

# Tobacco Addiction (*Nicotiana Tabacum*) and Its Effects on Oral Health

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## ABSTRACT

The modernization and westernization of the current lifestyle has unknowingly taken its toll, on an individual's habits, dietary or otherwise, ultimately culminating into fatal conditions or diseases.

Tobacco is a second major cause of death in the world. Tobacco is consumed in the form of smoking viz cigarettes, cigars, beedis, hukkah etc. or as smokeless varieties that are chewed viz. Raw powdered tobacco, Misri (roasted and powdered tobacco), Gutkha, Zarda, Pan masala etc.

In *Ayurved*, Tobacco (*Nicotiana tabacum* Linn), named as *Tamraparna* has been stated as a *Sthavaravisha* that primarily affects the CNS and is a cardiac poison. Its chemical constituent, Nicotine is highly toxic and addictive.

The common symptoms manifested being gingivitis, painful and bleeding gums, blackening of gums, dental caries, loosening of teeth, yellowish discolouration of teeth, halitosis, stomatitis, difficulty in chewing and swallowing, oral lesions etc. which may further lead to oral carcinoma.

**Keywords:** Nicotine, Oral Carcinoma, oral lesions, Toxicity.

## INTRODUCTION

There are approximately 120 million smokers in India (according to WHO).

According to (Indian Heart Association) (IHA) tobacco use has been associated with

rising incidence of tuberculosis, homicide, suicide, heart ailments, strokes, bronchitis, delayed healing of wound, infertility and peptic ulcer. Tobacco is the second major cause of death in the world.

One vicious trap that man finds himself in Addiction, the commonest of them being that of Tobacco which is either consumed in the form of smoking viz cigarettes, cigars, beedis, hukkah etc. or as smokeless varieties that are chewed viz. Raw powdered tobacco, Misri (roasted and powdered tobacco), Gutkha, Zarda, Pan masala etc. According to (ICMR) tobacco accounts for about 30% of all cancer in man, mouth cancer is most common among in man following by lung cancer. 42% of all male is due to cancer.<sup>1, 2</sup>

In *Ayurved*, Tobacco (*Nicotiana Tabacum* linn), named as *Tamraparna* has been stated as a *Sthavaravisha* that primarily affects the Central Nervous System and is a cardiac poison. Its chemical constituent, Nicotine, is highly toxic and addictive<sup>3</sup>.

It shows toxicity when smoked or chewed though absorbance is slower via the later. In fact, the oral cavity is at a greater risk of tobacco toxicity.

The common symptoms manifested are gingivitis, painful and bleeding gums, blackening of gums dental caries, loosening of teeth, yellowing of teeth, halitosis, stomatitis, difficulty in chewing and swallowing, oral lesions etc, which may further lead to oral carcinoma.

The contemporary management of symptoms of oral toxicity of tobacco includes abstinence, oral hygiene, analgesic, anti-inflammatory, antibiotic or antifungal administration, medicated gargles, gel application etc. i.e., Chlorhexidine gargles have been proven to be antibacterial. *Ayurveda* elaborates on oral hygiene and its importance as part of *Swasthavritta*. *Dantadhavan* and *Jihvanirlekhan*, plays an important role.

In fact, the use of improper or poisonous stick bark for *Dantadhavana* can cause occurrence of *Vishalakshan* in the *mukha*. both *Charakacharya* and *Sushrutacharya* have stated *Mukhagata Vish lakshan*<sup>4, 5</sup>.

The management of *Mukharoga* includes local treatment like *Pratisaran*, *Kaval*, *Gandush*, *Leha* or internal medicine.

## METHODOLOGY

It causes 25 different kinds of diseases that include cancer of lungs and mouth, heart diseases. There are approximately 120 million smokers in India. According to India heart association (IHA) tobacco usage has been associated with rising incidence of tuberculosis, homicide, suicide, heart ailments, strokes, bronchitis, delayed wound healing, infertility, and peptic ulcer.

Tobacco is a second major cause of death in the world in the form of smoking viz. cigarettes, etc. or as smokeless varieties that are chewed viz. raw powdered tobacco, Misri (roasted and powdered tobacco), Gutka, Zarda, Pan masala etc.

‘Tobacco’ originates from the Spanish and Portuguese word “Tobacco”. Photochemical: Nicotine, Anatabine, Anabasine, Glucosides (tabacine, tabacine), 6-Trimethyl-1, 4Naphthoquinon, Anethole, Acrolein, Nicotelline and Pyrene. Nicotine is the compound responsible for addictive nature.

In 2008, the World Health Organization named tobacco as the world’s most single cause of death.

- **Beedis:** Crushed and dried tobacco is wrapped in tendu leaves and rolled into a beedi. Beedis are smaller in size than

the regular company-made cigarettes. So more beedis are smoked to achieve the desired feeling caused by nicotine. Beedi smokers are at least at an equal risk of developing cancers as cigarette smokers due to use of smoked tobacco.

- **Cigarettes and cigars:** A cigar is a roll of tobacco wrapped in leaf tobacco and a cigarette is a roll of tobacco wrapped in paper. Cigarettes may come with filters, as thins low-tar, menthol, and flavored. Many people view cigar smoking as less dangerous than cigarette smoking. Yet one large cigar contains as much as tobacco of an entire pack of cigarettes. Cigarette smoking is more common in the urban areas of India and cigar use is seen in the big cities. Cigarette smoking in on the rise and is now also seen among teenage girls and young women

- **Chillum:** This involves smoking tobacco in a clay pipe. Chillum smoking increases chances of oral cancer and lung cancer. A chillum is shared by a group of individuals, so in addition to increasing their risk of cancer, people who share a chillum increase their chances of spreading cold, flu and other lung illnesses. A chillum is also used for smoking narcotics like opium

- **Hookah:** Hookah smoking involves a device that heats the tobacco and passes it through water before it is inhaled. It is not a safer way for use of tobacco. Hookah is thought to be a sign of royalty and prestige and is available in high-priced coffee shops in flavors like apple, strawberry, and chocolate. It is marketed as a safe recreational activity but it is not safe still increasing use among college students of both sexes is found. Use of tobacco in this form can result in tobacco addiction.

- **Chutta Smoking:** Chuttas are coarse tobacco cigars that are smoked in the coastal areas of India. Reverse chutta smoking involves keeping the burning end of the chutta in the mouth and

inhaling it. This practice increases the chance of oral cancer.

- **Smokeless tobacco:** Smokeless tobacco is very common in India. Tobacco or tobacco-containing products are chewed or sucked as a quid, or applied to gums, or inhaled
- **Khaini:** This is one of the most common methods of chewing tobacco. Dried tobacco leaves are crushed and mixed with slaked lime and chewed as a quid. The practice of keeping the quid in the mouth between the cheeks and gums causes most cancers of the gums – the most common mouth cancer in India
- **Gutka:** This is rapidly becoming the most popular form of chewed tobacco in India. It is very popular among teenagers and children because it is available in small packets (convenient for a single use), uses flavoring agents and scents, and is inexpensive (as low as Re 1/- equivalent to 2 cents). Gutka consists of areca nut (betel nut) pieces coated with powdered tobacco, flavoring agents, and other “secret” ingredients that increase the addiction potential. Gutka use is responsible for increased cases of oral cancers and other disorders of the mouth and teeth in young adults.
- **Paan with tobacco:** The main ingredients of paan are the betel leaf, areca nut (supari), slaked lime (chuna), and catechu (katha). Sweets and other condiments can also be added. The varieties of paan are named for the different strengths of tobacco in it. Some people think that chewing paan without tobacco is harmless, but this is not true. The International Agency for Research on Cancer (IARC) has established that people who chew both the betel leaf and the areca nut have a higher risk of damaging their gums and having cancers of the mouth, pharynx, esophagus, and stomach.
- **Paan masala:** Paanmasala is a commercial preparation containing the areca nut, slaked lime, catechu, and condiments, with or without powdered

tobacco. It comes in attractive sachets and tins, which are easy to carry and store. The tobacco powder and areca nut are responsible for oral cancers in those who use these products a lot.

- **Mawa:** This is a combination of areca nut pieces, scented tobacco, and slaked lime that is mixed on the spot and chewed as a quid. The popularity of mawa and its ability to cause **cancer matches that of gutka. Its use is rising among teenagers and young adults in India.**
- **Mishri, Gudakhu and Toothpastes:** These preparations are popular because people believe – incorrectly – that tobacco in the product is a germicidal chemical that helps in cleaning teeth. Mishri is roasted tobacco powder that is applied as a toothpowder. Mishri users often become addicted and start applying it as pastime. Gudakhu is a paste of tobacco and sugar molasses. These preparations are commonly used by women and involve direct application of tobacco to the gums, thus increasing the risk of cancer of the gums. Tobacco-containing toothpastes, which are promoted as antibacterial pastes, are popular among children. This habit often becomes an addiction, and the children graduate to other forms of tobacco, thus increasing their chance for cancers.
- **Dry snuff:** This is a mixture of dried tobacco powder and some scented chemicals. It is inhaled and is common in the elderly population of India. Snuff is responsible for the cancers of the nose and jaw.

#### **Diseases of Oral cavity<sup>6</sup>**

- **Gingivitis<sup>7</sup>**  
An inflammation of gums i.e. is a non-destructive disease that occurs around the teeth. Gingivitis is reversible with good oral hygiene; however without treatment gingivitis can progress to periodontitis in which the inflammation of gingival results in tissue destruction and bone resorption around the teeth.

- **Periodontitis**<sup>8</sup>

Also known as pyorrhoea is a set of inflammatory diseases affecting the periodontium i.e. the tissues that surround and support the teeth i.e. the tissues that surround and support the teeth. Periodontitis involves progressive loss of the alveolar bone around the teeth, and if left untreated can lead to the loosening and subsequent loss of teeth.

- **Halitosis**<sup>9</sup>

Called bad breath, or fetor oris is a symptom in which a noticeable unpleasant odour is present to be the third most frequent reason for people to seek dental care, following tooth decay and gum disease.

- **Dental caries**-<sup>10</sup>

Also known as tooth decay, cavities or caries is a breakdown of teeth due to activities of bacteria. The cavities may be a number of different colours from yellow to black. Symptoms may include pain and difficulty with eating. Complication may include inflammation of the tissue around the teeth, tooth loss and infection or abscess formation.

- **Difficulty in opening**

Trismus, also called lockjaw, is reduced opening of the jaws (limited jaw range of motion). It may be caused by spasm of muscles of mastication or variety of other causes. Temporary trismus occurs much more frequently than permanent trismus. It is known to interfere with eating, speaking and maintaining proper oral hygiene.

- **Difficulty in swallowing**<sup>11</sup>

Dysphasia is the medical term for the symptom of difficulty in swallowing. Sufferers are sometimes unaware of their dysphasia. It may be sensation that

suggests difficulty in passage of solids or liquids from the mouth to the stomach, a lack of pharyngeal sensation, or various other inadequacies of the swallowing mechanism.

- **Tooth discoloration**<sup>12</sup>

Also termed tooth staining is abnormal tooth colour, hue or translucency. External discoloration is accumulation of stains on the tooth surface. Internal discoloration is due to absorption of pigment particles into the structure.

- **Stomatitis**<sup>13</sup>: Inflammation of the mouth and lips with or without oral ulceration.

*Ayurveda* has explained the *visha* and its effects on the body in detail. However, this study is restricted to understand the ill effect found in *mukha* due to *Tamraparna atisevan*.

*Mukha* (Oral cavity) consists of 7 different parts. *Mukhadi* (All of the above-mentioned parts as a whole

1. *Osththa* (Lips)
2. *Dantmoola* (Gums)
3. *Danta* (Teeth)
4. *Jihva* (Tongue)
5. *Talu* (Palate)
6. *Gala* (Throat)

They are included in Shalakyta Tantra and 65 are categorically described according to the different parts of the *Mukha*.

***Mukharoga***:<sup>14</sup>

*Mukhagata Rogas* are described in ancient *Ayurvedic* texts like *Sushrut Samhita*, *Charak Samhita*, *Ashtanga Sangraha*, *Yoga Ratnakar*, *Madhav Nidan*, etc.

There are 5 types of *jihva roga* (disease of tongue), 8 types of *dantaroga* (disease of teeth), 8 types of *Ostha Roga* (disease of lips), 15 types of *dantamula roga* (disease of gingivitis), 9 types of *Talu Roga* (disease of palate), 17 types of *kantha* or *gala roga* (disease of throat) and *Sarbagata* (disease of entire oral cavity).

SITE	SUSHRUT SAMHITA	ASTANGA HRIDAYA	BHAVA PRAKESH	YOGA RATNAKAR	MADHAV NIDAN
Oshtha	08	11	08	08	08
Dantmoola	15	13	16	16	15
Danta	08	10	08	08	08
Jivha	05	06	05	05	05
Talu	09	08	09	09	09
Kantha	17	18	18	18	17
Sarvamukha	03	08	03	03	03
Ganda	-	01	-	-	-
Total	65	75	67	67	65

The general symptoms of *Mukharoga* have been mentioned in the *Vedana Adhyaya* of *Kashyap Samhita* in context with pediatric group.

These are as follows –

1. *Lalasarava* (Excessive salivation)
2. *Aruchi* (Anorexia)
3. *Hrullas* (Regurgitation)
4. *Agnimandya* (Loss of appetite)
6. *Daurbalya* (Generalised weakness)

#### **Chikitsa**

- *Nidan Parivarjan* (Avoiding causative factors)
- *Snehan, swedana* (Oleation and Fomentation)
- *Shodhana (vaman, Virechan, Nasya, Rakta mokshan)*
- *Kavalgraha / Gandush* with *Triphala Kashaya, Rasnadi*
- *Snehika Dhoomapana* (medicated smoking) with *Shalaphadi* drugs, *Sarjarasa,*
- *khadiradi vati* etc.
- *Snehana Nasya* with *Vatahara Taila* or *Ghruta.*
- *Lekhana and Pratisaran*

#### **Mukhagata visha lakshana**

*Mukhagata visha lakshan* of *mukhpaka* are similar to those seen in *Mukhpaka Visha lakshana.*

*Acharya Charak* has explained the *Mukhagata Visha Lakshan* by describing it as those substances which dislodge the various *Dosha* in the oral cavity. These substances are to be regarded as unwholesome. 12 types of *Mukhagata Visha Lakshan* have been cited along with

symptoms occurring as a result of *Ati Sevan* of *Tamraparna*<sup>15,16</sup>

- *Oshtha Chimchimayan* (Tingling of lips),
- *Jihvashunyata/ Rasa dnyan abhava* (Loss of sensation of tongue and taste),
- *Jihvajadyata* (Heaviness of tongue),
- *Dantaharsha* (hypersensitivity of teeth),
- *Mukha daha* (Burning sensation in mouth),
- *Lalasarava* (excessive salivation),
- *Mukhagata Todavat Vedana* (Pricking pain in mouth),
- *Mukhadaurgandhya.* (Halitosis /Bad breath),
- *Vaivarnya*  
*Danta/Dantamool/Oshtha/Kapola*(Discoloration – teeth/gums/lip/cheeks)
- *Dantamool shotha* (Gingivitis),
- *Mukhapaka* (Stomatitis)
- *Hanustambha* (Stiffness of jaw)

#### **Hanugraha/ Hanustambha**<sup>17</sup>

*Hanugraha* is a symptom seen in *Mukhagata Visha Lakshan* which can be termed as *Hanustambha.* Where in there is difficulty in opening of mouth and disability in movement of jaw

#### **Chikitsa**<sup>18</sup>

*Snigdha Chikitsa* is mentioned for *Hanugraha* and *Hanustambha* in *chikitsasthan*

#### **Samanya Chikitsa**<sup>19</sup>

The treatment is advocated to the patient and it follows certain principles. The principles of treatment of *Mukhagata Visha Lakshan* is described as below.

### 1. Dantadhawan-

Tooth Brushing, 12 finger long, straight and having circumference like little finger twing of *Katu*, *Tikta*, *Kashaya rasa* should be used.

### 2. Jivhanirlekhana-

Another essential daily activity. This helps to get rid of *ama* deposited on the tongue, this help get rid of *ama* deposited on the tongue.

### 3. Gandoosha and kavala

According to them, the difference between the two is only in the dosage and procedure of using the drug.

In *Gandoosha*, a medicated fluid is held mouthful for a specific period until there is lacrimation and nasal discharge, and then the patient spits it out. In *Kavalagra*, the mouth is only three-fourths filled with the medicated fluid; the fluid is swished in the mouth for a specific time and then spit out. According to *Sarangadhara*, *kalka* (medicated bolus) drugs are used in *kavala*, and liquids are used in *Gandoosha*.

### 4. Lepa-

Local application of a medicine over the body for a particular period without any massage or pressure or movement is called *Lepa*.

*Pratisarana* (mouth pastes): is a mouth pastes applied as a local application, there are three types, based on usage, viz., *Rasakriya*, *Kalka*, and *Choorna*.

### Internal Medication-

Medication in different dosages form like *Khadiradi vati*, *Triphala powder* and *Triphala Kashaya* etc internally can be given.

## CONCLUSION

Dried tobacco leaves are mainly used for smoking in cigarettes, cigars, pipe tobacco, and flavored tobacco. Consumed as snuff, chewing tobacco, dipping tobacco and Tobacco use is a risk factor for many

diseases, especially affecting the heart, liver and lungs as well as causes of cancers and may disturb the food habits which will be one of the major health problems.

### Declaration by Authors

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