 (50.3% urban). In respect of the female population 1482 (51.9%) was rural and 1505 (50.3%) was urban.

Current use of smokeless tobacco products was mainly a rural phenomenon seven times among males 26.4% vrs 3.7% and six times among females 12% vrs 2%. Greater prevalence was seen among males almost twice than females (Rural male 26.4% vrs females 12%; Urban male 3.7% vrs females 2%).

The highest prevalence of smokeless tobacco use was among those with no schooling (41.6%) and the lowest (1.9%) among those with higher secondary. The trend indicated a decrease of current use of smokeless tobacco with education.
Prevalence of current smokeless tobacco use inversely associated with the socioeconomic level. With ageing there was an increase in the frequency of current use of smokeless tobacco.
The frequency was less among females. Nearly three quarters of females use less than 5 times whilst for men it was nearly two thirds. In the rural area the frequency ratio of ‘6+ times a day’ current user of smokeless tobacco to ‘1-5 times a day’ was 1:2, whilst in the urban area it was 1:3.4. The rural to urban frequency ratio for the ‘1-5 times a day’ category was 1:1.1 and for ‘6+ times a day’ category it was 1:0.7. With improvements in the level of education, there was a decrease in the frequency of current use of smokeless tobacco. In the ‘no schooling’ group 47.7% or nearly 50% were in the ‘6+ times a day’ category. It had declined to zero or nil percent in the professional group.

Frequency of smokeless tobacco use was more marked in poors: The ‘6+ times a day’ current use of smokeless tobacco use was 36.4% in the <Rs. 3000 group and 17.4% in the Rs. 12,001 + group. The trend lines indicated an increase in the current daily use of smokeless tobacco with advancements in age. The frequency of current daily use of smokeless tobacco was higher among males. The frequency ratio of ‘6+ times a day’ current daily use of smokeless tobacco was 1:1.8 for males, whilst it was 1:3.7 for females. There was a higher frequency of current daily use of smokeless tobacco in the rural area. The frequency ratio of ‘6+ times a day’ to ‘1-5 times a day’ current daily use of smokeless tobacco was 1:2 in the rural area and 1:3.4 in the urban area. The frequency of current daily use of smokeless tobacco was higher in the ‘no schooling’ group. At each of the education levels the ‘6+ times a day’ users were less. Similarly, the highest frequency of current daily use of smokeless tobacco was in the socioeconomic group of <Rs. 3000. With progress in the socioeconomic status, the frequency dropped.

The highest age frequency of daily use of Pan Quid was in the 15-19 age group. The 20-29 age group followed it. The male to female ratio of the age frequency of daily use of pan quid was 1:1.8 in the 15-19 age range and 1:2.7 in the 20-29 age range. The age frequency of daily use of pan quid was higher in the rural area and highest in the 15-19 age range. Analysis by level of education showed that at all levels the peak was at the 15-19 age range. At the University and professional levels the age frequency was highest at the 20-29 age range. At
all age ranges the highest age frequency of daily use of pan quid was at the lowest socioeconomic group of <Rs. 3000. The highest percentage of users in the 30-39 year and 40+ year ranges had no schooling or had only primary education. There were few with University or professional education in the 40+ years of use range. Many of the long-term users of pan quid were in the <Rs. 3000 socioeconomic group. Among the long-term users other socioeconomic groups were also well represented.

Monthly Expenditure of Current Users of Smokeless Tobacco: The monthly expenditure of a majority of current smokeless tobacco users was in the <Rs. 500 expenditure bracket. In the rural sector the percentages were higher in the <Rs. 500 and Rs. 501-1000 expenditure brackets. In the Rs. 1001-2000 expenditure bracket, it was higher in the urban sector. The male and female monthly expenditure of current smokeless tobacco users was almost the same. Educational levels have not affected the pattern of expenditure. The highest percentages at all levels of education were in the <Rs. 500 expenditure bracket. Analysis of monthly expenditure of current users of smokeless tobacco by socioeconomic group showed that over 80% in all socioeconomic groups were in the <Rs. 500 expenditure bracket.

Oral tobacco use among youth

The acquisition of tobacco habits occurs mainly at young ages and according to patterns of product preference established among adults. In a small study, one-third to one-half of children under the age of 10 years in three rural areas of India (Gujarat, Tamil Nadu and Karnataka) had experimented with smokeless tobacco or smoking, imitating parents, grandparents, other elders in the family, or peers. In a study encompassing the entire state of Goa, 6271 of school children aged 5–10 years from 73 village schools, about 13.4% of boys and 9.5% of girls used tobacco, mostly as smokeless tobacco (mishri or tobacco toothpaste, followed by chewing), and family members were most influential in this regard.

Acquisition of tobacco habits was studied in a 10-year follow-up of Indian villagers aged 15 years and over, conducted during 1966–1977, in three diverse rural areas (Ernakulam, Kerala; Srikakulam, Andhra Pradesh and Bhavnagar, Gujarat). About 3.5% of the non-users, mainly in the lower ages, acquired tobacco habits for the first time, reflecting the already established area-wide patterns of chewing or reverse smoking for women and smoking for men. Almost all males who acquired a habit were in the lowest age group studied (15–34 years), although some females in the middle age group (35–54 years) acquired a habit as well.

It is popularly perceived that the chewing of betel quid with tobacco is becoming a less common habit in India and that it is more confined to the elderly. Yet younger generations have readily taken up the use of mixtures of areca nut and tobacco. Some evidence for such a trend was gathered during a survey carried out in Bhavnagar, Gujarat. The prevalence of mawa use rose from 4.7% in 1969, mainly among older women, to 19% in 1993–1994 mainly among younger generations. Still more evidence for a trend toward use of tobacco and areca nut products by youth has been gathered in several recent studies. In a survey of 95 boys and girls in the 8th and 9th grades of a small town private school in Gujarat, 16% of boys used gutka. In a village community in Gujarat, 72% of males under 26 years of age used tobacco, mainly bidis and gutka, and 50% of females used tobacco in the forms of gutka and tobacco toothpaste.
Approximately one-eighth of 476 high school students in the 10th to 12th standards in Patna, Bihar, used pan masala. Despite the tradition of low tobacco use in Punjab, in a recent survey of 100 rural school-going teenagers in five villages, two-thirds of respondents reported using gutka regularly.\textsuperscript{28}

Surveys conducted among medical and dental students in Patna, Bihar, India have revealed high levels of tobacco use, especially smokeless forms, such as Khaini and gutka. Chewing of pan masala is also common. Current use was higher among senior students, even though their awareness was much higher; this is believed by the researchers to be due to the students being already addicted before learning of the associated diseases. Assessment of the use of tobacco and areca nut products among medical and dental students is important because of the impact of the example they will set for their patients as future caregivers and the unlikely prospect that they would counsel their patients against using tobacco, a major determinant of oral health status.\textsuperscript{103, 104}

The global youth tobacco survey focuses on school students aged 13-15 and uses standardized methods.\textsuperscript{6,52,78,105-108,120,121} Smokeless tobacco use among students (13-15 Years) was reported 10-20\% from member countries in Southeast Asia (Figure 24)

![Figure 24 Comparison of smokeless tobacco use and smoking in member countries of SEA](image)

Among students (13-15 years) in India, current smokeless tobacco (ranged, Bihar, 55.6\% - Himachal Pradesh 2.0\%); (figure 6) for boys (ranged, Bihar, 57.6\% - 2.0, Punjab) and for girls (ranged, Bihar, 49.2\%-Himachal Pradesh, 1.3\%). Remarkably high (>25\%) prevalence was noted in Northeastern states and Bihar (25.3-55.6\%); other states had either low (2.0%-4.1\%) or intermediate (9.1%-19.7\%) prevalence (Figure 25).
In India median proportion of smokeless tobacco use and smoking among students aged 13-15 years was 2:1 (median smokeless tobacco use 18.6% vrs. median smoking 10.2%). However in some state there was no significant difference in smokeless tobacco use and smoking (figure 26). Current smokeless tobacco use reported more than smoking in most of the states from India (figure 26).
Among Chewing tobacco products gutka was the most preferred choice followed by Tamol and tobacco mixture in 8 north eastern states except Mizoram where the most preferred choice was Tamol and tobacco mixture followed by gutka.

**Dentifrice among youth:** In India legislation (India’s Drugs and Cosmetics Act 1940) prohibits the use of tobacco as an ingredient in dental care products. Such products, in the form of powder or paste, are applied most commonly with the index finger to teeth and gums. Various tobacco products are used as dentifrice in different parts of India.

In India the misconception is widespread that tobacco is good for the teeth. Many companies take advantage of this misconception by packaging and positioning their products as dental care products. A laboratory test of five samples of red tooth powder that did not declare tobacco as an ingredient found a tobacco content of 9.3-248 mg per gram of tooth powder.\textsuperscript{106}

The use of tobacco products as dentrifice varied from 6\% (Goa) to 68\% (Bihar). The prevalence among boys was notably higher than among girls in Orissa and Uttaranchal, marginally higher in nine states, and marginally lower in three states. Of the specific products, tobacco toothpaste (creamy snuff) ranged from 2\% to 29\% and tooth powder (lal dant manjan) ranged from 2\% to 32\% were common in all 14 states. Gul (a pyrolysed tobacco product) was used in eight states ranged 2\% to 6\%. Other dentifrice products containing tobacco were: mishri (roasted and powdered tobacco) and dry snuff (bajjar or tapkir) in Goa and Maharashtra; gudakhu (paste of tobacco and molasses) in Bihar, Orissa, Uttar Pradesh, and Uttaranchal; and tobacco water (tuibur or hidakphu, manufactured by passing tobacco
smoke through water) in Manipur, Mizoram, Sikkim, and Tripura. It is used for gargling, not drinking.\textsuperscript{106}

Current smokeless tobacco use among students (13-15 years) in Nepal was reported by 9.3%, boys used more than girls. Use of smokeless tobacco product was slightly greater than use of smoking product but the difference was statistically insignificant. (Table 6)

Table 6: Current smoking and smokeless product use in Nepal.\textsuperscript{78}

<table>
<thead>
<tr>
<th>Any Smoked Product</th>
<th>Smokeless Products</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total 7.2 (±2.6)</td>
<td>9.3 (±2.5)</td>
</tr>
<tr>
<td>Boys 9.9 (±3.2)</td>
<td>11.8 (±2.8)</td>
</tr>
<tr>
<td>Girls 3.2 (±2.8)</td>
<td>5.6 (±3.5)</td>
</tr>
</tbody>
</table>

About 15% of current smokeless tobacco users reported to chew/apply tobacco at home.

Table 7 Percent offered a free cigarette or bidi or khaini or gutka or pan masala by a tobacco company

<table>
<thead>
<tr>
<th></th>
<th>Never Tobacco User</th>
<th>Smokeless tobacco user</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total 1.8 (±2.9)</td>
<td>25.7 (±11.5)</td>
<td></td>
</tr>
<tr>
<td>Boys 4.9 (±3.9)</td>
<td>25.6 (±8.7)</td>
<td></td>
</tr>
<tr>
<td>Girls 0.1 (±3.2)</td>
<td>24.4 (±29.5)</td>
<td></td>
</tr>
</tbody>
</table>

In Myanmar among students (13-15 Years) over 20% used smokeless tobacco products.\textsuperscript{52} In Myanmar, smokeless tobacco user than never tobacco users reported significantly more for offered free samples of tobacco products (Table 8)

Table 8: Percent of students who use tobacco, Myanmar GYTS, 2001

<table>
<thead>
<tr>
<th></th>
<th>Any Smoked Product</th>
<th>Smokeless Products</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total 16.9 (±2.3)</td>
<td>20.4 (±2.7)</td>
<td></td>
</tr>
<tr>
<td>Male 30.9 (±3.8)</td>
<td>35.4 (±4.2)</td>
<td></td>
</tr>
<tr>
<td>Female 3.8 (±1.2)</td>
<td>6.6 (±1.8)</td>
<td></td>
</tr>
</tbody>
</table>
Percentage of smokeless tobacco use reported higher as compared to smoking, however there was no statistical difference. Boys used 5 times more smokeless tobacco products than girls. About 15% of Current Smokeless tobacco chewed tobacco at home.

Among disadvantaged youth group high (45%-71%) prevalence of tobacco use was reported in Southeast Asia.\textsuperscript{9,10,29,79}
Chapter 3

Toxicity of Oral Tobacco Products

About 35–40% of tobacco consumption in India is in smokeless forms, mostly of the species *Nicotiana rustica,* while most smoking tobacco is *N. tabacum.* Samples of *N. rustica* have been found to contain higher concentrations of tobacco-specific nitrosamines than *N. tabacum.*

Composition of tobacco leaf and tobacco smoke More than 3040 chemical compounds have been isolated from processed tobacco leaf (Roberts, 1988). Most are leaf constituents, but some arise from growing conditions such as the soil and atmosphere in an area, while others originate from the use of agricultural chemicals, from casings, humectants and flavourings added to the leaves, and from curing methods. Different tobacco varieties grown, cured and processed in various ways in different countries, show differences. The proportions of individual constituents may differ but not the overall composition. Among important toxic compounds identified, other than nicotine, are carcinogenic nitrosamines, derived from nitrates, amines, proteins and alkaloids present in the leaf, polycyclic aromatic hydrocarbons resulting from the curing process, radioactive elements absorbed from the soil and the air, and cadmium in tobacco grown on cadmium-rich soils. When tobacco is burned in the course of pyrolysis and other reaction products are formed.

Some of the following studies have identified the toxic effect of different smokeless tobacco products.

Sixty samples of smoking and chewing tobacco from subjects in and around Ludhiana, Punjab were tested for arsenic content. No significant difference between the two groups could be detected. The probable role of arsenicosis and tobacco in neuropathy and liver disease was suspected in the Indian population.

The significance of the interaction between alcohol and tobacco in causing head and neck cancers is well documented. In vitro studies using aqueous and organic extracts as well as cytogenetic studies among pan masala consumers have conclusively shown the genotoxic potential of pan masala. The clastogenic effect of ethanol and pan masala in different combinations was evaluated on Chinese hamster ovary cells utilizing chromosome aberration (CA) frequency as an endpoint. An ethanol concentration of up to 2.0% had no effect on CA/cell value. The low-dose continuous treatment and high-dose short-term pre-, post- and simultaneous treatment of ethanol and aqueous extract of pan masala with and without tobacco yielded dose-dependent elevations in CA frequency, compared to any of these two substances alone. Thus, these results provide evidence that alcohol consumption may potentially increase the risk of oral cancer among pan masala chewers.

The genotoxic potential of ‘gudakhu’, a paste-like tobacco preparation that is used widely in Orissa and Bihar, India, was evaluated using the micronucleus test in exfoliated cells of the buccal mucosa. Cells from 120 habitual users and from 102 non-users were examined. The incidence of micronuclei (MN) was increased in the mucosa cells of users, and the increase
was significant in those who had used gudakhu for more than 5 yr. The increased incidence of MN was significantly correlated with the period of use of gudakhu, as well as with the frequency of daily use.\textsuperscript{21}

In a study conducted in animal systems with tobacco products commonly used in India, it was concluded that tobacco products used in India are carcinogenic to animal systems.\textsuperscript{15}

Analytical and biological studies of tobacco with or without betel quid, masheri, a pyrolysed tobacco product used as dentifrice and creamy snuff were analysed for tobacco specific nitrosamines (TSNAs). All them contained quantities of nitrosonornicotine (NNN), 4-(methyl nitrosamino)-1-(3-pyridyl)-1-butane (NNK), N′-nitrosoanatabine (NAT) and N′ – nitrosoanabasine (NAB). In short term tests for mutagenicity of tobacco, masheri and two important TSNAs e.g. NNN and NNK, it was observed all were mutagenic in Ames test and micronuclei test. Subsequent long term studies on carcinogenicity revealed that masheri induced preliminary stomach papillomas, while tobacco, NNN and NNK induced lung tumors, forestomach tumors and occasionally liver tumors. The studies conclusively proved that tobacco products containing preformed TSNA are mutagenic and carcinogenic.\textsuperscript{14}

Masheri, an indigenous pyrolysed tobacco product in India, was found to be rich in N-nitrosamines and polycyclic aromatic hydrocarbons. It was highly mutagenic in the presence of an exogenous metabolic system in the Ames test and in the micronucleus test, in a dose-dependent manner. It also induced 8-azaguanine-resistant mutants in Chinese hamster V79 cells. On skin painting, it showed a weak carcinogenic effect in Swiss nude mice. The saliva of masheri users showed high levels of N′-nitrosonornicotine (NNN; 14-43 ppb) and N-nitrosopyrrolidine (NPYR; 2.2-8.3 ppb). Thus, this tobacco habit, was considered as an additive risk factor in oropharyngeal carcinogenesis.\textsuperscript{16}

The toxicity of tuibur(Tobacco water, used in northeastern states of India) was studied using modified version of \textit{Allium} test. Even dilute solutions of tuibur exhibited significant toxicity by reducing the root growth of \textit{Allium} bulbs and inducing tumour formation in the roots. Microscopical features revealed reduction of mitotic index, formation of micronuclei, lagging chromosome and c-mitosis in the root tip cells treated with different concentrations of tuibur. People use undiluted (100%) tuibur regularly whereas even its dilute solutions showed significant toxic effect. Therefore, impact of this unique form of smokeless tobacco product can have greater implications on human health.\textsuperscript{55}

In vitro, an aqueous extract of the Khaini tobacco elicits chromosome aberrations and micronuclei in cultured human fibroblasts and Chinese hamster ovary (CHO) cells.
Chapter 4

Implications

4.1 Early implications

4.1.1 Poverty Many of the risks to health and life caused by tobacco consumption develop over a long period, and take decades to become fully evident. But tobacco use also inflict immediate harm on users and their families, damage is wreaked little by little each day. This is the damage that is done when scarce family resources are spent on tobacco products instead of on food, or other essential needs. Even a small diversion of resources of poor families who live at or below the edge of poverty can have a significant impact on their health and nutrition. This has been shown in many studies from Southeast Asia. In poverty and tobacco studies, in Southeast Asia, studies from Bangladesh and Indonesia have taken smoking into account while Studies from India and Myanmar have shown the relationship of growing poverty with use of smokeless tobacco use). Efroymson and colleagues show that "If poor people did not smoke . . . potentially 10.5 million fewer people would be malnourished in Bangladesh." Each tobacco user represents one or more people whether the user or his or her spouse or child who is needlessly going hungry." The national household expenditure survey in India in 1986-87 found that between 2.5-4% of all household expenditures were for tobacco, pan, and intoxicants; the percentage was highest for the lowest income urban households. Path Canada, India project study, done on disadvantaged group of adolescents (400 street children in Mumbai) found that they use tobacco at the cost of their meals. They spent four times on gutka purchase as compared to their protein (eggs).

![Average monthly expenditures on tobacco and other items, India](image)

Figure 27 Expenditure on tobacco and essential food items
Source Path Canada India Study

A world Bank study found that sickness or injury of a family member caused by tobacco use was by far the most frequent trigger for a downward slide into (worse) poverty. The implications of high prevalence of tobacco use among men with low education and low
incomes, which raises their relative risks of serious diseases and premature death, are grave in Southeast Asian countries.

Instead of going up in buying carcinogens (TRC), the money might instead be buying desperately needed additional calories and nutrients. Efroymson et al. 24 show that "If poor people did not use tobacco . . . potentially 10.5 million fewer people would be malnourished in Bangladesh." Of course, reducing malnutrition is a complex challenge in Southeast Asian countries, and additional income does not translate in any simple way into nutritional improvements. Clean water, the intra-household distribution of food, feeding and child care practices, and many other factors are relevant in Southeast Asian countries but resources are diverted towards tobacco use.

4.1.2 Environmental pollution
This is common to see the red splotches on the pavement everywhere as are evidences of the copious spitting that is so deeply culturally ingrained in Southeast Asia. It is always nostalgic to see these stains in public places. One of the responsible factors for the discord between travelers and South east Asians (Indians) is the spitting habits. Some quotes 18,64,82,122 from Western travelers to Southeast Asian countries are illustrated here for better explanations

“The difference in personal habits between India and the West is quite obvious: in India there seems to be no taboo about spitting,” “............Most Indians don't mind the spitting.”

“you see the red splotches on the pavement everywhere as evidence of the copious spitting that is so deeply culturally ingrained. Whole tile corners are stained red with the stuff in Connaught Place, which is a big circular colonnade serving as the heart of New Delhi.”

“India, in my opinion one, of the most civilized place on earth. (That is, apart from all the spitting and shitting.)”

“Many Indians (with sincere apologies to those who don't), irrespective of class, gender, age or social status have this absolutely unhygienic habit of spitting out in public - tobacco, pan, supari, chewing gum and worst of all, the secretions of their sinuses! They spit from the top storey of a double-decker bus, from the rolled down glass of a Ferrari, from a railway train window, and if possible even from an Airplane, I guess…”4 My misadventure required an immediate shower and lots of antiseptic to cleanse the exterior. But what about that dirty feeling that lingers in the mind. After all this, I had to return to the world of coughs, puffs and spitting fools loitering around every nook and corner…”

4.2 Late implications

Health

4.2.1 Mortality: Smokeless tobacco use in South East Asia may be considered as a potent contributor to mortality. The evidence from three cohort studies in India indicates that the age-adjusted relative risk of mortality for users of smokeless tobacco, is elevated compared to that of non-tobacco users.
A large cohort study in Mumbai showed elevated relative risks of death for both male and female users of smokeless tobacco (mainly in the forms of *mishri* and betel quid). The results were based on 5-6 years of follow-up of 52,000 persons, with 114,980 person years for female and 57,890 for male smokeless tobacco users. The age-adjusted relative risk for smokeless tobacco users compared with non-tobacco users among men was 1.22, and for women it was 1.35, with a suggestion of a dose–response relationship for daily frequency of use. In another cohort study in India (Ernakulam, Kerala) on a cohort of 10,287 individuals (15+ yrs) the relative risk of death for female chewers on 10 years follow up was significant \( P < 0.05 \) but not for male chewers 1.2 (not significant). In another cohort study in (Andhra Pradesh) India with 10,169 persons for same period of follow up (10 years) an age-adjusted relative risk of 1.96 was observed however, the predominant habit was reverse chutta smoking but there were some tobacco chewers among the men.

### 4.2.2 Morbidity:

The major health consequences associated with smokeless tobacco use in Southeast Asia include cancers of several sites (e.g. the upper respiratory and digestive tracts), and poor reproductive outcomes. There are some research results on the impact of smokeless tobacco on blood pressure and cardiac disease. In addition, use of areca nut, often chewed with tobacco, can predispose to diabetes mellitus and aggravate asthma. Epidemiological evidence from selected studies on the relationship of smokeless tobacco use with various diseases is summarized below.

#### 4.2.2.1 Non communicable diseases

**Cancers**

In India, the number of newly diagnosed tobacco-related cancers has been estimated at approximately 250,000 out of a total of 700,000–900,000 new cancers diagnosed each year. Tobacco-related cancers account for about one-third of all cancers in Bangladesh, India and Sri Lanka.

**Oral cancers:** Oral and pharyngeal cancers have a high incidence in Southeast Asia, even among women. In this area, the oral use of smokeless tobacco is considered the predominant risk factor for these cancers, especially oral cancer. In an evaluation of epidemiological studies on the carcinogenic risk to humans of tobacco habits other than smoking, the IARC Working Group concluded that there was sufficient evidence that the habits of chewing betel quid containing tobacco and tobacco mixed with lime were carcinogenic to humans. Since then, nine case-control studies from India and one from Pakistan on cancers of the oral cavity have provided fresh evidence of the oral cancer risk to chewers of betel quid with tobacco. In six of the studies from India, relative risks of oral cancer for men who were current chewers of *pan* with tobacco compared to non-chewers varied from 1.8 (95% CI: 1.2–2.7) to 5.8 (95% CI: 3.6–9.5). In contrast, for men who were current bidi smokers the relative risks varied from non-significant to around 2. Relative risks of oral cancer for women who currently chewed *pan* with tobacco varied from 30.4 (95% CI: 12.6–73.4) to 45.9 (95% CI: 25.0–84.1). The odds ratio for men who currently chewed areca nut without tobacco compared to non-chewers was 1.7 in one study. Relative risks of oral cancer in men, stratified by habit as ‘ever’ chewers and ‘never’ chewers or smokers, were reported in three studies conducted in Trivandrum, as 6.1 for tongue and floor of the mouth (95% CI: 3.3–11.4), 8.75 for gingiva (among nondrinkers only; 95% CI: 3.6–21.5) and 14.3 for buccal and labial mucosa (95% CI:
Significant dose–response trends were observed for frequency of chewing per day in many studies, and for duration of habit in some of them. Retention of the quid overnight, analysed in another study, showed a 36-fold increased risk.\textsuperscript{40} In a case series study from Bangladesh, the site of origin of the majority of the lesions corresponded with the site maximally exposed to betel quid, usually in the buccal mucosa.\textsuperscript{1} A case series study from Myanmar indicated a clear association of oral cancer with betel-quid chewing.\textsuperscript{97} Use of tobacco with lime was identified as a definite risk factor for oral cancer. Two large hospital-based case-control studies from India, reported two fold increases in the risk of oral cancer. In one study of oral cancer from India, current users of nasal snuff had a relative risk of 3.9 ($P < 0.05$) for cancer of the gingiva.\textsuperscript{92} Due to a lack of reported studies, the IARC Working Group had stated that there was inadequate evidence that oral use of \textit{mishri}, and \textit{gudakhu} are carcinogenic in humans. Not much further published evidence has emerged since then.\textsuperscript{32} In Thailand changes of traditional oral habits such as betel quid chewing seem to have resulted in a marked decrease of oral cancer in both men and women in the recent past. The age-standardized annual incidence per 100000 of oral cancer in males dropped from 3.6 (1988-1991) to 1.2 in 1999 ($P$ for trend $0.0002$) and in females from 2.6 (1988-1999) to 1.1 in 1999 ($P$ for trend $0.0007$). Similar trends in males and females for cancer of the tongue, oropharynx and hypopharynx were seen.\textsuperscript{90}

\textit{Oropharyngeal cancers:} A significant relative risk of 1.74 (95% CI: 1.25–2.43) was found for oropharyngeal cancer in men who chewed betel quid with tobacco, after adjusting for smoking and alcohol consumption, in one study.\textsuperscript{139} A significant dose–response for the frequency and duration of chewing was reported in another study.\textsuperscript{22}

\textit{Laryngeal cancers:} Smoking poses a much greater risk for cancer of the larynx. However one case-control study from India showed a highly significant relative risk of laryngeal cancer for occasional pan-tobacco chewing.\textsuperscript{88}

\textit{Oesophageal cancers:} Five case-control studies from India were available for analysis. In three case-control studies of oesophageal cancer, significant odds ratios for tobacco chewers (generally betel quid) varied from 2.1 to 3.2 in multivariate models.\textsuperscript{73,74,139} In two other studies of oesophageal cancer, only insignificant odds ratios for tobacco chewing (mostly betel quid) were found.\textsuperscript{88,96} In one of these studies, the adjusted odds ratio for the lower third of the oesophagus for chewers was 6.6 ($P < 0.001$).\textsuperscript{73} Two case control studies found a dose–response relationship for oesophageal cancers with chewing of areca nut/betel quid with or without tobacco.\textsuperscript{96,139} The study from Assam\textsuperscript{83} found highly elevated risks for the use of fermented areca nut, \textit{tamol}, with any form of tobacco (7.1 for men and 3.6 for women).

**Oral submucous fibrosis**

Oral submucous fibrosis (OSF) is a debilitating, potentially cancerous oral condition, caused primarily by chewing areca nut and its mixtures, as demonstrated by numerous epidemiological studies and other corroborative evidence.\textsuperscript{66} The condition may sometimes extend beyond the mouth to the oesophagus.\textsuperscript{61} The intense marketing of \textit{Gutka} has considerably increased the occurrence of OSF in the Indian population. In three recent case-control studies (in Bhavnagar, Gujarat; Nagpur, Maharashtra; and New Delhi) over 70% of the cases were under 35 years of age.\textsuperscript{33,43,98} In two studies from India, frequency of chewing was directly related to OSF.\textsuperscript{43,98} \textit{Pan masala} chewers developed the condition in about half the
time compared to quid users (betel quid, areca quid), with 75% of the pan masala chewers developing the disease within 4.5 years and quid chewers in about 9.5 years. It is supposed that absence of betel leaf in pan masala and the proportionately higher dry weight of areca nuts may be responsible for the earlier development of OSF in pan masala chewers. Tobacco as an ingredient in some areca nut mixtures is not a causative factor for OSF, but is responsible for a higher occurrence of OSF due to increased addiction and concurrent use of areca nut.

OSF is well established as a condition with high malignant potential and is considered irreversible. In a cohort study of 12 212 tobacco users in India (Kerala), patients with OSF followed up for an average of 6.0 years showed a relative risk of developing oral cancer of 397.3 compared to those with no oral lesions but with tobacco habits. The suspicion that increased occurrence of OSF in the younger age groups would lead to an earlier development of oral cancer from OSF was confirmed by the demonstration of a significant increase in the incidence of oral cancer in the Ahmedabad population-based cancer registry data. A comparison of the age-specific incidence rates of mouth cancer (ICD 143–5) during 1983–1987 and 1995 shows that the incidence had significantly increased in the younger population (< 50 years).

**Hypertension and blood lipid profile**

There is some evidence that smokeless tobacco is a risk factor for hypertension and adverse blood lipid profile. A study from India revealed that consumption of locally prepared alcohol, intake of extra salt and the habit of using khaini increased the risk of hypertension. Another study found statistically significant increments in heart rate and blood pressure following the chewing of betel quid with tobacco for 15–30 min, while no significant differences were found after chewing betel quid without tobacco.

High-density lipoprotein-cholesterol was lower in both smokers ($P < 0.01$) and tobacco chewers ($P < 0.001$) than in the controls; it also found that both smokers and tobacco chewers had higher values for total cholesterol, low-density lipoprotein cholesterol, very low-density lipoprotein-cholesterol and triglycerides, as compared to the no habit group. Thus smoking and tobacco chewing both demonstrated comparable adverse effects on lipid profile and could increase cardiovascular risk.

**Adverse effects on pregnancy**

Adverse reproductive outcomes from smoking during pregnancy have been well documented. There is some evidence that the same relationship may hold for smokeless tobacco use as well. Studies from India have shown a nearly threefold increase in stillbirths and a 100–400 g decrease in birth weight, in offspring of women who applied or chewed tobacco during pregnancy. Odds ratios varying from 2 to 3 have been found for low birth weight in infants born to mothers using smokeless tobacco. Other associations included an average increase in placental weight of 66 g in tobacco chewers (mostly tobacco with lime) and increased male fetus wastage, compared to non-users.
The WHO study in India \textsuperscript{128} and Bangladesh \textsuperscript{129} clearly pointed out towards significantly higher percentage of lower gestation period (Figure 1) and lower birth weight birth weight (figure 29) among smokeless tobacco users.

![Figure 28 - Odds ratio for low gestation period; WHO, India studies, 2002 \textsuperscript{128}]
Asthma
Asthma patients who chew betel quid with or without tobacco may find their condition aggravated by the arecoline from areca nut, which induces the contraction of bronchiolar smooth muscle by means of its acetylcholine-like (parasympathetic) actions.\textsuperscript{69}

Dental Hygiene
To detect the periodontal status 2178 rural adult males aged 20-60 years of male smokers and betel chewers in a rural community in Sri Lanka and compared it with that of male non-tobacco users of the same community. Bivariate analysis revealed that the overall periodontitis levels were significantly higher in betel chewers and smokers than in non-tobacco users. Oral hygiene and the quantified tobacco use may be considered as risk indicators for periodontitis.\textsuperscript{53}

4.2.2.2 Communicable diseases
WHO predicts that 30 million people will die of tuberculosis and 300 million will be infected by 2008. Tuberculosis is transmitted by air in coughing, sneezing, talking, or spitting,\textsuperscript{60} with spitting practices there is always increased chance of spread of communicable disease. Use of oral tobacco enhances the frequency of public spitting and thus increases the chances of communicable disease. There is need to initiate such case controlled studies for oral tobacco use, spitting and spread of communicable disease.

Chapter 5

Oral tobacco promotion & control practices

Oral tobacco is promoted intensively in India; In Bangladesh, Myanmar and Sri Lanka promotion is not very visible however in Nepal it is visible to some extent. Betel chewing promotion is mainly through culture but its tobacco ingredients are heavily promoted in India; of them zarda tops.
Other tobacco products are also advertised of them Gutka is most important. They are promoted through all media and all other avenues that can influence the youth and people at large.

One of the evidences on exposure of Gutka advertisement has been collected from GYTS study in India. Nine in ten students saw actors chewing tobacco in TV (5, a lot and 4, sometimes) and gutka ads on billboards (5, a lot and 4, sometimes). Eight in ten students saw gutka brand names on TV (4, a lot and 4, sometimes). Seven in ten students saw gutka advertisement in newspapers/magazines (4, a lot and 3, sometimes) and gutka ads in social/sports events (4, a lot and 3, sometimes) (Table9,10).  

Table 9 Gutka advertisement in TV and outdoor media, India GYTS, 2000-2
<table>
<thead>
<tr>
<th></th>
<th>Actors Chewing in TV</th>
<th>Gutka brand names /logo on TV</th>
<th>Gutka Advertisement on billboards</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>A lot</td>
<td>Sometimes</td>
<td>A lot</td>
</tr>
<tr>
<td>Arunachal Pr</td>
<td>51.0 (± 5.0)</td>
<td>30.3 (± 4.40)</td>
<td>38.0 (± 4.1)</td>
</tr>
<tr>
<td>Assam</td>
<td>55.6 (± 5.9)</td>
<td>25.3 (± 5.0)</td>
<td>39.1 (± 5.9)</td>
</tr>
<tr>
<td>Bihar</td>
<td>2.0 (± 1.1)</td>
<td>94.7 (± 2.7)</td>
<td>94.6 (± 2.7)</td>
</tr>
<tr>
<td>Manipur</td>
<td>65.9 (± 11.9)</td>
<td>49.8 (± 4.8)</td>
<td>35.9 (± 7.4)</td>
</tr>
<tr>
<td>Meghalaya</td>
<td>49.1 (± 13.2)</td>
<td>40.8 (± 4.7)</td>
<td>40.5 (± 7.0)</td>
</tr>
<tr>
<td>Mizoram</td>
<td>19.1 (± 4.0)</td>
<td>40.7 (± 3.9)</td>
<td>14.6 (± 2.6)</td>
</tr>
<tr>
<td>Nagaland</td>
<td>57.6 (± 9.8)</td>
<td>26.0 (± 6.0)</td>
<td>30.7 (± 4.3)</td>
</tr>
<tr>
<td>Orissa</td>
<td>37.4 (± 3.8)</td>
<td>24.0 (± 2.7)</td>
<td>38.1 (± 4.0)</td>
</tr>
<tr>
<td>Sikkim</td>
<td>63.5 (± 5.9)</td>
<td>34.8 (± 4.9)</td>
<td>48.7 (± 6.6)</td>
</tr>
<tr>
<td>Tripura</td>
<td>60.3 (± 8.2)</td>
<td>39.7 (± 7.6)</td>
<td>46.1 (± 7.5)</td>
</tr>
<tr>
<td>Uttar Pradesh</td>
<td>39.1 (± 5.0)</td>
<td>33.3 (± 4.7)</td>
<td>37.2 (± 4.5)</td>
</tr>
<tr>
<td>Uttarakhand</td>
<td>43.8 (± 4.3)</td>
<td>36.6 (± 4.8)</td>
<td>45.3 (± 5.8)</td>
</tr>
</tbody>
</table>

Source: Sinha 2003

Figure in parenthesis denotes 95% confidence interval.
Table 10 Gutka advertisements in newspapers, community events and through vendors, India GYTS, 2000-2

<table>
<thead>
<tr>
<th></th>
<th>Gutka Advertisement in newspapers</th>
<th>Gutka Advertisement in social events</th>
<th>Vendors offered free Gutka</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>A lot</td>
<td>Sometimes</td>
<td>A lot</td>
</tr>
<tr>
<td>Arunachal Pr</td>
<td>38.7(± 4.5)</td>
<td>42.2(±5.5)</td>
<td>35.7(± 3.3)</td>
</tr>
<tr>
<td>Assam</td>
<td>44.4(± 7.2)</td>
<td>32.0(± 4.3)</td>
<td>45.8(± 5.4)</td>
</tr>
<tr>
<td>Bihar</td>
<td>93.2(± 3.7)</td>
<td>4.3(± 2.6)</td>
<td>93.5(± 3.4)</td>
</tr>
<tr>
<td>Manipur</td>
<td>36.7(± 7.4)</td>
<td>40.9(± 5.0)</td>
<td>36.0(± 7.1)</td>
</tr>
<tr>
<td>Meghalaya</td>
<td>43.1(±9.0)</td>
<td>35.4(± 3.5)</td>
<td>38.1(± 9.0)</td>
</tr>
<tr>
<td>Mizoram</td>
<td>15.9(±3.2)</td>
<td>27.8(± 4.0)</td>
<td>15.9(± 3.3)</td>
</tr>
<tr>
<td>Nagaland</td>
<td>34.6(±4.0)</td>
<td>42.6(± 6.6)</td>
<td>32.2(± 4.3)</td>
</tr>
<tr>
<td>Orissa</td>
<td>19.0(± 2.5)</td>
<td>36.1(± 3.9)</td>
<td>20.3(± 2.1)</td>
</tr>
<tr>
<td>Sikkim</td>
<td>53.1(± 6.3)</td>
<td>33.1(± 4.3)</td>
<td>50.4(± 6.9)</td>
</tr>
<tr>
<td>Tripura</td>
<td>51.6(7.7)</td>
<td>32.7(±7.6)</td>
<td>50.9(±7.2)</td>
</tr>
<tr>
<td>Uttar Pradesh</td>
<td>41.6(± 6.9)</td>
<td>21.9(±3.4)</td>
<td>35.7(± 5.8)</td>
</tr>
<tr>
<td>Uttarakhand</td>
<td>34.1(± 5.0)</td>
<td>38.2(±3.9)</td>
<td>41.2(± 5.1)</td>
</tr>
</tbody>
</table>

*Source: Sinha 2003* 110

Figure in parenthesis denotes 95% confidence interval

Figure 32 Gutka advertisement in sports page of Newspapers
Figure 33 Gutka advertisement in sports magazines

Figure 34 Zarda advertisement on billboards
In the Southeast Asian region, like everywhere else, existing tobacco control legislation focuses more on cigarettes and smoking ban. Spitting in public places is prohibited in limited areas in different member countries in Southeast Asia region. In India spitting is prohibited in Goa, West Bengal, and certain areas in Maharashtra \(^{114-116}\) and other states. Goa has taken certain steps to implement this policy however in other places implementation is not a reality. The corridors, working chambers, bath rooms, corners in lifts and stairs in many government buildings, even schools in different parts of India, are stained with tobacco quid. Likewise in certain areas of townships in Myanmar, the local government bans spitting on roads and charge heavy penalties. In certain areas of Yangon and few other townships this is implemented however situation is almost the same as in India throughout the country. The author has no knowledge about prohibition of spitting in other member countries.

In India ‘The new Cigarettes and Other Tobacco Products Act, 2003.\(^{113}\) prohibits direct advertising in all media and sports sponsorship by tobacco companies. It also prohibits smoking in public places to protect nonsmokers, especially children, from environmental smoke. It disallows the sale of tobacco in any form to persons under 18 years and within 100 yards of educational institutions. Clear health warnings in local languages and in English have been made mandatory on all packages, with a pictorial warning of a skull and cross-bones. Also, the tar and nicotine content of cigarettes have to be specified on the packages. Issues of enforcement will have to be tackled next, and this will require the strong voice of prominent and knowledgeable citizens, including health professionals.

Certain states in India took initiative to control some chewing products like gutka. In Maharashtra, Goa, Tamilnadu, Bihar\(^{117-119}\) and few other states banned gutka advertisements and sale to minors. Bihar in one step further banned sale, storage and use of gutka in the state. The West Bengal government and few other state governments prohibited advertisements, the sale and storage and distribution of any tobacco products within 100 yards of educational institutions and to minors. On the other hand industry opposition through the courts has forced some of the states to modify the ban or postpone its implementation until the Supreme Court reaches a decision. The Union Ministry of railway banned sale and use of tobacco products on platforms and trains but it goes without implementation.

Since 1990, in India, the scope of the Prevention of Food Adulteration Act, 1954 was expanded to cover chewing tobacco and pan masala, whereby these products need to bear the statutory warning, “Chewing of tobacco is injurious to health”, and “Chewing of pan masala may be injurious to health”, respectively. Every package of areca nut is to carry the warning “Chewing of supari is injurious to health”. Other member countries in Southeast Asia do not face such situation as gutka is not commonly practiced. However it is penetrating into the border of neighboring countries from India and is taking a shape of status symbol to use foreign tobacco products (especially among rich and affordable section in Myanmar, Bangladesh and Nepal). Statutory warnings were almost absent on zarda tins in Myanmar and Bangladesh. Some products, bear warnings in foreign languages (Hindi and English), but not in local language (Burmese and Urdu).
In India, in 1992, an amendment in the Drugs and Cosmetics Act, 1940 barred manufacturers from using tobacco as one of the ingredients in toothpaste and toothpowder. However analysis of such products, 10 years after the legislation found tobacco in lal dantmanjan samples.\textsuperscript{106}

**Past experience effective health education**

In Southeast Asia, especially there is evidence of demonstrable feasibility and efficacy of anti-tobacco education for the community in high tobacco-chewing areas through controlled intervention studies.\textsuperscript{5,38} A large controlled prospective intervention trial for primary prevention of oral cancer was conducted in Kerala, India. The intervention cohort, at baseline, consisted of 12,212 tobacco users 15 years of age and older in the intervention group and 6075 subjects in a non-concurrent control cohort.\textsuperscript{38} Both cohorts were interviewed about their tobacco use by trained investigators, and subjects were examined for the presence of oral lesions by dentists and subjected to 10 annual follow up examinations.

In the intervention cohort at baseline, 16\% were chewers (mostly betel quid with tobacco) while among women tobacco users, 92\% were chewers. The percentages were somewhat similar in the control cohort. At baseline, the prevalence of leukoplakia was 2.9\% in the intervention cohort and 2.7\% in the control cohort.\textsuperscript{58,65}

In the intervention villages, social scientists provided personal communication on tobacco habits using photographs and pictorial booklets and addressed the factors that can influence continuation of tobacco use. Two documentary films were made with the involvement of the local people to reinforce the messages imparted during home visits. The first film imparted information on the relationship between tobacco use and oral cancer and the second one addressed the reasons for initiation and tips on tobacco cessation. Cinema slides, posters, folk dramas, radio programs and newspaper articles were also used, with content based on feedback received from the field. At the request of the population, cessation camps were conducted, with group discussions on problems faced in cessation and possible solutions, as well as a few days of regular daily counseling of individuals. Ten annual follow-up surveys were conducted after the baseline survey, covering a 10-year period for the intervention cohort during 1977–1988.

**Table 11** Stoppage of tobacco chewing habits in intervention and control cohorts in South India (Ernakulam District) during 10 years of follow up

<table>
<thead>
<tr>
<th>Interval</th>
<th>Intervention</th>
<th>Control*</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>%</td>
<td></td>
</tr>
<tr>
<td>1 year</td>
<td>2.7</td>
<td>nr</td>
</tr>
<tr>
<td>5 years</td>
<td>10.2 (men)</td>
<td>nr</td>
</tr>
<tr>
<td></td>
<td>14.9 (women)</td>
<td>nr</td>
</tr>
<tr>
<td></td>
<td>13.9 (all)</td>
<td>4.2 (all)</td>
</tr>
<tr>
<td>8 years</td>
<td>13.0 (men)</td>
<td>1 (men)</td>
</tr>
<tr>
<td></td>
<td>18.0 (women)</td>
<td>6 (women)</td>
</tr>
<tr>
<td>10 years</td>
<td>15.1 (men)</td>
<td>2.3 (men)</td>
</tr>
</tbody>
</table>
nr, not reported

*Minimal intervention

Source: Gupta & Ray, 2004

Cohort (1966–1977), no active programme of health education was undertaken, but during the surveys, the dentists routinely explained the association of tobacco use with oral cancer and advised against tobacco use, more forcefully so if the individual had a precancerous lesion. Results for 1 year, 5 years, 8 years and 10 years of follow-up were reported (Table 11). After 1 year of follow up, 2.7% of the intervention cohort had stopped and 6.5% had reduced their chewing habits. The rate of regression of leukoplakia among those who had stopped or reduced their tobacco use was 5.3%, which was significantly higher than the rate (1.1%) in those who did not change or increased their tobacco use. After 5 years of follow up, the percentage stopping their tobacco use (of every type) was higher in the intervention cohort compared to the control cohort: 3% in the control group versus 9% in the intervention cohort, but for chewers in particular, 10.2% of men and 14.9% of women chewers in the intervention cohort had stopped. Furthermore, the reduction in tobacco use by continuing users was much higher in the intervention cohort than in the control group. For chewers after 5 years, the age-adjusted incidence rate of leukoplakia per 1000 men was 44.6 in the control cohort versus 22.6 in the intervention cohort, and 33.5 versus 6.2 among women (Table 12). The rate ratio for the protective effect of the intervention against leukoplakia ranged from 0.19 to 0.51 in women and men chewers, respectively. Intervention was helpful to all categories of tobacco users but was more helpful to men and chewers (mainly betel quid with tobacco), especially those with habits of long duration.

Table 12 Annual age adjusted incidence rates per 1000 of leukoplakia in tobacco (betel quid) chewers in intervention and control cohorts in South India (Ernakulum District) over 10 years of follow-up

<table>
<thead>
<tr>
<th>Interval</th>
<th>Intervention</th>
<th>Control</th>
<th>Odds ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>5 years</td>
<td>22.6 (men)</td>
<td>44.6 (men)</td>
<td>nr</td>
</tr>
<tr>
<td></td>
<td>6.2 (women)</td>
<td>33.5 (women)</td>
<td></td>
</tr>
<tr>
<td>8 years</td>
<td>3.5 (men)</td>
<td>7.4 (men)</td>
<td>nr</td>
</tr>
<tr>
<td></td>
<td>4.8 (women)</td>
<td>6.2 (women)</td>
<td></td>
</tr>
<tr>
<td>10 years</td>
<td>3.3 (men)</td>
<td>5.2 (men)</td>
<td>0.63*</td>
</tr>
<tr>
<td></td>
<td>2.2 (women)</td>
<td>4.6 (women)</td>
<td>0.45*</td>
</tr>
</tbody>
</table>

* P< 0.05, nr, not reported

* Minimal Intervention

Source: Gupta & Ray 2004

By the end of 10 years, significant quit rate among tobacco chewers (15.1% of men and 18.4% of women) tobacco chewers in the intervention cohort was observed as compared to 2.3% and 7.8% in the control cohort. The reduction in the daily frequency of overall tobacco use was higher in the intervention than in the control cohort. The relapse rates were much lower in the intervention cohort than in the control cohort. The overall incidence of leukoplakia in the control group was 40% higher (Table 4) than in the intervention cohort and
the differences in observed and expected incidence rates of leukoplakia among tobacco users of all types were statistically significant \((P < 0.05)\). In a detailed analysis of the effect of cessation of tobacco use, it was shown that it led to a substantial fall in the incidence of leukoplakia. The incidence ratios between those who stopped their habits and all others ranged from 0.15 to 0.81 in different gender and tobacco use groups. For female chewers this was 0.31 and for male chewers it was 0.81. The fact that all ratios were below unity implied a reduced risk of oral cancer after cessation of tobacco use, since oral leukoplakia demonstrated a high pre-malignant potential.

The educational intervention was helpful in reducing the use of tobacco, in increasing quit rates and decreasing relapse rates. Spontaneous regression rates of oral precancerous lesions were higher among individuals who reported stopping or reducing their tobacco use compared to those who did not. The incidence rates of oral pre-cancer were lower in the intervention cohort than in the control cohort. This study was felt to have demonstrated the feasibility and practicality of primary efforts in preventing oral cancer in rural India. Another educational intervention, was carried in South India (Kolar District, Karnataka) was carried out by specially trained primary health centre (PHC) workers in the government system, in one experimental and two control areas with similar populations. They performed the baseline habit prevalence survey in the three areas and provided anti-tobacco education of the community in the experimental area and a repeat survey after 2 years and a final survey after another 3 years. Health education methods included screening of films, exhibits, and personal contact with a display of photographs of the harmful effects of tobacco. Results after the final survey showed that in the experimental area, the decline in the prevalence of tobacco use in the prevalence of tobacco use (compared with the baseline) was 10.2% in males and 16.3% in females. The quit rates in men and women in the intervention cohort were 26.5% and 36.7%, respectively, compared to 1.1% and 1.5% in a control cohort. In Western India (Goa) trained 4th and 5th grade students in 46 villages communicated anti-tobacco information to their parents and to the community. Quit rates of 8.9% among men and 11% among women were observed after about 1.5 years from baseline.

**Mass media intervention**

A ‘radio dates 1990’ was launched by Indian Council of Medical Research, educational information about the use of tobacco was broadcasted on All India Radio (the only radio medium at that time), through 30 Sunday morning episodes in 16 languages from 84 stations. Community surveys (without comparison groups) conducted in Karnataka and Goa to evaluate the broadcasts showed that about 30% of the potential audience listened to the programmes in both states. In Karnataka, nearly 6% of tobacco users reported quitting the habit, as did 4.3% in Goa. In addition, about one-third of tobacco users intended to quit and another third had reduced their consumption.

**Educational messages, materials, and related issues**

Methods of communication used in the South India (Ernakulam) intervention study included personal communication, films, posters, newspaper articles, folk dramas, radio programmes, exhibits, group meetings and cessation camps. The study experience showed that the health messages should be personally relevant to the consumer, and tailored to his/her beliefs and lifestyle, including the prevalent tobacco habits in the area.
**WHO Community cessation Intervention**

WHO pilot testing on community cessation intervention in India\(^{130}\), Myanmar\(^{131}\) and some other member countries have shown that it is cost effective and sustainable.

**WHO Clinical Cessation Intervention**

Clinical cessation is well practiced in Thailand. WHO has taken initiative to extend and strengthen clinical cessation to other member countries in the region and 12 cessation clinics in different parts of India has been sponsored by WHO, India. These clinics are pilot testing on cessation of smokeless tobacco too. This experience needs to be disseminated to other parts of India and to other member countries where smokeless tobacco use is high.

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**Chapter 6**

**Recommendations**

**Spitting ban**

Spitting in public is one of the important public health hazards. Oral tobacco use enhances the frequency of public spitting as everyone is to spit after taking oral tobacco. It increases the chance of airborne communicable diseases in developing countries. Spread of TB is one of them. Non-spatters have all rights to protect themselves from the hazard of public spitting. Singapore is one of the best example where communicable and non communicable disease has been reduced after this law is enforced.\(^{37}\)

**End to misbelieve**

There is widespread belief that smokeless tobacco use is less harmful than smoking. There needs to have an end of this belief. This may be achieved by sustainable public education system with sufficient scientific proofs and simple logics.

**Equal importance to smokeless and Smoking control strategies**
‘Smokeless tobacco use’ is not given a priority during planning and management of comprehensive tobacco control. In developing countries policy makers need to be appraised that smokeless tobacco use is equally implacable society, environment and health of individual and community.

**Caring special groups (Pregnant Women)**
Due to lack of information many thousands pregnant women continue with smokeless tobacco use during pregnancy. In group discussion with community people it was revealed that smoking is supposed to be dangerous for pregnancy so both females and male smokers switch over to smokeless tobacco during the pregnancy. During the first prenatal visit by a pregnant woman, details of tobacco use should be ascertained. Families with pregnant women need to be counseled and educated that smokeless tobacco use as well as smoking both are detrimental for the health of babies lying in womb. Health centers providing prenatal care ought to follow strict no tobacco policies in their premises. Reproductive health care givers should not use tobacco. If they are users, they ought to be helped in towards tobacco use cessation.

**Extension of Clinical cessation services in the Region**
More cessation clinics should be established in the region to help over 250 million smokeless tobacco users to quit.

**Development of educational materials**
There is a paucity of educational materials on smokeless tobacco. Keeping in mind the high quality of tobacco advertising that commands the attention of the public, skilled commercial artists should be motivated to work with health professionals and health authorities in preparing such materials which must be attractive, with simple language and unequivocal meaning, incorporating messages about all forms of smokeless tobacco and smoking. Anti-tobacco education must be imparted through schools, hospital outreach programmes, existing government health programmes such as maternal and child health programmes and routine home visits, using suitable materials.

It is essential that medical and health-related conferences be made tobacco free, including all venues attached to the conference, and this should apply to all participants, staff, advertisers and volunteers that would help to raise awareness among participants and non-participants connected with the event. The International Union against Cancer (UICC) has already adopted this guidelines.

**Ban on indirect advertisements**
There is a lot of indirect advertising still going on in electronic and print media. Tobacco industry is still promoting brand names through advertisements of other products like Pataka clay, Tulsi Pan masala and other Pan masala.

**Choosing potential groups**
When doctors examine patients of South Asian origin, it is not enough to ask them about smoking habits, but they should also be asked about whether they use smokeless tobacco. The tell-tale staining of gums and teeth can alert an observant practitioner. Outreach programmes from hospitals can educate the community about the dangers of tobacco and the signs of tobacco-related cancer. Such a programme, conducted through a large cancer hospital in India.
over the last several years, approximately doubled the outpatient attendance for oral examination and the number of oral pre-cancers seen. As the programme develops, it has been attracting tobacco users (smokers and smokeless) to its cessation programme.

Children are a potentially powerful motivating force for health and against tobacco use. Because personal communication is very effective for tobacco cessation and children communicate personally with their parents, they can be very effective in changing tobacco use behaviour. Hence school and community programmes to raise tobacco awareness among children are recommended.

**Quality control**

Quality control, both in respect of detail product information, proper warning levels is needed. Government should initiate a sustainable system which looks into these issues. Many tobacco (processed) products does not carry proper information in SEA countries. There is dire need of establishment of proper testing laboratory in the region.

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