Tobacco and Oral Health

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Abstract: Tobacco is a menace in all its forms that disrupts the socio economic fabric of our country obstinately. It has affected all the strata of society equally. It has numerous adverse affects on the human health. Preceding systemic effects, oral symptoms are manifested due to direct contact and long term exposure with the product. Various precancerous and cancerous lesions and conditions are evident which are mostly preventable. Correct diagnosis at the correct time becomes essential to a good prognosis. Harmful effects from second and third hand can be reduced if the legislation against tobacco users becomes stronger and stricter.

Keywords: Tobacco, oral health, prevention.

Tobacco, in all its forms, is a menace that has disrupted the socio-economic fabric of the community extensively. It not only has devastating effects on the mankind but also cuts across all age-groups, genders, cultures, regions or religions. Its consumers succumb to its addiction and are thus affected by a myriad of adverse health effects associated with its consumption. Tobacco consumption may be associated with various forms of cancerous and pre cancerous conditions and lesions of both oral cavity and the entire body. Hence, correct diagnosis at the correct time becomes essential to a good prognosis.

The plant “Nicotiana” has more than 60 species, out of which Nicotiana tabacum, native to South American continents, now grown as an important commercial cash crop [1]. With its use, mortality is estimated to more than eight million a year by 2030, and notably 80% is related to the developing world [2]. India accounts for 90,000 annual tobacco related deaths, highest globally [3].

Tobacco is extensively smoked in the form of manufactured cigarettes, bidis, cigars, cheroots, kreteks, pipes and sticks [4]. It is also chewed as betel quid with tobacco, Paan masala, areca nut and slaked lime preparations, Mainpuri tobacco, Mawa, Khaini, chewing tobacco, snus and gutkha. It also applied and is present as Mishri, Gul, Bajjar, Lal dantmanjan, Gudhaku, Creamy snuff, and tobacco water [5].

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Oral and systemic health are equally affected. Visible carcinoma ranges from head and neck region to stomach, liver, kidney, large intestine, prostate, breast, cervix, uteri and blood [6]. Dermatologic effects include wrinkling and gauntness of face, a change in complexion, lack of skin moisture, yellowing of nails and skin burns [7]. For pregnant females, it contraindicated as it has been known to cause congenital or birth defects like cleft lip and palate in children of smoking mothers [8]. A pregnant smoker is known to have complications like abruptio placentae or premature membrane rupture which leads to preterm delivery. Further the baby may have a low birth weight, congenital malformations or physiological and neurological defects [9].

Oral health is intimately and profoundly related to the use of tobacco. It can initiate and cause a variety of oral cancerous and precancerous lesions [10]. Examples of precancerous lesions include leukoplakia, defined as “a predominantly white lesion of the oral mucosa that cannot be characterized as any other definable lesion; some of these lesions will develop into cancer” [11,12]. “The chemical constituents of tobacco and its combustion end products such as tars and resins are irritating and capable of producing leukoplakic alterations of the oral mucosa [13]”. Smokeless tobacco keratosis or Snuff pouch is a white keratotic lesion with a translucent appearance rather than an opaque whiteness [14]. It is reversible and decreases in severity on abstinence of habits [15]. Leukoedema is a congenital benign, whitish-grey filmy appearance of the mucosa [16], which occurs as a result of continued low grade subclinical insults to the

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oral mucosa [17]. Clinically leukoplakia, presenting with loss of flexibility of the involved tissue, which can be differentiated from leukoedema showing no such features [17]. Oral submucous fibrosis has been defined as a "slowly progressive disease in which fibrous bands form in the oral mucosa leading to severe restriction of movements of the jaw including tongue" [18]. The disease is characterized initially, by burning sensation of mouth on consuming spicy foods, which may also be associated with vesicles/ blisters on the palate, petechiae which may be present on tongue, labial or buccal mucosa. This is followed by blanching, opaqueness and fibrous bands first affecting the buccal mucosa, lips, faucial pillars followed by deviation and shortening of uvula or soft palate [13,19]. Smoker's melanosis occurs due to the physical effect of tobacco smoke or heat stimulating melanocytes located along the basal cells of the epithelium to produce more melanosomes [20]. It may also be due to the direct effect of nicotine, especially due to non filtered cigarettes. The smoker's buccal mucosa is worst affected [21]. Nicotine palatinus (stomatitis) is also associated with the high temperature of the smoke and causes reddish lesions on the oral mucosa, especially the palate [13]. This condition is more observed in reverse smokers rather than regular smokers [22]. Smokeless tobacco has also been associated with several salivary gland pathologies like sialadenitis and certain degenerative changes [23].

Gingival and alveolar bone damage leads to gingivitis and periodontitis [24]. The prevalence of gingival recession and attachment loss has been found to be higher in tobacco users as compared to non users [25,26]. Increased risk of alveolar bone loss and tooth loss is associated with cigarette and pipe smoking in males [27]. Smoking has been associated with increased incidence of Acute Necrotizing Ulcerative Gingivitis and delayed wound healing [28]. The constituents of cigarette smoke are Carbon monoxide (causing diminished oxygen transport and metabolism), Nicotine (potent vasoconstrictor causing tissue ischemia, also reduces red blood cell, fibroblasts and macrophage cell count) and Hydrogen Cyanide (inhibiting necessary enzyme systems required for oxidative metabolism and oxygen transport at the cellular level) [29].

Halitosis or oral malodour occurs as a result of the anaerobic bacterial retention in the oral cavity. Volatile sulphur compounds arise due to bacterial metabolism of amino acids. These compounds increase the periodontal tissue destruction and has helped to establish an associate a relationship between smoking and halitosis [30] and diminished taste and smell acuity [31]. The high sugar content in smokeless tobacco can initiate the occurrence of caries, especially when held in the mouth for long periods [32].

Tobacco smoke thus harms the smoker through 'first hand smoking'. Through 'second hand smoking' or environmental tobacco, smoke is inhaled by non smokers; it is called passive or involuntary smoking. A high breathing frequency is seen in children. Hence, they inhale more air per body volume and are thereby more susceptible to respiratory infections (bronchitis, pnuemonia), induction and exacerbation of asthma, chronic otitis media, SIDS (sudden infant death syndrome) and occasionally lymphomas and brain tumors. In adults, along with similar effects in children it produces significant susceptibility to cardiovascular diseases, stroke, chronic obstructive pulmonary disease and emphysema [9,33]. The chemical residue that clings to clothing, furniture, carpet, etc when the cigarette is extinguished is called 'third hand smoke' [34].

Throughout the globe, programs have been launched to reduce the usage of tobacco. Various methods have been employed for the same. In 1988, after the US Surgeon General Report, smoking was identified as nicotine addiction [35].

Tobacco has harmful effects on the physical and mental health of the patient. It has adverse economic and social effects as it affects social interaction and relationships negatively. But the patient faces problems in quitting the habit as: sudden withdrawal causes physical symptoms like coughing, restlessness, headaches etc. Also, smokers are known to have an emotional, behavioural and psychological dependence on the product. For health professionals, World Health Organization proposed a "5A" (Ask, Advise, Assess, Assist, Arrange) strategy for those who want to quit and "5R" (Relevance, risks, rewards, roadblocks, and repetition) strategy for those who are unwilling to quit [36]. Framework Convention on Tobacco Control (FCTC) was developed in response to curtail the liberalized and illicit cross border trading [37]. Under FCTC, MPOWER include "Monitoring of tobacco use and prevention policies, Protection of people from tobacco smoke, and Raising taxes on tobacco" [38]. Various non-governmental organizations are operating quit help lines, self help groups and community participation for those who want to quit.

Thus tobacco control methods should be comprehensive and cannot work in isolation. Equal involvement of the individual, family, community and government of the respective country is required. Increased lobbying efforts by tobacco companies and monetary benefits in form of high taxation help government generate high revenue. These factors makes it increasingly difficult for its use to be banned. Thus, advocacy against tobacco and grass root level efforts should go hand in hand for complete termination of its use.

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