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Tobacco cessation-scissor the consumption-a review

Abstract

Tobacco in any form is a killer. While tobacco use is decreasing in many developed countries it is increasing in developing countries such as India. Tobacco addiction is menace in our society. There is an overall increase in the death tolls as well as decrease in the productivity of our nation. However all is not lost as we dentist can join hands in this initiative of tobacco cessation. Therefore the purpose of this review is to create awareness amongst general public about the tobacco addiction and cessation. The paper highlights various tobacco cessation services to the tobacco users including- behavior counseling, nicotine replacement therapy and medication. It mentions various laws and bans that are formulated by the government for the same but are not being implemented completely. Introduction of tobacco cessation centers, that provide habit counseling techniques as well as pharmacotherapy, that is available in India. Tobacco intervention initiative credited by the Indian Dental Association will also be discussed.

Keywords: tobacco addiction, cessation, tobacco cessation center, tobacco intervention initiative

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Abbreviations: ICD, international classification of diseases; SDS, sudden infant death syndrome; PAH, polyaromatic hydrocarbons; TSNA, tobacco specific nitrosamines; FCTC, framework convention on tobacco control; TII, tobacco intervention initiative; IDA, the indian dental association

Introduction

Tobacco, a product prepared by curing of the leaves of the tobacco plant, is a killer. It is the only legally available and commonly used substance that will kill one third to half of the people who use it.[1] Tobacco is the major cause of preventable mortality and morbidity all over the world. The tobacco epidemic is one of the major public health threats with one million deaths attributed to tobacco each year in India. High prevalence of overall tobacco use and rise in its consumption amongst women and youth is a cause of concern. Besides health, tobacco also has huge impacts on the economy and environment.[1,2] This damage from tobacco is attributed to the fact that most of the tobacco users are unaware of the dangers related to the habit.[3] India is the second largest consumer of tobacco products (after China) in the world and the second largest producer of tobacco (after China). India is at the second stage of epidemic, where the percentages of smokers as well as deaths due to smoking are on the rise. The deaths caused by tobacco are more than those caused by Malaria, TB, and HIV/AIDS combined. In India, smokeless from is more prevalent than the smoking form with 75% being daily users.[2] The oral cavity is the first area of the body affected by tobacco products. Tobacco use impacts many oral conditions, including dental caries, periodontal diseases, oral cancers, impaired wound healing, reduced ability to smell and taste, staining of the teeth, leukoplakia, oral precancerous lesions, halitosis and implant failure.[4]

Therefore there is a need of an hour to create awareness of tobacco cessation amongst tobacco users to prevent its hazardous effects to the consumers and their family members Dental practitioners can play a very important role in such initiatives to help tobacco users to quit such deleterious habit even though policy makers have taken numerous initiatives to reduce its consumption.[4]

Tobacco dependence

Tobacco products are made entirely or partly of tobacco leaf as raw material, which are intended to be smoked, sucked, chewed or snuffed and contain the highly addictive psychoactive ingredient, nicotine.[5,6] The cause of initiating the tobacco habit could be, stress reliever, promote tobacco products, curiosity and experimentation, fun and enjoyment, a challenge, a sign of rebellion, relief of negative feelings like anxiety, boredom or an act to cover up insecurities, to appear as stylish, independent and grown-up, and also due to dental problems (toothache).[2] Gradually this habit becomes an addiction due to dependence, conductive environment, relief of negative feelings like anxiety, stress, emotional problems etc., low level of education, boredom, and lack of cessation support and services.[2] Addiction is a physical or psychological dependence on a substance or behavior. The words addiction, dependence and dependency have become interchangeable. The World Health Organization defines substance abuse dependence in the International Classification of Diseases (ICD)-10.2.

Nicotine, contained in the tobacco, causes an abnormally large flow of certain brain chemicals (e.g. dopamine) that induce a sense of heightened well-being, followed by an abnormally light feeling. This causes cravings, which can be relieved by repeated use of tobacco products. Cravings are strong enough to cause users to minimize, deny or temporarily forget that tobacco is harmful to them.[1,2] Thus tobacco users are unable to quit even though the product is causing them harm. Another way nicotine induces dependence is the adrenaline rush it produces each time it is used. Once addiction is reached, tobacco user experiences withdrawal symptoms. At one point, the new user regrets having become dependent on tobacco and has an urge to quit it.[2]

Risks of tobacco consumption

There is abundant literature on the health consequences of tobacco use. The US Surgeon General's Report, 2004 reports that smoking has deleterious effect on almost every organ of the body, causing many diseases and reducing the health of smokers in general.[7] The various diseases caused due tobacco exposure can be summarized as.[1,2,7,8]

Heart and blood vessel diseases

i. Atherosclerosis, coronary heart disease.

ii. Cerebrovascular diseases.

iii. Abdominal aortic aneurysm.

iv. Peripheral vascular disease (may cause gangrene in the legs).

Cancer

i. Cancers of the bladder, cervix, esophagus, kidney, larynx, lung, oral cavity and pharynx, pancreas, stomach and leukemia.

ii. Precancerous lesions: leukoplakia, erythroplakia, and smoker's palate.

Respiratory diseases

i. Chronic obstructive pulmonary disease: chronic bronchitis.

ii. Acute respiratory illness: Pneumonia, bronchitis, and other respiratory infections.

iii. Respiratory effects mediate in utero: Reduced respiratory functions in infants.

iv. Respiratory effects in childhood and adolescence: decreased physical fitness, potential retardation, rate of lung growth and the level of maximum lung function among children and adolescence.

v. Other effects: increased cough, phlegm production, wheezing, respiratory infections and dyspnea

Reproductive effect

i. Fetal death and stillbirth: sudden infant death syndrome (SDS).

ii. Fertility: Delayed conception.

iii. Low birth weight: fetal growth restriction and preterm delivery.

iv. Pregnancy complications.

Other effects

i. Cataract.

ii. Premature aging.

iii. Diminished wound healing.

iv. Low bone density (especially amongst women).

v. Peptic ulcer disease.

vi. Periodontitis.

vii. Drug interactions.

Second and third hand smoke

Second hand smoking or passive smoking refers to the involuntary inhalation of tobacco smoke when another person is smoking. Third hand smoke refers to the tobacco by products that cling to the smokers hair, clothing or the household fabrics even when the smoke has been cleared. Small children and pets are particularly susceptible because they breathe near, crawl on, play, touch or lick these contaminated surfaces. Second hand smoke can occur in two forms: side stream smoke that comes from the burning end of the tobacco product and mainstream smoke that the smoker exhales. This smoke (Environmental Tobacco Smoke) also contains toxins and carcinogens and such indirect forms of tobacco exposure can cause disease, disability, and death.[1,2,8,9]

Occupational health

Tobacco use causes a decrease in the productivity of a person. Young smokers, even before they develop established tobacco-related diseases; abstain from work due to a variety of symptoms such as bodily pain, problems in the digestive tract and general health symptoms. Specific exposure to a range of substances in work place can cause harm e.g. fine particulate matter from coal dust, asbestos, silica, fungi, drugs and enzymes, alcohol, metal etc. can cause asthma, progressive lung damage, and other serious respiratory diseases. On combining tobacco smoke with these, the workers are at a higher risk.[1,2] Besides all these, smoking has also been associated with accidents at work place. This is because smoking causes a loss in concentration and distraction.

Environmental pollution

The tobacco industry damages the environment in many ways, and in ways that go far beyond the effects of the smoke that cigarettes put into the air when they are smoked. Tobacco farming is a complicated process involving heavy use of pesticides, growth regulators, and chemical fertilizers. These can create environmental health problems. In addition, tobacco, more than other food and cash crops, depletes soil of nutrients, including nitrogen, potassium, and phosphorus. As a result new areas of woodlands are cleared every year for tobacco crops (as opposed to re-using plots) and for wood needed for curing tobacco leaves, leading to deforestation. This deforestation can contribute to climate change by removing trees that eliminate CO_2 from the atmosphere.[9] Tobacco smoke causes both indoor and outdoor pollution. Certain chemicals released from smoking of tobacco products like: carbon monoxide, hydrogen cyanide and acrolein, phenol, polyaromatic hydrocarbons (PAHs), particularly benzopyrenes and Tobacco specific Nitrosamines (TSNA's) are released into the environment causing harmful effects (generally carcinogenic).[1,2]

Economical effects

In a developing country such as India, the net economic effect of tobacco consumption is to deepen poverty. In many ways tobacco and poverty are part of the same vicious circle. Tobacco use is higher amongst the poor than the rich. For the poor money spent on tobacco is money not spent on basic necessities like food, clothing, and shelter. Hence the poor are more likely to become ill and die prematurely from tobacco related sickness.[1] This creates greater economic hardships, especially the deaths of daily wageworkers, which are the only source of income for certain families. Despite these dangers related to

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tobacco, relatively few users completely understand these risks. This is because tobacco is merely seen as a bad habit that a person develops and chooses to indulge in. Hence some have the misconception that they can stop and quit this habit very readily.

Benefits of tobacco cessation

It is of utmost importance that the tobacco users get an incentive to quit the habit. Freedom from all the harms listed above is the biggest benefit that one gets. Lets divide these benefits into 2parts- short term and long-term benefits

Short term benefits (immediate effects)

i. The main effect of quitting is on the overall appearance of the tobacco user, which improves drastically.

ii. Soon after quitting, the sense of smell improves and gastric irritation reduces.

iii. Along with quitting, good attention to the oral care, halitosis can improve.[1]

iv. Another major change is improvement in the lifestyle and a good image in the society.

Long term benefits

Quitting decreases the risk of several diseases and health problems. There is an overall increase in the mortality rates.

i. It prevents further staining of teeth and tooth loss.

ii. It reduces the risk of pre-malignant conditions like leukoplakia and erythroplakia.[3]

iii. He risk of developing cancer rises with the duration of exposure to tobacco and its amount consumed and decreases with its cessation.

iv. In smokers without COPD, quitting improves lung function by 5% within a few months of quitting. For quitting in smokers with COPD, there is deceleration in the progress of the disease.1

v. Quitting also helps prevent atherosclerosis and thus reduces the risk of stroke and myocardial infarction and prevents progression of peripheral vascular disease.[10]

vi. There is also reduction in the progress of the ophthalmological complications (cataract).

vii. Quitting also helps reduce erectile dysfunction among males and correct menstrual irregularities among females. It also helps in improving pregnancy outcomes.[1,10,11]

These are the benefits for the tobacco consumer. Besides these, there are very important gains for the family of a tobacco user - relief that the user is no more subjecting himself to the harmful risk, financial savings, and improving in the health of the family by eliminating second and third hand smoke. The moment one user quits, another is encouraged to quit.

Role of a health care professional in tobacco cessation

Healthcare professionals like physicians or dentists are not only clinicians but also serve as educators and role models and helps motivate the patient to change their behavior. This is important for patients who have adequate knowledge about the hazards of smoking as well as those who do not have such knowledge. Intervention helps them to think about the importance of quitting.

Methods of cessation

Tapering

Involves counting the number of cigarettes/bidis smoked each day and then reducing that amount by a fixed number over a given amount of time. This method involves setting a quit date by which the client will have tapered down to the point that they are no longer using tobacco.[12]

Cold turkey

Is when a tobacco user is able to quit the use of tobacco with help of his/her will power without any assistance.[2,12]

Patient identification and assessment

Is the first step in providing tobacco cessation. Effective identification helps the clinician in providing appropriate interventions based on patient's tobacco use status and willingness to quit. It is necessary for the clinician to examine a patient thoroughly.

i. A detailed history is elicited tom know whether the person is or was a tobacco user.

ii. General examination pertaining to the effects of tobacco use- note down any feature which may indicate tobacco smoking or chewing or complications related to such use

iii. Examination of the Oral cavity- inspection and palpation of the entire oral cavity, to detect any lesions

iv. Investigations- showing the tobacco user objective findings of an X ray, ECG, spirometer, or a blood test is effective in explaining to the patient that change is necessary and will be beneficial.

v. The Fagerström Test for Nicotine Dependence is a standard instrument for assessing the intensity of physical addiction to nicotine.[13,14]

The patients on the basis of the history taking and examination can then be classified as.[15]

i. **Precontemplative phase:** The patient states that he/she is not yet ready to quit. The patient's motivation status should be documented and monitored at every subsequent visit.

ii. **Contemplative phase:** The patient is considering smoking cessation at some point in the future.

iii. **Determination phase:** The patient is actively involved in a quit attempt and has quit smoking within the last six months.

iv. **Action phase:** The patient is actively involved in a quit attempt and has quit smoking within the last six months.

v. **Maintenance phase:** The patient has quit for at least six months.

Brief intervention

This is the foremost step of cessation. Sometimes clinicians are time bound, hence detailed counseling strategies are difficult to achieve. According to the Public Health Service's Clinical practice guidelines on smoking cessation, brief interventions should occur in

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10 minutes or less. Hence the following strategies can be adapted for a behavior counseling sessions.

5 A's

It is a counseling strategy used to assess patients new to the quitting process and also patients who have previously quit and are attempting cessation again.[5,16,17]

Summary of the 5A's:

a. **Ask:** Ask the patient about current and past tobacco use at every patient visit and follow-up, i.e.

i. What types of tobacco products do you use?

ii. How many cigarettes do you smoke each day?

iii. What time of the day do you start smoking?

iv. What are your triggers for smoking?

Have you tried quitting before, and if so, tell me about how those particular smoking cessation treatments worked for you.

Advise: Advise all patients to quit using tobacco by educating them about health benefits that will affect them personally along with their loved ones. Examples of health issues to discuss are improving blood pressure control, decreasing risk for cardiovascular disease, decreasing cancer risk, etc.

Assess: Assess the patient's willingness to quit.

i. How would you describe your interest in quitting smoking at this time? For patients who have previously tried smoking cessation therapy and failed.

ii. Assess what went wrong in their therapy in order to guide the patients to either a new treatment strategy or ways to correct old habits.

iii. If you would like, we can discuss some ways that can help improve treatment adherence for patients who are currently being treated, assess how their current therapy is working for them, i.e.

iv. How is your current therapy working for you

v. In what ways have you noticed a positive change in your life since quitting

Assist: In the assisting process, each patient should give a detailed medical history. Some medications may be contraindicated in select patient populations.

i. In patients ready to quit smoking, assist the patient with selecting an appropriate treatment medication or plan.

ii. For patients unwilling to quit right now, assist by letting the patient know they have an emotional support partner in this difficult process.

Arrange: Arrange a follow-up. Follow-ups should occur even if the patient is not actively seeking to quit smoking at this time.

Star method: Counseling method for those patients that are actively seeking help to quit smoking.[16]

i. Set a quit date

ii. Tell friends, family, and co-workers

iii. Anticipate adherence challenges

iv. Remove tobacco products to prevent easy accessibility

5R's

These R's basically refer to the areas that should be discussed during an interview to enhance motivation in an unwilling person.[16]

i. Relevance: The clinician asks the patient why is cessation relevant to them

ii. Risk: Ask the patient to identify the possible risks of tobacco and repeat saying it.

iii. Rewards: Ask the patient about the benefit of cessation and ask the patient to repeat it.

iv. Roadblocks: Ask the patient what is stopping him from quitting

v. Repeat

Pharmacotherapy

Pharmacotherapy is simply an adjunct to behavior counseling. It is strongly recommended to those with

i. All persons with severe dependence.

ii. Tobacco users with multiple failed self attempts.

iii. Tobacco users unable to abstain with brief intervention alone.[1]

There are seven FDA-approved agents that can be considered first line therapies for smoking cessation, including over-the-counter products as well as prescription options. These agents are

i. Nicotine replacement therapy(tablets, gums, lozenges, skin patch, nasal spray, inhaler)

ii. Varenicline

iii. Bupropion.[1,16]

Nicotine replacement therapy (Nrt)[1,18,19]

NRT's are valuable cessation aids. Using them increases the rate of long-term quitting by 50-70%.[1,5,16]

There are total 6 forms of NRT's with different delivery methods.

i. Nicotine Chewing Gums: These are the commonest form of NRT. Available in two strengths-2mg and 4mg as an over the counter product. The 2mg dose is recommended for low-dependent users and 4mg for high dependent users. This gum comes in a number of flavors.

ii. Nicotine Skin Patches: Simple to use and their compliance rates are better than for the other products. However their delivery is relatively slower and may not adequately protect against craving. Three strengths are used–21mg, 15mg, and 7mg patch. The 21mg patch for those who smoke more than 20 cigarettes per day.

iii. Nicotine Lozenges and Tablets: These are dissolved under the tongue. They come in two strengths: a 2mg high-dose lozenge and a low dose 1mg lozenge. They are easy to use and facilitate rapid nicotine absorption.

iv. Nicotine Inhalers: This resembles a cigarette. Nicotine cartridges are inserted into it and inhaled like a cigarette. The usual dose

recommended daily dose is 6-12 cartridges a day for 8weeks, with gradual reduction over the subsequent 4weeks.

v. Nicotine Nasal Sprays: This allows rapid nicotine absorption through the nose. It mimics the rapid nicotine levels achieved from smoking and may help to relieve sudden urges. Side effects include irritation of the nose, throat, coughing and watering of the eyes.

Varenicline

It is partial agonist of the nicotine receptor. It acts by

i. Releasing dopamine and creating similar reinforcing effects (against action).

ii. Binding to the nicotine receptor (antagonist action) and blocking the effects of nicotine.[1]

Bupropion

Bupropion is an antidepressant drug. It is believed to act as an antagonist by blocking nicotine receptors in the brain and affecting the brain's reward/pleasure system. It is useful in tobacco users with or without a history of depression. It also relieves withdrawal symptoms and may reduce depression. These are available as 150mg and 300mg tablets.[1,2]

Other medications: Nortriptylin, Clonidine

Tobacco cessation centers

Recognizing tobacco as an epidemic, the World Health Organization and the Ministry of Health and Family Welfare and Government of India 13 Tobacco Cessation Clinics were set up throughout the country in the year 2002. Currently there are 18 of such centers with the National Institute of Mental Health and Neurosciences, Bangalore as the coordinating center for these clinics.[17,18] The initial phase involved the setting up of tobacco cessation clinics in India and developing models for cessation. Subsequently these clinics expanded to include training, awareness and advocacy issues and were re-designated as tobacco cessation centers in 2005. Presently, it is envisaged to make these tobacco cessation centers nodal to the National Tobacco Control Program (NTCP).

TCC services are provided regularly at different parts of the country. The clinic activities include-Tobacco cessation clinic (OPD/ community based)

i. Registration and documentation of tobacco use profile in detail
ii. Group counseling
iii. Individual counseling/Relatives counseling
iv. Carbon Monoxide (CO) monitoring
v. Pharmacotherapy
vi. Regular follow up with brief counseling at each visit
vii. Telephone Counseling for the defaulters
viii. Postal letters to people who do not have access to telephone facility
ix. Home visits by social workers as and when required
x. Interaction with quitters during Educational programs
xi. Felicitation of quitters/Distribution of certificates to quitters
xii. Research work is also conducted by different TCCs
xiii. Educational Programs
xiv. Preparation and display of educational materials

The list of the centers across India

i. Shree Krishna hospital and PSM college- Gujarat
ii. National Institute of Mental Health and Neurosciences (NIMHANS)-Karnataka
iii. Jawaharlal Nehru Cancer Hospital & Research Centre-Madhya Pradesh, PGIMER, Chandigarh
iv. Cancer Institute (Adyar Cancer Institute), Tamil Nadu
v. A.H. Regional Cancer Centre-Orissa
vi. Institute of Human Behavior& Allied Sciences (IHBAS)-Delhi
vii. Vallabhbhai Patel Chest Institute-Delhi
viii. Vaidya Hospital-Goa
ix. Bhagwan Mahaveer Cancer Hospital & Research Center-Rajasthan
x. King George's Medical College-Uttar Pradesh
xi. Tata Memorial Hospital-Maharashtra
xii. Indira Gandhi Institute of Cardiology-Bihar
xiii. Directorate of Hospital and Medical Education-Mizoram
xiv. Bhubaneswar Borooh Cancer Institute-(Regional Institute for Treatment and Research), Assam
xv. MNJ institute of Oncology and Regional Cancer Center-Telangana
xvi. Chittaranjan National Cancer Institute-West Bengal
xvii. Regional Cancer Centre, Thiruvananthapuram-Kerala

Laws pertaining to tobacco cessation in India

Just a decade ago, it would have been inconceivable for an objective observer to imagine that India, in 2003, would be acclaimed as a leader in global tobacco control efforts. Given the fact that India is the second-largest producer of tobacco and had previously valued the revenue- and employment-generating potential of tobacco agriculture and manufacture, it would have been natural to expect that policy-makers would continue to be lukewarm towards national or global efforts to curb tobacco consumption. However, the reality of 2003–2004 is that the Indian Parliament enacted a far-reaching anti-tobacco legislation in April 2003, the Indian Government played a prominent role in the Framework Convention on Tobacco Control (FCTC) negotiations (which concluded in March 2003), signed the FCTC in September 2003, ratified it in February 2004 and commenced enforcement of the national tobacco control law in May 2004.12

Cigarettes and other tobacco products act, 2003

The above law, intended to protect and improve public health, encompasses a wide array of evidence-based strategies to reduce tobacco consumption. This legislation brings the entire range of

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tobacco products under the jurisdiction of the Central Government for the purpose of this Act. It is enforceable across all states and union territories, and for all tobacco products, including cigarettes, cigars, cheroots, bidis, cigarette tobacco, pipe tobacco, hookah tobacco, chewing tobacco, gutka, tobacco toothpowder, pan masala or any chewing material having tobacco as one of the ingredients.[1,2,12]

Who Framework Convention on Tobacco Control (FCTC)

The World Health Assembly of the World Health Organization (WHO) adopted the Framework Convention on Tobacco Control (FCTC) at its 56th Session in May 2003. The Convention will come into force after 40 countries have ratified it (Article 36). India ratified the convention on 5 February 2004. It was the eighth and the largest country to ratify till October 2004.[1,12] As a UN organization, the WHO has a constitutional mandate to initiate the development and facilitate the adoption of international treaties, such as a framework convention. The FCTC is the first ever international public health treaty of any kind. It is the first step in the global fight against the tobacco epidemic. This treaty presents a blueprint for countries to reduce both the supply of the demand for tobacco. It establishes that international law has a vital role to play in preventing disease and promoting health.[1]

Tobacco intervention initiative

The Tobacco Intervention Initiative (TII) is a professionally led "call to action" program to eradicate tobacco addiction while striving for a `tobacco free India' and thus improving the oral health of Indians by the year 2020.19. Tobacco causes significant changes in a person's mouth and counseling is the first step on the road to quitting. Counseling reveals the deleterious effects of continued tobacco use. After an informed public that is knowledgeable about the risk factors for oral cancer, the dental community is the first line of defense in early detection of the disease. The Indian Dental Association (IDA) an association of dentists is the best equipped to deal with all complications, be it periodontal diseases or oral cancer. Dentists are prevention-oriented and professionally trained to diagnose abnormal conditions associated with or caused by tobacco use. The oral cavity is the area of specialization for the oral health professionals. Credited by the IDA, the TII aims at training dental professionals in tobacco cessation. Its goal is to achieve a tobacco–free India. The membership for TII is divided into two categories.[19]

i. TII Centre Registration: Dental professionals/dental institutes can get their clinics or institutes registered as Tobacco Intervention Centre's, with the Tobacco Intervention Initiative of IDA. The prime requisite is that the applicant should be an IDA member or institutes must provide dental training and/or treatment.[20]

ii. TII Membership (without TII Centre Registration): This membership is open for all professionals (including dental surgeons). It is not mandatory for the applicant to be an IDA member.[21]

Conclusion

Tobacco is the major cause of preventable deaths throughout the world. Tobacco cessation is an essential component of tobacco control. A wide range of health professionals need to be involved in providing tobacco cessation in primary care and community care settings. As a health care professional is a highly respected, trusted community leader, they need to be actively involved in delivering anti-tobacco and tobacco cessation awareness message regularly to the public. We, as trained dentists need to take up the initiative and responsibility to help are country be tobacco-free.

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Conflicts of interest

The author declares there are no conflicts of interest.

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