

# Smokeless Tobacco: An Overview

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## How to cite this article:

Bhuvaneshwari NG. Smokeless Tobacco: An Overview. *Ind J Dent Educ.* 2024;17(2):91-96.

## Abstract

Tobacco is mostly commonly used drug which is the foremost preventable cause of death and disease in the world today. It is of major public health concern for countries in the southeast region. India faces a dual burden of tobacco use in the form of smoking and smokeless tobacco. With wide variation in smokeless tobacco consumption in India, the prevalence is higher in rural population. Tobacco use is a major risk factor for various infectious and Non-communicable Diseases. Participation of health care professionals in tobacco cessation is the need of the hour. Training the healthcare professionals for behavioural counselling and addiction management would serve the need to reduce the burden of tobacco related diseases. The association between tobacco usage and the various oral diseases are well recognized now.

With the incorporation of Tobacco cessation counselling centre in all dental colleges across India, Dentists are nowadays trained for behavioural management of patients.

**Keywords:** Tobacco; Health Care; Counselling Centre; WHO FCTC.

## INTRODUCTION

Abuse of drugs is one of the biggest curses that modern society has come across.<sup>1</sup> About 190 million people all over the world consume one drug or the other, such as heroin, smack, ganja, affeem, bhang, tobacco, etc.<sup>1</sup> Of the various drugs abused, the most widely distributed and commonly used drug in the world is 'Tobacco'. Article 1 (f) of the WHO FCTC defines tobacco

as "products entirely or partly made of the leaf tobacco as raw material which are manufactured to be used for smoking, sucking, chewing, or snuffing".<sup>2</sup> Many social, economic and political factors have contributed to the global spread of tobacco consumption. With wide variety and different popularity of different SLT products in different geographic regions, the overall burden differs between countries.<sup>3</sup>

Tobacco is the foremost preventable cause of death and disease in the world today, killing half of the people who use it.<sup>4</sup> Currently, approximately 5.4 million people die each year due to tobacco related illnesses. Which is expected to increase to more than 8 million a year by 2030.<sup>5</sup> People in North America, northern Europe, India and other Asian countries, and parts of Africa, have a long history of using smokeless tobacco products.<sup>5</sup> It has become a global health issue with about 350 million users, maximally seen in the South-East Asian Region.<sup>6</sup>

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**Received on:** 11.03.2024

**Accepted on:** 17.05.2023



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## ***Tobacco - India***

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### **Prevalence**

SLT use remains a huge public health concern for countries in the southeast region. India being the second largest producer and consumer of tobacco products globally with over 27 crore tobacco users. More than 1 million adults die each year in India due to tobacco use accounting for 9.5% of overall deaths.<sup>7</sup> India faces a dual burden of tobacco use in the form of smoking and smokeless tobacco. According to the Global Adult Tobacco Survey<sup>8</sup> (GATS 2) conducted in 2016–17, the overall prevalence of smoking tobacco use is 10.38% and smokeless tobacco is 21.38% in India. Of all adults, 28.6% currently consume tobacco either in smoke or smokeless form, including 42.4% of men and 14.2% of women.<sup>9</sup> About 21.4% adults, including 29.6% of men, 12.8% of women, use SLT while more than 0.35 million Indians die every year due to SLT use.<sup>8</sup> Available estimates in India show that smoking attributable annual deaths were about 930,000, while the smokeless tobacco (SLT) attributable annual deaths were about 3,50,000, together accounting for about 1,280,000 deaths per year or approximately 3500 deaths every day.<sup>10,11</sup> As per the WHO Global Report (2012) on ‘Mortality attributable to tobacco’ 7% of all deaths (for ages 30 and over) in India were attributable to tobacco.<sup>12</sup>

A study by balram rai<sup>13</sup> et al, compared the phase one findings of the National Family Health Survey conducted in 2019–20 with GATS 2 findings to track the progress for tobacco free India. The results showed that the prevalence of tobacco use among men had declined in most states, except Sikkim, Goa, Bihar, Gujarat, Himachal Pradesh, and Mizoram, where an upward trend was seen. In the case of women, the prevalence has declined in almost all states except Mizoram and Sikkim. The prevalence of tobacco use in rural areas was higher than in urban areas. The absolute number of tobacco users in India were still very high thereby directly posing its huge population, to a higher risk for developing various chronic diseases.

### **Economic impact**

Tobacco also impacts the economic development of the country, and as per studies conducted by the Ministry, the total economic costs attributable to tobacco use from all diseases and deaths in the year 2011 was INR 1,04,500 crores, which is huge burden for a developing country like India to bear.<sup>14</sup>

## **Tobacco**

The varied forms and types in which tobacco is consumed in India are: Smokeless tobacco and smoking: Smokeless tobacco comprises of tobacco or tobacco containing products which are chewed or sucked as a quid, or applied to gums, or inhaled such as Snuff, Dried tobacco leaves, Gutkha, Paan with tobacco, Paan masala, Mawa, Mishri, Gudakhu and toothpastes, Plug tobacco, Twist tobacco and Dry snuff.<sup>1</sup> Tobacco may be used in raw, processed mixtures and pyrolised forms. The raw forms are generally sun-cured or air-cured, consist of flakes of plain tobacco leaves mixed with other ingredients especially lime, areca nut and/or other condiments and pyrolised forms (mishri, bazaar, etc.) are used as dentifrice.<sup>1</sup> Smoking tobacco was a taboo in traditional families but smokeless forms of tobacco were widely accepted. The wide social acceptance and increased importance of Paan during the Mughal era made it a widely prevalent form of smokeless tobacco use in India.<sup>11</sup> A systematic review<sup>15</sup> assessed thereasons and factors of SLT consumption. The main categories reported was due to beliefs, cultures and social conditions among the people using it.

### **Betel quid and arecanut<sup>16</sup>**

Areca nut or supari is a fruit of areca catechu palm tree, which is native of South Asia and Pacific Islands. Betel quid (BQ) and areca nut are used to prepare a wide variety of products. There common forms of sale in India include khaini, gutka, Manipuri, Mawa, Kharra, paan, Naswar and Zarda. Tobacco is often added to the BQ in South-Central Asia (India, Pakistan, Bangladesh). The IARC has classified ‘betel quid without added tobacco’, ‘betel quid with added tobacco’, and areca nut as carcinogenic to humans (Group 1).<sup>16</sup>

Areca nut, like tobacco, is addictive, and dependence is reported to be higher among those who use betel quid and areca nut products together. A study across six Asian communities reported that addition of slaked lime as an added ingredient was associated with higher dependency among users.<sup>17</sup> A systematic review, found that areca nut use affects almost all organs of the human body. It is reported to worsens conditions such as myocardial infarction, cardiac arrhythmias, hepatotoxicity, asthma, obesity, type 2 diabetes, metabolic syndrome, hypothyroidism, infertility, and adverse reproductive outcomes.<sup>18</sup>

## Tobacco and general health

Smoking, e-cigarettes, smokeless tobacco, pan masala and the like products use can increase risk and severity of pulmonary infections because of damage to upper airways and a decrease in pulmonary immune function.<sup>19-21</sup> Tobacco use in children and adolescents may predispose students to hypertension, heart disease, recurrent lung infections, ear infections, asthma, cough and poor grading.<sup>22</sup>

There is widespread and increasing use of SLT-products in certain parts of the world, but the available evidence related to their impact on health outcome is far less compared to cigarette smoking. Tobacco use is also one of the major risk factor for the four main Non-communicable Diseases (NCDs) cardiovascular disease, cancer, chronic lung disease and diabetes, which puts people with these conditions at higher risk for developing severe illness when affected by COVID-19. NCDs are estimated to account for 63% of all deaths in India and these are expected to rise further.<sup>23</sup>

Using smokeless tobacco during pregnancy can increase the risk for early delivery and stillbirth. Many smokeless tobacco products contain cancer causing chemicals.<sup>24,25</sup> Smokeless tobacco is associated with many health problems. It increases the risk for death from heart diseases, stroke, nicotine addiction, cancer of the mouth, esophagus, and pancreas. The most harmful chemicals are tobacco specific nitrosamines, which form during the growing, curing, fermenting, and aging of tobacco. The amount of these chemicals varies by product and higher the levels of these chemicals, the greater the risk for cancer.<sup>25,26</sup> Other chemicals found in tobacco reported to cause cancer includes:<sup>24</sup> A radioactive element (polonium-210) found in tobacco fertilizer, polycyclic aromatic hydrocarbons, harmful metals like arsenic, beryllium, cadmium, chromium, cobalt, lead, nickel, mercury etc.

International Agency for Research on Cancer (IARC) reported the carcinogenicity of smokeless tobacco (SLT) for mouth, oesophagus and pancreas in humans based on western studies. SLT use was found to be responsible for a large burden of oral, pharyngeal, oesophageal, laryngeal and stomach cancer cases in India. Associations were strongest for oral, esophageal, and pharyngeal cancers.<sup>27</sup>

## Nicotine

Nicotine is a drug found in tobacco. It is highly addictive – as addictive as heroin or cocaine. Over time, a person becomes physically and emotionally addicted to, or dependent on, nicotine.<sup>1</sup> Nicotine in

smokeless tobacco products that are used during pregnancy can affect baby's brain development.<sup>24</sup> Nicotine adversely affects many organs including cardiovascular, respiratory, renal and reproductive systems. It promotes tumorigenesis by affecting cell proliferation, angiogenesis, apoptotic pathways and reported to cause resistance to the chemotherapeutic agents and radio therapeutic agents. It affects the tumour cell proliferation, oxidative stress, apoptosis, DNA mutation by various mechanisms which leads to cancer.<sup>28</sup>

Nicotine replacement therapy (NRT) is an effective adjunct in management of withdrawal symptoms. Nicotine should be used only under supervision of trained cessation personnel therefore its sale needs to be strictly regulated.<sup>28</sup>

## SLT and Behavioural Interventions

According to the guidelines of Article 14, tobacco cessation has multiple dimensions to it, comprising behavioural interventions [brief advice, telephone counselling via national toll-free quitlines (NQLs)], pharmacotherapy, nicotine replacement therapy (NRT) and non-nicotine therapy bupropion and varenicline, involvement of the healthcare system/ healthcare workers, noting individual's tobacco use.<sup>29</sup>

Globally, a smaller proportion of smokeless tobacco users are advised to quit the use of smokeless tobacco products compared to tobacco users.<sup>8</sup> Behavioural interventions have been proven to be an efficacious and feasible modality for tobacco cessation in all settings (low and high resource).<sup>6</sup> Unlike smoking cessation, access to interventions for smokeless tobacco cessation is scarce<sup>28</sup> and training among the majority of health professionals is inadequate.<sup>31</sup> A study of more than 12000 registered users of mCessation facilities in India, showed that about 7% of smokers and smokeless tobacco users quit after 6 months of enrolment.<sup>32</sup> Therefore, sensitising and training health-care professionals, including dentists, to inquire about smokeless tobacco use and provide advice on how to quit is need of hour.<sup>6,33</sup> Additionally, efforts should be made to integrate smokeless tobacco cessation into relevant health programmes and services, including tuberculosis and HIV/AIDS control, oral health, reproductive health, substance abuse, and non-communicable diseases.<sup>34</sup>

## Importance of tobacco cessation - Indian context

SLT constitutes a plethora of unregulated, under-researched and unidentified products; it has been regarded as a growing socio-economic and health

concern in many countries of South-East Asia, Eastern Mediterranean and Western Pacific Regions of World Health Organization (WHO).<sup>35</sup> Research on cigarettes has led to global awareness and regulatory activities on smoking, leading to a gradual shift of tobacco industry's focus on under-researched forms of tobacco, including SLT. This has made SLT control even more significant than ever before.<sup>36</sup>

A need for research on curbing major challenges in regulating SLT use has been long felt and subsequently highlighted in several sessions of the Conference of Parties (COP) of the Framework Convention on Tobacco Control (FCTC). The first substantial development towards SLT, was its consideration as a global epidemic by the world leaders at the Conference of Parties at its 6th session (COP6) held in Russia in 2014.<sup>37</sup> The second was the establishment of the WHO FCTC Global Knowledge Hub on Smokeless Tobacco in India, a Party with one of the largest tobacco burdens, in 2016.<sup>38,36</sup> India leads the global efforts in prevention and control of SLT and has implemented several laws, even beyond the Cigarettes and Other Tobacco Products (Prohibition of Advertisement and Regulation of Trade and Commerce, Production, Supply and Distribution) Act, 2003 (COTPA), to curb its use.<sup>34</sup>

### Mass media interventions<sup>39</sup>

The first comprehensive pan national mass media campaign known as "Surgeon" in 2009 a 30 second documentary style public service announcement described the illness and disfigurements of patients due to use of SLT products by well renowned surgeon. The second SLT mass media campaign featuring 24-year-old Mukesh in 2011 and another one featuring Sunita, suffering from mouth cancer in 2014 influenced the public over the usage of SLT. Also, it was used to support and advocate policy efforts towards SLT. Ban on second most prevalent form of SLT (Gutka) in 2012, by supreme court of India was another initiative. A meta-analysis by Noar et al, demonstrated that Pictorial warnings were more effective than text warnings in changing outcomes relevant to both non-smokers (eg, intentions to not start smoking) and smokers (eg, intentions to quit smoking).<sup>40</sup>

### Role of dentists

The regularity and relatively high frequency of interaction with dentist, places dental professionals in a good position to deliver tobacco cessation interventions. Dental Professionals can be effective in treating tobacco use, dependence, the identification; documentation. Treatment of tobacco

users' needs to become a routine practice in every dental institutions and clinics.<sup>41</sup> Offer to help quit tobacco use is one of the six strategies for tobacco control advocated by WHO under MPOWER and technical guidelines for tobacco cessation have also been developed for different levels of health care providers.<sup>42</sup> The dental team can play an effective role in the creation of tobacco-free communities and individuals through participation in community and political action and in counselling their patients to quit. There are well-trying and cost-effective methods for brief interventions in dental clinical settings, and team-work, to which both clinical and reception/ administrative staff must contribute fundamentally.

Advice and support from dental professionals that involves NRT or e-cigarettes is more likely to help people to stop smoking. Single or multiple sessions of brief advice, very brief advice, or less active treatment may help people to stop smoking or using tobacco products.<sup>43</sup> Public health awareness, raising a mass movement against tobacco, sensitizing and educating all health care professionals for tobacco control and cessation by incorporating the topic in Medical, Dental undergraduate curriculum, nursing curriculum, various CMEs, conferences, scientific meetings, workshops, etc. is vital. Eventually, if all healthcare professionals participate in tobacco control and cessation, it will have a huge impact.<sup>44</sup>

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