

## REVIEW ARTICLE

# Various terminologies associated with areca nut and tobacco chewing: A review

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## ABSTRACT

Globally, arecanut and tobacco are among the most common addictions. Tobacco and arecanut alone or in combination are practiced in different regions in various forms. Subsequently, oral mucosal lesions also show marked variations in their clinical as well as histopathological appearance. However, it has been found that there is no uniformity and awareness while reporting these habits. Various terminologies used by investigators like 'betel chewing', 'betel quid chewing', 'betel nut chewing', 'betel nut habit', 'tobacco chewing' and 'paan chewing' clearly indicate that there is lack of knowledge and lots of confusion about the exact terminology and content of the habit. If the health promotion initiatives are to be considered, a thorough knowledge of composition and way of practicing the habit is essential. In this article we reviewed composition and various terminologies associated with areca nut and tobacco habits in an effort to clearly delineate various habits.

**Key words:** Areca nut, habit, paan, quid, tobacco

## INTRODUCTION

Tobacco and arecanut are well-known carcinogens.<sup>[1-5]</sup> Tobacco habit alone or in combination with areca nut is practiced in various forms.<sup>[6]</sup> Subsequently, a variety of oral mucosal lesions and conditions are associated with betel quid and tobacco habits. Misleading histories by patient, mixtures of habits and inadequate knowledge of terminologies leads to considerable confusion and improper understanding of the habit.<sup>[7]</sup>

A workshop held in Kuala Lumpur, Malaysia in 1996 recommends few criteria and guidelines in order to bring some uniformity in reporting of 'betel quid' and tobacco chewing habits.<sup>[7]</sup>

The custom of chewing betel nut is practiced since the ancient times. Because of variable nature of some of the constituents of betel quid (e.g., inclusion or absence of tobacco) in different regions and difference in the method of usage, terminological discrepancies have been encountered in description of the practice.<sup>[8]</sup>

Tobacco plant, probably cultivated by man about 1,000 years back have now crept into each and every part of world. Since decades, tobacco habit has become the matter of international concern.<sup>[8]</sup> However, there is no proper attention given by the students as well as instructor, while noting down the habit history from the patients. Most important aspect of the history is actually a most neglected domain. Adequate knowledge of ingredients of mixture and eventual implementation of proper recording of the habit will definitely lead to thorough understanding of associated oral mucosal lesions. Also population will be benefited by meticulous oral health promoting programs and it will contribute to the control of oral cancer.

In an effort to add to the knowledge of composition and terminologies of various habits, article is divided and discussed into three basic categories:

- Terminologies associated with areca nut and its various preparations
- Terminologies associated with habit of tobacco chewing and its various preparations
- Terminologies associated with habits which include tobacco as well as Areca nut; mainly paan and quid.

## TERMINOLOGIES ASSOCIATED WITH ARECA NUT AND ITS VARIOUS PREPARATIONS

Areca nut is the seed of the endosperm of the oriental palm, *Areca catechu*.<sup>[2,9-11]</sup> It is not a true nut, but rather a drupe [Figure 1]. While fresh, the husk is green and nut inside

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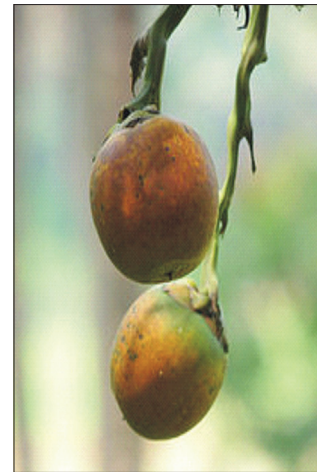
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**Figure 1:** Areca nut tree and its fruit (Courtesy: [http://upload.wikimedia.org/wikipedia/commons/0/0e/Areca\\_catechu\\_K%C3%B6hler%E2%80%93Medizinal-Pflanzen-014.jpg](http://upload.wikimedia.org/wikipedia/commons/0/0e/Areca_catechu_K%C3%B6hler%E2%80%93Medizinal-Pflanzen-014.jpg))

is so soft that it can be easily cut with an average knife [Figures 2 and 3].<sup>[12]</sup> Raw arecanut inside the husk is actually called as kernel and arecanut with its green husk is called as raw fruit [Figure 4]. The raw fruit has to be peeled in order to get its kernel.<sup>[13]</sup> In the ripe fruit, the husk becomes yellow or orange, as it dries the kernel inside becomes hard to wood-like in consistency [Figure 5]. At this stage, the areca nut can only be sliced using a special scissor like cutter.<sup>[12]</sup> The fresh fruit with husk (little less ripe) are cured in flowing water for some period. The process helps in loosening the husk. Twenty-two percentage of husk still remains over, which is removed with the help of knife. Immediately after kernel is taken out, it is boiled with sufficient water at high temperature for 12 h. After boiling, it is sundried for 7–8 days. After the entire process is over, different preparations of arecanut having different market value are prepared.<sup>[13]</sup> Areca nut is believed to be strongly associated with development of oral submucous fibrosis (OSMF).<sup>[14–17]</sup>

Arecanut is mixed with variety of substances; most significantly with tobacco product or wrapped in the leaf of piper betel nut.<sup>[2,9,18,19]</sup> Incorporation of lime (chuna or chunam in India) and tobacco to the nut demonstrate increased incidence of mucosal changes.<sup>[20]</sup> Some of the terminological confusion surrounding the subject possibly resides in the fact that the nut (areca nut) component of betel mixture is the fruit of betel tree (palm), while betel leaf and other constituents derived from different plant called betel vine.<sup>[8]</sup> Blank *et al.*,



**Figure 2:** Areca nut hanging on a palm tree (Courtesy: [http://upload.wikimedia.org/wikipedia/commons/thumb/1/1c/Areca\\_catechu\\_nuts\\_at\\_Kadavoor.jpg/220px-Areca\\_catechu\\_nuts\\_at\\_Kadavoor.jpg](http://upload.wikimedia.org/wikipedia/commons/thumb/1/1c/Areca_catechu_nuts_at_Kadavoor.jpg/220px-Areca_catechu_nuts_at_Kadavoor.jpg))

(2008), suggested that the common additive betel leaf (from the piper betel plant) has led to the labeling as ‘betel nut’.<sup>[7]</sup> Hence, Zain *et al.*, (1996), suggested that the term betel nut should be avoided and the term “areca nut” which is more appropriate should be used.<sup>[7]</sup>

Areca nut can be chewed raw or processed by roasting, sundrying, soaking or boiling prior to chewing. Those who chew soaked or boiled nuts demonstrated lower incidence of mucosal changes than those who chew raw, sundried or roasted nuts. Marked reduction in active chemical constituents in the nuts namely arecoline and polyphenols were observed when nuts were subjected to soaking and boiling as compared to sundried or roasted nuts.<sup>[20]</sup> Curing improves color, taste and freshness of the nuts. Cured kernels are less astringent and are better to chew and taste.<sup>[18]</sup>

#### VARIABLE PREPARATIONS OF ARECA NUTS AND THEIR DESCRIPTION IN INDIA

- Bura tamul -In Assam, ripe fresh nuts are preserved in thick layers of mud. They result in a moist chew. Nuts often get infected with fungus.<sup>[8,18]</sup>
- Neetadaka -In Kerala, nuts are preserved by soaking in water. The nuts tend to become discolored and develop odor due to bacterial degradation. Inner core is well preserved. Use of solution containing sodium benzoate (0.1%) and potassium and heat, blanching is suggested to eliminate the foul smell and improve quality of nuts.<sup>[18]</sup>
- Chali or kottapak -This describes dried whole areca nuts. It is the most popular trade form. Ripe nuts are sun dried for 35–40 days, dehusked and marketed as whole nuts. Chali is sold in several decreasing grades depending upon nut size (e.g. Moti, Srivardham, Jamnagar and Jini).<sup>[18]</sup> This is popular in Kerala, Karnataka, Assam and Maharashtra
- Parcha (Pareha) - To facilitate drying and dehusking, the fruits are cut longitudinally into two halves and sun



**Figure 3:** Raw areca nut, fresh, tobacco leaves and paan (Courtesy: [http://thumb7.shutterstock.com/display\\_pic\\_with\\_logo/727267/135305945/stock-photo-areca-nut-betel-nut-chewed-with-the-leaf-is-mild-stimulant-135305945.jpg](http://thumb7.shutterstock.com/display_pic_with_logo/727267/135305945/stock-photo-areca-nut-betel-nut-chewed-with-the-leaf-is-mild-stimulant-135305945.jpg))



**Figure 5:** Ripe areca nut (Courtesy: <http://upload.wikimedia.org/wikipedia/commons/thumb/7/77/Arecanut.jpg/800px-Arecanut.jpg>)

dried for 10 days. Kernels are scooped out and given a final drying. This product is known as Pareha, popular in Kerala and Karnataka. Dehusking can be made by using manually-operated arecanut dehusker.<sup>[18]</sup> Driers can also be used. It takes 6–7 h over a period of 7–8 days at 45–75°C

- Kalipak -This is made from areca nuts of 6–7 months maturity. The nuts are dehusked, cut into pieces, boiled and then coated with a substance called kali before being dried. Kali is produced by concentrating the liquid (water) in which the nuts are boiled. Kali coating can be repeated three to four times to facilitate glossy appearance. A variety of names are given to varying grades of kalipak depending upon the number of pieces of nut produced by cutting. Api, whole nut -Batlu, transversely cut nut in two pieces; choor, nut cut longitudinally into many pieces. Podi, both longitudinal and transverse cut. Erazel transverse thin slices [Figure 6]. Iylon-Green nuts cut transversely into five to six discs and without kali coating. During preparation of Kalipak, tannin content is reduced substantially. Kerala and Karnataka are main producers of kalipak. This is a well-dried product with dark brown color, glossy appearance, crisp chewing



**Figure 4:** Ripe areca nut with husk and fruit (Courtesy: [http://upload.wikimedia.org/wikipedia/commons/0/0e/Areca\\_catechu\\_-\\_K%C3%B6hler%E2%80%93s\\_Medizinal-Pflanzen-014.jpg](http://upload.wikimedia.org/wikipedia/commons/0/0e/Areca_catechu_-_K%C3%B6hler%E2%80%93s_Medizinal-Pflanzen-014.jpg))



**Figure 6:** Dried areca nut cut into transverse section (Courtesy: <http://www.asiayoma.com/wp-content/uploads/2014/05/Betel-Nuts.jpg>)

feel, well-toned astringency and there is absence of over mature nuts<sup>[18]</sup>

- Iylon -Made from sliced, dried areca nut which is still green, but of greater maturity than that used for kalipak.<sup>[8]</sup>
- Nayampak -Immature nuts once cut transversely and then dried<sup>[8]</sup>
- Nuli -Made from very immature nuts<sup>[8]</sup>
- Supari -Dried fragmented areca nut which is blended with flavoring agents and then packed. The flavors used are often local secrets, may be made from either chali or from kalipak.<sup>[8]</sup> Instead of raw spices, essential oils are used for easy blending, with coconut grating to avoid microbial growth<sup>[18]</sup>
- Tamol - Fermented areca nut referred by eastern parts of India<sup>[21]</sup>
- In Meghalaya, slightly immature fruits are cured in earthen pots of water for maintaining moisture and freshness. Normal curing time is 4–5 months<sup>[18]</sup>
- In Northern Assam, fruits are cured by keeping in pits, which is plastered with leaves and cow dung.<sup>[18]</sup> One more popular method of processing is boiling of immature fruit for 2 h after removal of husk and drying in sun. This product is known as chikani.

## TERMINOLOGIES ASSOCIATED WITH HABIT OF TOBACCO CHEWING AND ITS VARIOUS PREPARATIONS

### Tobacco

The word tobacco is derived from the species of the plant of genus *Nicotiana* in the potato family. Linnaeus in 1753 had named the genus of the tobacco plant 'Nicotiana' after the French Ambassador to Portugal, Jean Nicot. The major varieties include *Nicotiana rustica* and *Nicotiana tabacum*.<sup>[22]</sup>

Christopher Columbus reported a gift of strange dry leaves from a native of San Salvador. These powdered leaves were inhaled by the Indians in a Y-shaped piece of cone or pipe called Tobago or tabaca, the forked ends of which were placed in each nostril. The leaves subsequently came to be known as tobacco [Figure 7].<sup>[6,8,22]</sup>

Some suggest that this word has originated from island of "Tobago" in West Indies.<sup>[22]</sup>

Tobacco leaves are subjected to different types of curing; and then it can be chewed, smoked, sucked and sniffed.<sup>[22]</sup> The potential carcinogens in tobacco are the tobacco-specific nitrosamines (TSNA). Polycyclic aromatic hydrocarbons and many others.<sup>[5,6]</sup> Tobacco use is most important risk factor linked to the development of oral squamous cell carcinoma (OSCC), oral leukoplakia (OL) and OSMF.<sup>[23-29]</sup>

Various Preparations of tobacco are categorized as:

- Tobacco smoking
- Tobacco chewing
- Tobacco snuff usage.<sup>[8]</sup>

Tobacco chewing and tobacco snuff usage together are generally described as smokeless tobacco. Because of the wide range of products used worldwide, in this article we review terminologies related only to tobacco chewing.



**Figure 7:** Dried tobacco leaves (Courtesy: [http://st.depositphotos.com/1050070/1901/i/950/depositphotos\\_19016325-Leaf-tobacco.jpg](http://st.depositphotos.com/1050070/1901/i/950/depositphotos_19016325-Leaf-tobacco.jpg))

### Tobacco chewing

In western style, chewing tobacco is prepared in three main forms; namely, plug tobacco, loose leaf tobacco and twist (roll) tobacco [Figure 8].

#### Plug tobacco

It is made from tobacco leaves which are wrapped in fine cut tobacco and then compressed into bars. They are sold as 'firm plug' (less than 15% moisture content) or as 'soft plug' (moisture content 15% or greater).

#### Loose leaf tobacco

It is made from fermented cigar leaf tobacco to which sugar and flavoring agents are added. Sold as loose pieces or strips.

#### Twist tobacco

Manufactured from cured tobacco leaf which is then twisted into strands and allowed to dry.<sup>[8]</sup>

North American style of using twist tobacco is

- Chaw: A large plug placed in buccal sulcus and then chewed and/or held in that area
- Quid: Smaller portion of tobacco placed in buccal sulcus and chewed.<sup>[8]</sup>

## DESCRIPTION OF SOME FORMS OF SMOKELESS TOBACCO ENCOUNTERED IN THE TROPICS

### Khaini

Sundried powdered tobacco, slaked lime paste occasionally used with areca nut.<sup>[8]</sup> Popular in north India and Maharashtra. The two ingredients (tobacco and lime) are carried separately in double-ended metal container. A small quantity of tobacco is



**Figure 8:** Shredded, dried tobacco (Courtesy: <http://cdn.xl.thumbs.canstockphoto.com/canstock12131125.jpg>)

taken in the palm and little slake lime is added. The ingredients are mixed with thumb and placed either in the vestibule or on the dorsum of the tongue. Khaini is not chewed but sucked.<sup>[6,22]</sup>

### Pattiwala tobacco

Sun-cured tobacco leaf used with or without lime.

### Manipuri tobacco

Tobacco, slaked lime, finely cut areca nut and spices like camphor, cloves.<sup>[8,22]</sup> It is common in villages of Uttar Pradesh and found to have high incidence of oral cancer and leukoplakia.<sup>[6]</sup>

### Mishri

Dark, roasted, powdered tobacco. It is roasted on a hot metal plate. This product is taken out with index finger and applied to teeth and gums. Twenty-two villages in Maharashtra use mishri.<sup>[6]</sup>

### Zarda

Tobacco leaf boiled in water with lime and spices until evaporation. Residual tobacco is then dried and colored with vegetable dyes.<sup>[8]</sup>

### Kiwam

Destalked tobacco leaf boiled in water with rose water and spices (e.g., saffron, cardamom, aniseed and musk). This is used as a thick paste or, if further dried can be used as granules or pills.<sup>[8]</sup>

### Gudakhu

A paste of powdered tobacco, molasses and other unspecified ingredients.<sup>[8,22]</sup> Used by women in Bihar.

### Shammah

A mixture of powdered tobacco leaf, carbonate of lime and unspecified ingredients.<sup>[8]</sup>

### Toombak

Sudanese smokeless tobacco. It is sundried tobacco leaves of plant *Nicotiana rustica* and sodium bicarbonate (locally known as natron).<sup>[30,31]</sup>

## TERMINOLOGIES ASSOCIATED WITH HABITS WHICH INCLUDE TOBACCO AS WELL AS ARECA NUT, MAINLY PAAN ANDQUID

### Paan

In India, the term 'paan' refer to the betel leaf itself [Figure 9].<sup>[8]</sup> Although paan is generally used to refer to the



**Figure 9:** Paan tree (Courtesy: <http://www.seedsofindia.com/shop/images/Piper-betel-plant-Paan-Leaf221-280.jpg>)

leaves of the betel vine, the common use of this word refers mostly to the chewing mixture wrapped in betel leaves.<sup>[32]</sup> Thus, the habit of chewing the quid is often colloquially described as paan chewing.<sup>[8]</sup> Thus, the word 'paan' is from Hindi and Urdu. It is an Indian, Pakistani and southeast Asian tradition of chewing betel leaf (*Piper betel*) with areca nut, slaked lime paste and katha (brown powder/paste) with many regional and local variations.<sup>[32]</sup> It is also known as "betel quid".<sup>[3,21,32,33]</sup> Because of variable nature of some of the constituents of betel quid (e.g. inclusion or absence of tobacco) in different region, various terms such as 'betel chewing', 'betel quid chewing', 'betel nut habit', 'tobacco chewing' and 'paan chewing' have created a great confusion.<sup>[8]</sup>

Betel quid is to be considered as a specific variety of quid. It indicates any type of mixture or quid that includes betel leaf.<sup>[7]</sup> Betel quid may or may not contain tobacco.<sup>[5,34]</sup> That means betel quid is mixture of substances chewed along with betel leaf [Figure 3].<sup>[7]</sup>

Paan has various forms and flavors.<sup>[34]</sup>

They include:

- Tobacco paan (tambaku paan)- Betel leaf filled with powdered tobacco with spices
- Areca nut paan (paan supari, paan masala, or sada paan) -Betel leaf filled with a mixture of coarsely ground or chopped areca nuts and other spices[Figure 10]
- Sweet paan (methapaan)-Betel leaf with neither tobacco nor areca nuts, the filling is primarily coconut, fruit preserves; rose petal preserves (gulkand); and various spices. It is often served with maraschino cherry [Figure 11]
- Trento (colarno paan)- Has a taste like betel with minty after taste. Eaten along with fresh potatoes, served in Indian restaurants
- Deshi mahoba- Delicately flavored paan from Bengal
- Maghai and Jagannath - Paans of Banaras



**Figure 10:** Tobacco paan (Courtesy: [https://encrypted-tbn1.gstatic.com/images?q=tbn:ANd9GcQ2LyDQI\\_ZI6hRYmhJLTC1QS4fgj9uUMsklGBX9T3tqYK1TirLx4g](https://encrypted-tbn1.gstatic.com/images?q=tbn:ANd9GcQ2LyDQI_ZI6hRYmhJLTC1QS4fgj9uUMsklGBX9T3tqYK1TirLx4g))

- Chigrayale - Paan prepared from small and fragile leaves from South India
- Ambadi and Kariyele - Thicker black paan leaves chewed with tobacco.<sup>[34]</sup>

Three principal ingredients are necessary for the description “betel” to apply:

- The areca nut
- Parts of betel vine (member of pepper family: Leaf, stalk, pods and other parts of inflorescence)
- Lime.

Apart from these ingredients; other ingredients like catechu, cloves, coconut and tobacco may or may not be added.<sup>[8]</sup> Catechu (katha) is a resinous extract derived by soaking the wood of tree *Acacia catechu* or *Acacia suma* in boiling water. In Malaysia, the catechu which may be called as Gambir prepared from the twigs and leaves of the shrub, *Uncaria gambir*.<sup>[8]</sup>

To serve, a leaf is removed from the wrapping cloth, deveined and katha and lime paste applied on its surface. This is topped with tiny pieces of areca nuts, cardamom, saffron, roasted or unroasted coconut pieces, etc.

The leaf is then folded in a special manner into triangle called gilouree and is ready to be eaten. On special occasion, ‘gilouree’ is wrapped in delicate silver leaf (vark). To serve, a silver pin is inserted to prevent it from unfolding and placed inside a domed casket called khaas daan. Some paan makers insert a pointed end of clove to prevent a gilouree from unfolding.<sup>[34]</sup>

In India, a prepackaged ‘readymade’ form of betel known as ‘beeda’ is also available.<sup>[8]</sup>

In Papua, New Guinea, betel is chewed by first biting off or placing a piece of areca nut in the mouth. Edentulous patients grind areca nut with mortar and pestle. The nut is then chewed for few seconds followed by addition of betel vine leaf, stalk or pod and a quantity of lime.<sup>[8]</sup>



**Figure 11:** Meethapaan (Courtesy: [http://upload.wikimedia.org/wikipedia/en/6/66/Meetha\\_paan.jpg](http://upload.wikimedia.org/wikipedia/en/6/66/Meetha_paan.jpg))

In Java and Bali in Indonesia, betel chewing was associated with concurrent custom of cleaning the teeth by using shredded tobacco, a large wad of which was then placed in the buccal sulcus and commissure region and left dangling outside the mouth.

The chewing of betel rapidly imparts a bright red color to the saliva and quid. Bright red color is due to the alkalinity of the mixture imparted by slaked lime.<sup>[8]</sup>

In Taiwan, green unripe areca nut of the size of an olive is often wed with betel inflorescence or betel leaves.<sup>[21]</sup> Betel quid in Taiwan comprises of areca nut, inflorescence piper betel and lime wrapped in a piper betel leaf.<sup>[35]</sup>

In Guam, unripe areca nuts are chewed singly or with the leaves.

In Pacific Islands of Palau, areca nut is chewed in green, unripe state, one half at a time with slaked lime and tobacco wrapped in a piece of betel leaf.

In Cambodia, most users add tobacco to their quid, while others use it to rub the gums/clean the teeth after chewing betel quid.<sup>[21]</sup>

## Quid

Quid is defined as, “a substance or mixture of substances placed in the mouth or chewed and remaining in contact with mucosa usually containing one or both of the two basic ingredients tobacco and/or areca nut in raw or any manufactured or processed form”.<sup>[7,27,36]</sup>

Specific ingredient of the mixture has to be listed so as to delineate its variety.<sup>[7]</sup>

Basically there are three categories of quid:

- Category I (areca nut quid)
  - Quid with areca nut but without tobacco products
  - This type of quid is also called as paanmasala or supari<sup>[3,12,21,37,38]</sup>
  - Paanmasala is basically a preparation of areca nut,

- catechu, cardamom, lime and number of natural and artificial perfuming and flavoring materials<sup>[3]</sup>
- Supari (a North Indian word for areca nut) is a mixture of many flavors whose primary base is areca nut crushed into small pieces<sup>[21,12]</sup>
- Paan masala is available in attractive foil pack (sachets) and tins.<sup>[23]</sup>
- Category II (tobacco quid)- Quid with tobacco products but without areca nut
- Category III [tobacco (T) and areca nut quid (AQ)]- Quid with areca nut as well as tobacco products<sup>[7]</sup>
  - Also called as gutkha (AQ+T)<sup>[38]</sup>
  - Gutkha is variant of paan masala in which in addition to ingredients of paan masala, flavored chewing tobacco is added.<sup>[3]</sup> Gutkha is a combination of betel nuts, tobacco and aromatic spices with or without lime<sup>[28]</sup>
- A variety of packaged products are now available in several countries. Depending upon ingredients, these packaged products may fall into one of the three above mentioned categories. It is almost always possible to identify the presence or absence of two principle ingredients of interest, arecanut and tobacco to allocate the package to a specific category. For example, Gutkha may be commercially available as Manikchand, Goa, Shimla, Sikandar and Tulsī.<sup>[7]</sup>

These categories of 'quid' are mutually exclusive and individual can belong to only one category.

Betel nut quid is a combination of areca nut, catechu betel leaf (from piper betel) lime paste and leaf tobacco.<sup>[19,35,36]</sup> It may be chewed with or without tobacco. Betel quid without tobacco is classified as Group 1 carcinogen.<sup>[1,10]</sup>

The betel vine leaf contains eugenol, an aromatic unsaturated volatile substance that is central nervous system stimulant and small traces of an alkaloid reputed to have cocaine-like properties. Even without addition of tobacco, the quid is thought to have possible mutagenic and carcinogenic properties. It increases intraoral pH from 6–7 to an acidic pH within a minute after chewing.<sup>[19]</sup>

Betel quid may or may not contain tobacco.<sup>[3]</sup> Betel quid without tobacco is a risk factor for oral precancers<sup>[39,40,41]</sup> and has a higher risk of OSMF relative to leukoplakia and erythroplakia.<sup>[5]</sup>

Broadly it appears that whatever is the habit, its basic content is either tobacco or areca nut or both. Then why it is so important to understand the constituents of the habit and its way of practicing. Following few facts will clearly delineate the importance.

- Areca nut chewers will show areca nut-related lesions

- A quid-induced lichenoid oral lesions has been reported exclusively among betel quid users. It resembles lichen planus, but there are specific differences
- Tobacco and lime user's lesion, snuff-induced lesions, areca quid lesions, chewers mucosa, etc., although appears similar; but shows diverse clinical as well as histopathological features<sup>[7]</sup>
- Apart from varied clinical and histopathological picture, addition or subtraction of smallest ingredients leads to difference in its property of carcinogenicity and mutagenicity. For example, Betel quid containing inflorescence Piper betle (IFB) has a greater carcinogenic potential.<sup>[35]</sup>

## SIGNIFICANCE TO PUBLIC HEALTH

All these products, although appear similar; but they differ largely by TSNA concentration and nicotine. Subsequently, it alters the risk of oral malignant transformation.<sup>[23]</sup>

Lime paste causes accelerated cell turnover by rapidly killing the cells with which it comes in direct contact. This continual turnover increases the likelihood of cell mutations. In certain places of the world where the lime is added to the nut (instead of wrapping in the betel leaf) and then held directly against a specific site in the mouth, the incidence of malignant ulcerations are more.<sup>[19]</sup>

Likewise there are many more facts. Thus, through this review, we would suggest that while noting down the history, habit should be finely subcategorized. The usage of the term 'mixed habits' should be discouraged. In addition, brand names of common packaged products should be noted down and their major ingredients should be listed. This would definitely narrow down the clinical as well as histopathological diagnosis and would surely control cancer and help in health promotion programs.

## REFERENCES

1. Tsai KY, Su CC, Lin YY, Chung JA, Liang IeB. Quantification of betel quid chewing and cigarette smoking in oral cancer patients. *Community Dent Oral Epidemiol* 2009;37:555-61.
2. Warnakulsuriya S, Trivedi C, Peters TJ. Areca nut use: A independent risk factor for oral cancer. The health problem is under-recognized. *BMJ* 2002;324:799-800.
3. Nair U, Bartsch H, Nair J. Alert for an epidemic of oral cancer due to use of the betel quid substituted gutkha and paan masala: A review of agents and causative mechanisms. *Mutagenesis* 2004;19:251-62.
4. Bouquot JE, Meckstroth RL. Oral cancer in a tobacco-chewing US population-no apparent increased incidence or mortality. *Oral Surg Oral Med Oral Pathol Oral Radiol Endod* 1998;86:697-706.
5. Jacob BJ, Straif K, Thomas G, Ramadas K, Mathew B, Zhang ZF, et al. Betel quid without tobacco as a risk factor for oral precancers. *Oral Oncol* 2004;40:697-704.

6. Mehta FS, Hamner JE. Tobacco- related oral mucosal lesions and conditions in India. A guide for dental students, Dentists and Physicians. 1<sup>st</sup> ed. Mumbai: Basic Dental Research Unit Tata Institute of Fundamental Research; 1993. p. 89.
7. Zain RB, Jkeda N, Gupta PC, Warnakulsuriya K, van Wyk CW, Shrestha P, *et al.* Oral mucosal lesions associated with betel quid, arecanut and tobacco chewing habits: Consensus from a workshop held in Kuala Lumpur, Malaysia, November 25-27, 1996. *J Oral Pathol Med* 1999;28:1-4.
8. Prabhu SR, Wilson DF, Daftary DK, Johnson NW. Oral diseases in tropics. 1<sup>st</sup> ed. New York: Oxford Medical Publications; 1992.p. 104-20.
9. Blank M, Deshpande L, Balster RL. Availability and characteristics of betel products in the U. S. *J Psychoactive Drugs* 2008;40:309-13.
10. IARC. Betel quid and areca nut chewing. Lyon: International Agency for research on cancer. Monogr 1985;37:141-202.
11. Murti PR, Bhonsle RB, Gupta PC, Daftary DK, Pindborg JJ, Mehta FS. Etiology of oral submucous fibrosis with special reference to the roles of areca nut chewing. *J Oral Pathol Med* 1995;24:145-52.
12. Available from: [Areca%20Nut%20Article/Areca%20Nut%20net%20article/Arecanut%20%20Wikipedia,%20the%20free%20encyclopedia.htm](#) [Last accessed on 2015 Apr 21].
13. Available from: [Areca%20Nut%20Article/Arecanut%20processing%20steps.htm](#) [Last accessed on 2015 Apr 21].
14. Merchant AT, Haider SM, Fikree FF. Increased severity of oral submucous fibrosis in young Pakistani men. *Br J Oral Maxillofac Surg* 1997;35:284-7.
15. Sinor PN, Gupta PC, Murti PR, Bhonsle RB, Daftary DK, Mehta FS, *et al.* A case control study of oral submucous fibrosis with special reference to the etiologic role of areca nut. *J Oral Pathol Med* 1990;19:94-8.
16. Maher R, Lee AJ, Warnakulasuriya KA, Lewis JA, Johnson NW. Role of areca nut in the causation of oral submucous fibrosis: A case-control study in Pakistan. *J Oral Pathol Med* 1994;23:65-9.
17. Ranganathan K, Devi MU, Joshua E, Kiankuma K, Saraswathi TR. Oral submucous fibrosis: A case control study in Chennai, South India. *J Oral Pathol Med* 2004;33:274-7.
18. Available from: [Areca%20Nut%20Article/NESACPost%20Harvest%20Information%20Arecanut.htm](#) [Last accessed on 2015 Apr 21].
19. Pickwell SM, Schimelpfening S, Palinkas LA. 'Betelmania' Betel quid chewing by Cambodian Women in the United States and its potential health effects. *West J Med* 1994;160:326-30.
20. Awang MN. Fate of betel nut chemical constituents following nut treatment prior to chewing and its relation to oral precancerous and cancerous lesions. *Dent J Malays* 1998;10:33-7.
21. Gupta PC, Ray CS. Epidemiology of betel quid usage. *Ann Acad Med Singapore* 2004;33:31-6.
22. Peter S. Essentials of preventive and community dentistry. 1<sup>st</sup> ed. India: Arya Publishing House; 1999. p. 373-84.
23. Schwartz JL, Brunemann KD, Adami AJ, Panda S, Gordon SC, Hoffmann D, *et al.* Brand specific responses to smokeless tobacco in a rat lip canal model. *J Oral Pathol Med* 2010;39:453-9.
24. Souto GR, Caliarri MV, Lins CE, de Aguiar MC, de Abreu MH, Mesquita RA. Tobacco use increase the number of aneuploid nuclei in the clinically healthy oral epithelium. *J Oral Pathol Med* 2010;39:605-10.
25. Warakulsuriya S. Smokeless tobacco ad oral cancer. *Oral Dis* 2004;10:1-4.
26. Reichart PA, Nguyen XH. Betel quid chewing, oral cancer ad other oral mucosal diseases in Vietnam: A review. *J Oral Pathol Med* 2008;37:511-4.
27. Ariyawardhana A, Athukorala AD, Arulanandam A. Effect of betel chewing, smoking and alcohol consumption on oral submucous fibrosis: A case-control study in Sri Lanka. *J Oral Pathol Med* 2006;35:197-201.
28. Ali NS, Khuwaja AK, Ali T, Hameed R. Smokeless tobacco use among adult patients who visited family practice clinics in Karachi, Pakistan. *J Oral Pathol Med* 2009;38:416-21.
29. Vigneshwaran N, Tilashalski K, Rodu B, Cole P. Tobacco use and cancer. A reappraisal. *Oral Surg Oral Med Oral Pathol Oral Radiol Endod* 1995;80:172-82.
30. Costea DE, Lukandu O, Bui L, Ibrahim MJ, Lygre R, Neppelberg E, *et al.* Adverse effects of Sudanese toombak vs. Swedish snuff on human oral cell. *J Oral Pathol Med* 2010;39:128-40.
31. Idris AM, Warnakul suriya KA, Ibrahim YE, Nilsen R, Cooper D, Johnson NW. Toombak-associated oral mucosal lesions in Sudanese show a low prevalence of epithelial dysplasia. *J Oral Pathol Med* 1996;25:239-44.
32. Available from: [Areca%20Nut%20Article/Areca%20Nut%20net%20article/Paan%20%20Wikipedia,%20the%20free%20encyclopedia.htm](#) [Last accessed on 2015 Apr 21].
33. Gupta PC, Warnakulsuriya S. Global epidemiology of areca nut usage. *Addict Biol* 2002;7:77-83.
34. Auluck A, Hislop G, Poh C, Zang L, Rosin MP. Areca nut and betel quid chewing among South Asian immigrants to Western countries and its implications for oral cancer screening. *Rural Remote Health* 2009;9:1118.
35. Jeng JH, Hoh LJ, Lin BR, Hsieh CC, Chan CP, Chag MC. Effect of areca nut, inflorescence piper betle extracts and arecoline on cytotoxicity, total and unscheduled DNA synthesis in cultured gingival keratiocytes. *J Oral Pathol Med* 1999;28:64-71.
36. Shah N, Sharma PP. Role of chewing and smoking habits in the etiology of oral submucous fibrosis (OSF): A case-control study. *J Oral Pathol Med* 1998;27:475-9.
37. Alonge OK, Ashrafi SH, Colvard MD. Mitochondrial volume densities in the smokeless tobacco-treated hamster cheek pouch epithelium. *Oral Dis* 2003;9:138-43.
38. Hazarey VK, Erdewad DM, Mundhe KA, Ugadhe SN. Oral submucous fibrosis: Study of 1000 cases from central India. *J Oral Pathol Med* 2007;36:12-7.
39. Chen PC, Kuo C, Pan CC, Chou MY. Risk of oral cancer associated with human papilloma virus infection, betel quid chewing, and cigarette smoking in Taiwan--an integrated molecular and epidemiological study in 58 cases. *J Oral Pathol Med* 2002;31:317-22.
40. Ko YC, Huang YL, Lee CH, Chen MJ, Lin LM, Tsai CC. Betel quid chewing, cigarette smoking and alcohol consumption related to oral cancer in Taiwan. *J Oral Pathol Med* 1995;24:450-3.
41. Lu CT, Yen YY, Ho CS, Ko YC, Tsai CC, Hsieh CC, *et al.* A case-control study of oral cancer in Changhua Country, Taiwan. *J Oral Pathol Med* 1996;25:245-8.

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