Review Article

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Smokeless Tobacco Use in India: A Historical Review and Update on Various Practice Patterns

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ABSTRACT

Background: It is now understood well that arecanut & tobacco, both in isolation & association are potent carcinogens in their own right. India is no stranger to both these. The various forms in which they are available only complicates the understanding of this dreaded habit. This review paper strives hard to enlist all these varied forms, break them down to their ingredients and also throw light on their pattern of use, a complete knowledge of which is paramount if health promotion is our eventual goal. A note on history is also added which details the entry of smokeless tobacco in India and its travel through time which makes for an interesting read as well.

Keywords: Arecanut, Betel Quid, Gutkha, Khaini, Mawa, Paan.

INTRODUCTION

India is unique in the range of tobacco products that are available. Tobacco is consumed in a variety of forms, from smoking tobacco products like bidis and cigarettes to several types of chewing tobacco. In India, tobacco consumption is responsible for half of all the cancers in men and a quarter of all cancers in women, in addition to being a risk factor for cardiovascular diseases and chronic obstructive pulmonary diseases[1]. India also has one of the highest rates of oral cancer in the world, partly attributed to high prevalence of tobacco chewing. Arecanut a prime ingredient of ST is a known carcinogen now. This alone, or in association with tobacco is practised in various forms. The present review attempts to collate the various types of chewing tobacco used across India and attempt to know their ingredients as proper knowledge and understanding of various components of chewing tobacco will help in better understanding of the disease causation & progression while helping the health care providers a better chance at treating them.

Tobacco as we know it today is a very refined form of its predecessor which almost dates back to when civilization started. Archaeological excavations around the remains of Mexican and Peruvian settlements of around 3500 BC led to the discovery of Tobacco underlining the importance of tobacco as an article to the inhabitants there[2]. Tobacco belongs to the family of plants called solanaceae or the night shade family and the genus Nicotiana. Cultivation of the tobacco plant probably dates back 5000 years when the plant species was seen to originate on the main lands between North & South America[2]. American Indians were probably the first people to smoke, chew and snuff tobacco, as early as the 1400s[3]. The Indians inhaled powdered tobacco through a hollow Y-shaped piece of cane or pipe called a 'tobago' or 'tobaca'. The word was later changed by the Spaniards to 'tobacco'[3].

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METHODOLOGY

Data were gleaned from a literature search of available medical and dental databases including PubGet, Research gate, Ovid, PubMed, Medline, Cochrane The search phrases included the main set "smokeless tobacco" with defined subsets such as "history in India of," "different types of," "patterns of use of" etc.

History of Tobacco in India:

The history of global tobacco trade is integrally linked with the history of India. It was to discover a sea route to this fabled land, reputed for its spices, silk and gems, that Christopher Columbus set sail in 1492. His wayward journey took him instead to America. This discovery of the New World was accompanied by the discovery of tobacco by Portuguese sailors. This plant, treasured by the American Indians for its presumed medicinal and obvious stimulant properties, was eagerly embraced by the Portuguese who then moved it to the Old World of Europe. Even though their quest for easy access to Indian spices was delayed by some years, the Europeans did not fail to recognize the commercial value of this new botanical acquisition. When the Portuguese eventually did land on India's shores, they brought in tobacco. They introduced it initially in the royal courts where it soon found favour[4].

Tobacco was first introduced in the kingdom of Adil Shahi, the capital city of Bijapur, presently in Karnataka in south India, along the trading route of the Portuguese. Asad Beg, ambassador of the Mughal Emperor Akbar, visited Bijapur during 1604-1605 and took back large quantities of tobacco from Bijapur to the Mughal Kingdom in the north and presented some to Akbar along with jewel-encrusted European-style pipes. Several nobles in Akbar's court were also given tobacco and pipes, and tobacco was appreciated by everyone.[5] In the Subhasitaratnabhandagara, the seven Sanskrit verses of unknown date and authorship, the use of tobacco is mentioned. These are thought to be written at the time when tobacco use became extremely popular in India[6].

Tobacco, introduced as a product to be smoked, gradually began to be used in several other forms in India. It became an important additive to paan (betel quid). Paan chewing as a habit has existed in India and South-East Asia for over 2000 years. Stone inscriptions from the year AD 473 are historical evidence of its existence. In Hindu culture (the predominant religion in India), paan chewing is referred to as one of the eight bhogas (enjoyments) of life[5]. Paan chewing was adopted even by invading kings and settlers in India. It was also a part of the Mughal culture. Several Mughal rulers were great connoisseurs of paan and employed specialists skilled in preparing paans to suit all occasions. The social acceptance and importance of paan increased further during the Mughal era. The practice of chewing betel quid reached India by the first century or earlier. Some scholars believe that it was introduced from the South Sea Islands, Java and Sumatra, through contacts with the South Pacific Islands[6]. Paan chewing became a widely prevalent form of smokeless tobacco use after tobacco use took roots in India[7]. Women ate paan for cosmetic reasons as chewing it produced a bright red juice that coloured their mouth and lips. The ancient scriptures have mentioned the use of paan being forbidden to people who adopt a religious mode of life or observe vows, widows, menstruating women and students. This popular practice became a convenient vehicle for chewed tobacco. Inclusion of tobacco as one of the ingredients of paan highlights the importance of this product and wide social acceptability of tobacco chewing in ancient India. Tobacco was chewed by itself, with areca nut or with lime in India in as early as 1708[5]. These historical accounts reveal that contemporary tobacco habits had beginnings during the seventeenth century. The Marathi poet Madhva Munisvara refers to tobacco, tobacco used for chewing and smoking accessories in some of his songs. Thomas Bowrey, in his Account of countries round the Bay of Bengal mentioned that in the city of Achin, in the north of Sumatra, he was honoured with. Betels and areca to eat and tobacco to chew, a custom used by all India and south-seas over[6]. In the middle of the seventeenth century, the use of tobacco had become widely prevalent among warriors in the army of the Maratha King Shivaji. In 1673, Shivaji issued an official order in which he warned his officers against careless smoking of tobacco pipes. He highlighted possible damage due to fire resulting from the careless use of tobacco, which could destroy the fodder for horses, etc[6].

Soon after its introduction towards the end of Akbar's reign, tobacco became a popular product. However, Jahangir, the son of Akbar, like his contemporaries, King James I of England and Shah Abbas I of Persia, believed tobacco to be a noxious drug and forbade its use[8]. Jahangir, after his accession on 24 October 1605, passed 12 orders to be observed as rules of conduct. These have been mentioned in his memoirs. His fifth order runs: .They should not make wine or darbahara (rice-spirit) or any kind of intoxicating drug or sell them[8]. It is noteworthy that within twelve years of its introduction in India, Jahangir noticed the ill effects of tobacco and took measures to prohibit its use. In 1617, Jahangir passed orders against tobacco smoking and he referred to the efforts undertaken by Shah Abbas of Iran to prohibit the practice of smoking. However, within a few years of his orders, tobacco was cultivated on an extensive scale and, by 1623, tobacco was being exported from the port of Surat[8]. Terry's writings mention that Indians grew tobacco in abundance[8]. It is not clearly mentioned in the Tuzuk-e-Jahangiri whether tobacco cultivation was prohibited as per Jahangir's orders. It is possible that Jahangir issued orders against the manufacture of wine but did not prohibit the cultivation of tobacco. He explicitly issued prohibitory orders for smoking of tobacco but possibly did not issue any order against the cultivation of tobacco, since it was a commodity for export[8]. However, Jahangir did not enforce any kind of penalty as was done by Khalil Pasha of Iran. In 1673, Shivaji issued an official order in which he warned his officers against careless smoking of tobacco pipes. He highlighted possible damage due to fire resulting from the careless use of tobacco, which could destroy the fodder for horses, etc[6].

Varied practices of Smokeless Tobacco in India

Oral mucosal lesions can occur as a result of infections, local trauma or irritation, systemic diseases and excessive consumption of tobacco, betel quid and alcohol. The World Health Organization (WHO), predicts that India, which is the second largest country in the world, with a billion plus population will have the fastest rate of rise in deaths attributable to tobacco in the first two decades of the twenty first century. Many of these deaths will occur in the productive years of adult life, as a consequence of an addiction acquired in youth[4]. India's tobacco problem is more complex than probably that of any other country in the world, with a large consequential burden of tobacco related disease and death[9]. On the world tobacco map, India occupies a very special place. As the second most populous country in the world as well as the second-largest producer and consumer of tobacco in the world, India's share of the global burden of tobacco-induced disease and death is substantial.

World over, cigarette smoking being the more used form of tobacco, the global literature is only of limited help in assessing the problem of tobacco use in India, since here in India, cigarette smoking makes up for only a small part of the tobacco smoking problem and a minor part of the overall tobacco problem. The major smoking problem in India is beedi smoking, and a large part of the overall tobacco problem is the oral use of smokeless tobacco products. So, the results of tobacco research in other countries would, therefore, not provide a correct or comparable picture of the extent of the tobacco problem in India. While much of the biological associations between tobacco and disease are applicable across the world, the varied patterns of tobacco use within India and the diverse socioeconomic determinants will substantially influence the profile of tobacco-related diseases. This requires that the Indian experience be carefully documented and data from research studies conducted in the country be critically appraised.[4] Table 1 outlines the varied forms of smokeless tobacco and their methods of use:

Table 1: Types of Smokeless Tobacco.

Mode of Use	Types
Oral application	Gul, Gudakhu, Mishri, Bajjar, Tobacco toothpaste (Lal Dantmajan), Creamy snuff.
Chewing	Khaini, Mawa, Meetha Mawa , Gutkha, Paan Or Betel Quid Chewing, Paan Masala, Zarda, Mainpuri Tobacco, Kiwam, Gundi, Kadipuddi, Hogesoppu, Pattiwalah, Snus, Dohra.
Drinking	Tuibur, Hidakphu

Varied patterns of Tobacco use in India:

A. Gul:

Gul is a pyrolysed tobacco product[4]. Gul contains tobacco powder, molasses and other ingredients and is manufactured commercially. It is applied to the teeth for the purpose of cleaning and then to the gums many times during the day.[10] It is marketed under different brand names in small tin cans and used as a dentifrice in the eastern part of India. It is prevalent in Gujarat and UP, Orissa, and Bihar[11].

B. Gudhaku:

Gudhaku is a paste made of tobacco and molasses. It is available commercially and is carried in a metal container but can be made by the users themselves. It is commonly used in Bihar, Orissa, Uttar Pradesh and Uttaranchal. Gudhaku is applied to the teeth and gums using fingers, predominantly by women[4].

C. Mishri:

Mishri is made from tobacco that is baked on a hot metal plate until toasted or partially burnt, and then powdered. It is applied to the teeth and gums as a dentifrice, usually twice a day and more frequently in some cases. Users then tend to hold it in their mouths (due to the nicotine addiction). [10] 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 & Goa.[11]

D. Bajjar / Tapkeer:

In India, dry snuff, once commonly used nasally, is now used mainly orally. It is frequently prepared at home by roasting coarsely cut tobacco on a griddle and then powdering it. This pyrolysed snuff-like preparation, mainly used in Goa, Maharastra, Gujarat and eastern parts of India, is widely used by the poorer classes as a dentifrice (applied to the teeth and gums), especially by women, but tends to be used many times a day, due to its addictive properties. This is known as bajjar or tapkir/tapkeer.[10]

E. Laal Dantmanjan (Red Toothpowder):

It is a dentifrice; a red-coloured tooth powder. Traditionally, it contained tobacco but after the passage of a law banning the use of tobacco in dental care products, the listing of tobacco as an ingredient was stopped. [4]

F. Creamy Snuff:

Creamy snuff consists of finely ground tobacco mixed with aromatic substances, such as clove oil, glycerin, spearmint, menthol and camphor, salts, water and other hydrating agents. It is often used to clean teeth.[10] Commercially this is marketed in toothpaste-like tubes. They are advertised as possessing anti-bacterial activity and being good for the gums and teeth. These products are thus used like regular toothpaste, but users soon become addicted. This practice seems popular with children in Goa.[4]

G. Khaini:

Khaini is made from sun-dried or fermented coarsely cut tobacco leaves. The tobacco used for khaini is from N. rustica and/or N. tabacum. The tobacco leaves are crushed into smaller pieces. A pinch of tobacco is taken in the palm of the hand, to which a small amount of slaked lime paste is added. The mixture is then rubbed thoroughly with the thumb. Khaini is usually prepared by the user at the time of use, but is also available commercially. It is held in the mouth and sucked or chewed. Areca nut may sometimes be added to khaini by the user[10]. 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.[11]

H. 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)[14]. The mixture is rubbed together to combine. The resulting mixture is about

95% areca nut.[11] It is often mixed with various condiments, grated coconut, dried fruits and other sweetening agents like sugar/ molasses to give it a sweet taste (Meetha Mawa).[15]

I. Gutkha:

Gutka is manufactured commercially and In addition to tobacco, gutkha, which is placed between the gum and cheek and sucked or chewed, contains a mixture of areca nut (seed of areca palm), slaked lime (calcium hydroxide paste), catechu (extract from the wood of the acacia plant), and a number of spices[12] .The same mixture without tobacco is called pan masala. It is held in the mouth and chewed. Saliva is generally spit out, but sometimes swallowed. It is commercially manufactured. Tobacco, betel quid nut and catechu are mixed together with several other ingredients, flavored and sweetened.[11] Gutkha is industrially prepared and has a longer shelf life [13]. Product is sold in small brightly-colored packets, which appeal to children.

J. Paan Chewing Or Betel Quid Chewing:

Betel quid chewing is an ancient practice in the Indian subcontinent and many parts of Asia, and is still prevalent today. In modern times the term "betel quid" for most people is synonymous with "pan," a chewing item used in India and neighbouring countries. The term "quid" denotes a substance or a mixture of substances that is placed and retained in the mouth, and often swallowed.[16] Paan consists of four main ingredients - betel leaf (Piper betle), areca nut (Areca catechu), slaked lime [Ca(OH2)] and catechu (Acacia catechu). Betel leaves contain volatile oils such as eugenol and terpenes, nitrates and small quantities of sugar, starch, tannin and several other substances. Condiments and sweetening agents may be added as per regional practices and individual preferences. Sometime after its introduction, tobacco became an important constituent of paan, and currently most habitual paan chewers include tobacco.[4] Various tobacco preparations are used in unprocessed, processed or manufactured forms. Tobacco may be used in raw, sun-dried or roasted form, then finely chopped or powdered and scented. Alternatively, tobacco may be boiled, made into a paste and scented with rosewater or perfume.[10] The product that does not contain tobacco is called pan masala while the term gutka is used for the product that contains tobacco in addition to the ingredients of pan masala.[17] The ingredients are placed on the betel leaf and the leaf is folded into a triangular-shaped object to obtain a betel quid with or without tobacco. Like slaked lime, thick paste of catechu may be smeared on the betel leaf or small bits of dry catechu may be placed on the betel leaf before it is folded to form a pan.

K. Pan Masala:

Pan masala is a commercial preparation containing areca nut, slaked lime, catechu and condiments, with or without powdered tobacco. 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. 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.

L. Zarda:

Zarda consists of tobacco, lime, spices and vegetable dyes.[1] Tobacco leaves are boiled in water with lime and spices until evaporation. Residual tobacco is then dried and colored with vegetable dyes.[18] Zarda may be chewed by itself, with areca nut or in betel quid quid. 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. [11]

M. Mainpuri tobacco:

It contains good quality rich flavoured tobacco with slaked lime, finely cut areca nut, camphor and clove. This is consumed mostly alone and less commonly in dressing of Paan. It was first prepared in 1906 with active patronization of the then Maharaja of Mainpuri. [15]

N. Kiwam:

Kiwam is a thick tobacco paste; it is also available as granules or pellets. [11]It is prepared by boiling

selected parts of tobacco leaves (without stalk, midrib and veins). The cut leaves are boiled in water with powdered spices like cardamom, aniseed and musk. The mixture is continuously stirred and allowed to macerate until a thick paste is obtained. This is then dried in air and granules/ pellets are made.[15]

O. Gundi:

It 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 which also adds to the flavour.[11] Gundi is used in Western India. In Orissa, a variant of Gundi known as Kadapan is used. [15]

P. Kaddipudi & Hogesoppu:

Kaddipudi ("Powdered sticks" in Kannada) is the cheapest form of chewing tobacco. The petiole and stalks of dried tobacco leaves are powdered. This is then taken raw. In a variant form, this powder is mixed with sugar molasses and made into bricks and blocks that are sold after drying. Hogesoppu is a better form of powders tobacco leaves from where the petioles and midribs are removed. This is either used as a dry powder for consumption or used as a dressing of Paan.[15]

Q. Pattiwalah:

Pattiwala is a sun-dried, flaked tobacco which may be used with or without lime. [11]

R. Snus:

Swedish snuff, called Snus is also marketed in India with. It is available in tea-bag like pouches and are kept in Gingivo-Buccal sulcus (space between check and gum) and sucked slowly.[15] It is seen as a more convenient tobacco product to use than cigarettes.

S. Dohra:

It 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 available either in two separate packs with one containing dohra & the other containing tobacco or it is also available as a single pack where it come premixed with tobacco. [11]

T. Tuibur/Hidakphu:

A unique form of water extract of tobacco smoke called tuibur is used by some people in Mizoram. It is also called as Hidakphu in Manipur. Unlike other smokeless tobacco products, a unique water (liquid preparation) containing the extracts of tobacco smoke is used here. This product is made locally by passing smoke, generated by burning tobacco, through water till the preparation turns cognac in colour and has a pungent smell. Indigenous crude devices are used for the production of tuibur on small scale.[19] Users take about 5 to 10 ml tuibur orally directly from bottle or through cotton soaked with Tobacco water and keep it in the mouth for some time and then spit it out. It is usually started out as a habit to keep clean one's teeth or to protect from insect bite initially, but soon start sipping several times in a day and get addicted.[11] Most of the users take it several times a day.

This review is an attempt to understand comprehensively the variety & the qualitative magnitude in terms of the different forms of chewing tobacco use in India and their compositions. It might just present us with an opportunity to deal with treating of oral mucosal lesions based on separate individual ingredients of each type & form of Smokeless tobacco. Smokeless tobacco represents a shift in the way tobacco is consumed. This is indeed an alarming trend considering the deleterious effects of tobacco consumed in any form. The imperishable nature of areca nut just makes it even more complicated to deal with.

CONFLICT OF INTEREST

No potential conflict of interest relevant to this article was reported.

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