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## **Effect of nicotine on oral and dental health**

A Project

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In partial fulfillment of the requirement for bachelor's degree in dentistry

**By**

**Ali Kamil Abd al-kadhim**

**Ghadeer Ghassan Kadhim**

**Ali Dhiyaa Jassim**

**Ghassaq Sami Hussein**

**Ali Sami Abd al-kareem**

**Ali Abd al-hussein Raheem**

Supervised by

**Assist.prof. Jamila k. al-umeri**

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بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

فَاتَّقُوا اللَّهَ عَسَىٰ أَنْ يَكُونَ بَعْضُ مَا كُنْتُمْ تَعْمَلُونَ

صَدَقَ اللَّهُ الْعَظِيمِ

# Supervisor Certification

I certify that this project entitled:

## **Effect of nicotine on oral and dental health**

Prepared by (**Ali Kamil, Ghadeer Ghassan, Ali Dhiyaa, Ghassaq Sami , Ali Sami, Ali Abd al-hussein**)  
under my supervision at Al-Qadisiyah University,  
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requirements for the degree of Bachelor in dental  
and oral surgery (B.D.S)

**Name : Assist.prof Jamila k. al-umeri**

# أهداء

أهدي بحث تخرجي ..

إلى من كان دعائها سر نجاحي ، وحنانها بلسم جراحي ، إلى أغلى الحبايب  
أمي الحنونة . وإلى سندي وقوتي ، وملاذي بعد الله ، أبي الغالي الذي لم  
يبخل علي يوماً وبه تسعد ايامي . إلى كل من علمني حرفاً أصبح سناً  
برقه يضيء الطريق امامي .. إلى اساتذتي الأعزاء كل من ..(د.علي حسن  
مراد ، د. رحيم عبد جبر ، د. جميلة كاظم العمري، د. غسان ماجد ، د.  
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# Abstract

Tobacco is the greatest disease-producing product, with its prevalent addictive habit influencing the behavior of human beings for more than four centuries. Tobacco is consumed orally in a variety of forms such as smoking and chewable forms. Smoking is increasing rapidly throughout the developing world and is one of the biggest threats to current and future world health. By 2030, if current trends continue, smoking will kill more than nine million people annually. On an average, to date 47.5% of men and 10.3% of women are smokers. In India, tobacco products are commercially available with added scents and flavouring agents which not only attracts rural population but also influences urban population. Tobacco smoking is linked with many serious illnesses, such as cardiopulmonary diseases, cancer, low birth weight, as well as with many other health problems, contributing to thousands of premature deaths each year. When exposed to tobacco salivary behaviour is reversed and saliva loses its antioxidant capacity, becoming a potent pro-oxidant milieu. Most oral consequences of tobacco use impair quality of life be they as simple as halitosis or as complex as oral birth defects, as common as periodontal disease or as troublesome as complications during wound healing. Tobacco smoking and chewing not only causes discolouration of teeth, periodontitis, dental caries, altered taste, nicotinic stomatitis, but also causes leukoplakia & carcinoma with high morbidity and mortality. It is especially important to understand that harmful effects of tobacco products are dose-dependent, that they depend more on abuse than on simple use. The aim of this review is to highlight the effect of smoking and chewing forms of tobacco on oral health. And remedies which can be thought of.

**Key words:** Tobacco, teeth stains, periodontitis, oral submucous fibrosis oral-pre cancer, oral cancer.

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# Introduction



Nicotine constitutes approximately 0.6–3.0% of the dry weight of tobacco. Nicotine is also present at concentrations of millionths of a percent in the edible family Solanaceae, including potatoes, tomatoes, and eggplants, though sources disagree on whether this has any biological significance to human consumers. It functions as an antiherbivore chemical; consequently, nicotine was widely used as an insecticide in the past and neonicotinoids, such as imidacloprid, are some of the most effective and widely used insecticides.

Nicotine is highly addictive unless used in slow-release forms. Animal research suggests that monoamine oxidase inhibitors present in tobacco smoke may enhance nicotine's addictive properties. An average cigarette yields about 2 mg of absorbed nicotine. The estimated lower dose limit for fatal outcomes is 500–1,000 mg of ingested nicotine for an adult (6.5–13 mg/kg). Nicotine addiction involves drug-reinforced behavior, compulsive use, and relapse following abstinence. Nicotine dependence involves tolerance, sensitization, physical dependence, and psychological dependence. Nicotine dependence causes distress. Nicotine withdrawal symptoms include depressed mood, stress, anxiety, irritability, difficulty concentrating, and sleep disturbances. Mild nicotine withdrawal symptoms are measurable in unrestricted smokers, who experience normal moods only as their blood nicotine levels peak, with each cigarette. On quitting, withdrawal symptoms worsen sharply, then gradually improve to a normal state.

Nicotine use as a tool for quitting smoking has a good safety history. Animal studies suggest that nicotine may adversely affect cognitive development in adolescence, but the relevance of these findings to human brain development is disputed. At low amounts, it has a mild analgesic effect. According to the International Agency for Research on Cancer, "nicotine is not generally considered to be a carcinogen. The Surgeon General of the United States indicates that evidence is inadequate to infer the presence or absence of a causal relationship between exposure to nicotine and risk for cancer. Nicotine has been shown to produce birth defects in some animal species, but not others. It is considered a teratogen in humans. The median lethal dose of nicotine in humans is unknown, but high doses are known to cause nicotine poisoning.

The primary therapeutic use of nicotine is treating nicotine dependence to eliminate smoking and the damage it does to health. Controlled levels of nicotine are given to patients through gums, dermal patches, lozenges, inhalers, or nasal sprays to wean them off their dependence. A 2018 Cochrane Collaboration review

found high quality evidence that all current forms of nicotine replacement therapy (gum, patch, lozenges, inhaler, and nasal spray) therapies increase the chances of successfully quitting smoking by 50–60%, regardless of setting.

Combining nicotine patch use with a faster acting nicotine replacement, like gum or spray, improves the odds of treatment success. 4 mg versus 2 mg nicotine gum also increase the chances of success.

Nicotine is being researched in clinical trials for possible benefit in treating Parkinson's disease, dementia, ADHD, depression and sarcoma.

In contrast to recreational nicotine products, which have been designed to maximize the likelihood of addiction, nicotine replacement products (NRTs) are designed to minimize addictiveness. The more quickly a dose of nicotine is delivered and absorbed, the higher the addiction risk.

Nicotine has been used as an insecticide since at least the 1690s, in the form of tobacco extracts (although other components of tobacco also seem to have pesticide effects). Nicotine pesticides have not been commercially available in the US since 2014, and homemade pesticides are banned on organic crops and not recommended for small gardeners. Nicotine pesticides have been banned in the EU since 2009. Foods are imported from countries in which nicotine pesticides are allowed, such as China, but foods may not exceed maximum nicotine levels. Neonicotinoids, which are derived from and structurally similar to nicotine, are widely used as agricultural and veterinary pesticides as of 2016.

## **Chapter one: effect of nicotine in oral and dental health**

People who smoke have a higher risk of gum problems, tooth loss, complications after tooth removal and surgery in the mouth, and developing oral cancer. They are more likely to get infections and don't heal as well as non-smokers.

Quitting smoking improves oral health, reduces the risk of developing gum disease and oral cancer, and improves the person's response to gum treatment.

It is very important for people who smoke to visit their dentist regularly to keep their teeth and gums healthy and check for signs of oral cancer.

It is also important for people who vape to visit a dentist regularly to detect and treat any oral health problems. If you vape, make sure to tell your dentist this.

Less adults smoke now than they used to, but it still remains a problem. In 2018, 10.7% of Victorian adults smoked.

The most common oral problems affecting people who smoke are:

Gum (or periodontal) disease.

Mouth cancer.

Whitening of the soft tissue in the mouth (called smoker's keratosis).

Poor healing after tooth removal (known as dry socket).

Tooth decay.

Tooth loss.

Poor healing after mouth and gum surgery.

Decreased taste.

Bad taste in the mouth and bad breath (called halitosis).

Tobacco use makes it harder for the immune system to fight infections. This slows down healing after tooth removal or injuries in the mouth.

Smoking may lead to:

- Dry socket – a slow healing tooth socket after a tooth removal which is very painful.
- Increased pain after oral and gum surgery.
- Less success if you have dental implants.
- Contact your dentist if you have any problems after dental treatment.

Smoking e-cigarettes or water pipes (known as vaping) – may seem less harmful than smoking regular cigarettes. Yet this may not be the case for the health of your mouth.

When you vape, you inhale e-liquids (also called vaping juice) which, even when labelled ‘nicotine-free’, can contain harmful substances. These include:

Nicotine.

Heavy metals.

Volatile organic compounds (VOCs).

Cancer-causing chemicals.

The risk of vaping devices causing problems in your mouth is much higher if they contain nicotine.

The long-term effects of vaping are not fully known. Yet there is some evidence that vaping can cause inflammation in the mouth, which can lead to gum disease and other oral health problems.

Temporary loss of taste may happen in some people (also called vape tongue).

Vaping may be seen as a way to quit smoking. Yet vaping may make it harder to quit smoking completely which increases the risk of diseases associated with tobacco use, such as mouth cancer.

Physiological and microbial effects of smoking

1\_increased salivary flow: Nicotine from tobacco products are cholinergic agonist which acts on muscarinic receptors and affect the nervous system via acetylcholine, stimulates the salivary secretion. Certainly, intense smokeless tobacco use has been shown to result in degenerative changes of more than 40%

of minor salivary glands located in the site of chronic tobacco placement, and immunoglobulin A (IgA) levels are depressed in smokers.

2\_bacteria: Smoking reduces the overall concentration of bacteria in the mouth, but the mix of oral micro flora does not appreciably alter, nor is the rate of plaque formation enhanced, at least not when differing oral hygiene levels are controlled for. Tobacco chewing however, appear to enhance the presence of several periodontal pathogens, namely Veillonella, Bacteroides, and Fusobacterium.

3\_candidiasis and median rhomboid glossitis: The great majority (83%) of oral candidiasis patients are moderate to heavy smokers. Median rhomboid glossitis, a Candida-induced tongue change, is most frequently (85%) seen in smokers and is markedly improved upon smoking cessation.



4\_sinusitis: Tobacco smokers are much more prone to maxillary sinusitis than nonusers and this condition typically resolves or is significantly reduced when the smoking habit is discontinued. This effect is probably secondary to a tobacco-induced oedema of the sinus membranes and by diminished ciliary activity of respiratory epithelial cells. The oedema tends to narrow sinus openings or orifices while the weakened ciliary movement prevents mucous and bacterial transport out of the sinuses.

5\_altered taste: Tobacco smoking increase taste thresholds thereby diminishes ability to detect various tastes and smells. Relative to taste, a dose-related association is known for bitter sensations, and to a lesser extent for salty tastes, but there appears to be little change in the ability to detect sweet or sour substances.<sup>14</sup> Interestingly, persons who are able to quit smoking express a

very strong preference for sweet foods, a feature which probably helps to explain the weight gain so commonly noted after smoking cessation.

6\_halitosis: Both smoking and chewable tobacco forms produce unpleasant breath odours or “bad breath”. With smoking the halitosis is produced predominantly by the retention and subsequent exhalation of inhaled smoke in the lungs. Pipe and cigar tobacco contains more sulfur than cigarettes, hence users tend to have a more offensive halitosis than cigarette smokers.

7\_aphthous ulcer: Tobacco smoking seems to prevent its occurrence or diminish its effects. Aphthae frequently begin to appear or reappear in persons who stop smoking, and almost all (96%) affected individuals are non-smokers. Canker sores are less prevalent in smokeless tobacco users than in nonusers. The reasons for this “protection” are unclear, but may be related to an increased mucosal keratinization or a reduced immune attack against the bacterial antigens thought to trigger ulcer formation.



## **chapter two:effect of nicotine on soft tissues**

The oral changes from tobacco use range from harmless soft tissue changes to a life-threatening oral cancer.

Your dentist is trained to perform an oral examination to detect tobacco use related abnormalities. Some of the more common of these are discussed below:

### ***Smoker's Melanosis***

Smoker's melanosis (see Right) is increased tissue pigmentation, or darkening, due to irritation from tobacco smoke. Typically this pigmentation occurs on the gingiva (gums) of the upper and lower front teeth. The amount of pigmentation increases with greater tobacco use, and is more common in females; it occurs in 5.0 – 22% of cigarette and pipe smokers. There is no treatment for smoker's melanosis; however, tissues typically return to normal color in six to 36 months after quitting smoking

### ***Periodontal Disease***

The evidence is overwhelming that smoking contributes to periodontal disease (see Right) and that continued smoking results in a reduced response to periodontal treatment. There is a greater amount of bone loss around teeth in smokers and individuals who smoke are more likely to lose teeth than nonsmokers. It is reported that more than half of advanced gum disease can be linked to tobacco use.

### ***Nicotinic Stomatitis***

In nicotinic stomatitis, the hard palate (roof of the mouth) appears white instead of pink, and numerous, small raised areas with red centers are found throughout the palate (see Left). These red areas are irritated minor salivary glands whose duct openings are inflamed in response to the heat from tobacco products. This lesion is most commonly seen in older male tobacco users who smoke pipes but it also can be found in cigar and cigarette smokers.

There is an increased risk for cancer of the tonsils, posterior mouth, and lungs in individuals who develop nicotinic stomatitis from their tobacco use. However, if the individual stops their tobacco use, the appearance of hard palate typically returns to normal within a few weeks..

### ***Smokeless Tobacco Induced Changes***

Use of smokeless tobacco produces a specific change in the area of the mouth where it is held. The area appears more whitish and wrinkled than normal, healthy tissue (see Right). This degree of tissue change is directly dependent upon the type of smokeless tobacco (leaf versus finecut), the specific brand of tobacco, the size of the pinch of tobacco, and the length of time the pinch is in contact with the mouth tissues. Although the use of any tobacco product increases one's risk of developing cancer, the oral cancer risk for smokeless tobacco use is largely unknown. However, use of leaf-type smokeless tobacco for greater than 50 years is associated with the development of a specific oral cancer known as "verrucous carcinoma". If the individual stops using the smokeless tobacco, the appearance of the oral tissue typically returns to normal in two to six weeks.

### ***Gingival Recession and Tooth Abrasion***

In addition to the development of changes to the oral tissues, the use of smokeless tobacco can damage both the gum tissue and the teeth in the area where it is held in the mouth. Smokeless tobacco can result in localized gum recession and the exposed teeth often develop dental decay due the sweetener in smokeless tobacco. Unfortunately, stopping the tobacco use does not reverse the gum problem or tooth decay.

### ***Black Hairy Tongue***

Hairy tongue (please see PATIENT INFORMATION SHEET: Hairy Tongue) results from either an overgrowth of the normal tongue papillae or a decrease in the rate that the papillae are removed. With tobacco use the overgrown papillae can trap pigment from the tobacco and take on a black appearance. This condition has no symptoms; however, it may be a concern due to the appearance and the frequent unpleasant mouth odor from the trapping of particles in the tongue.

### ***Oral Cancer***

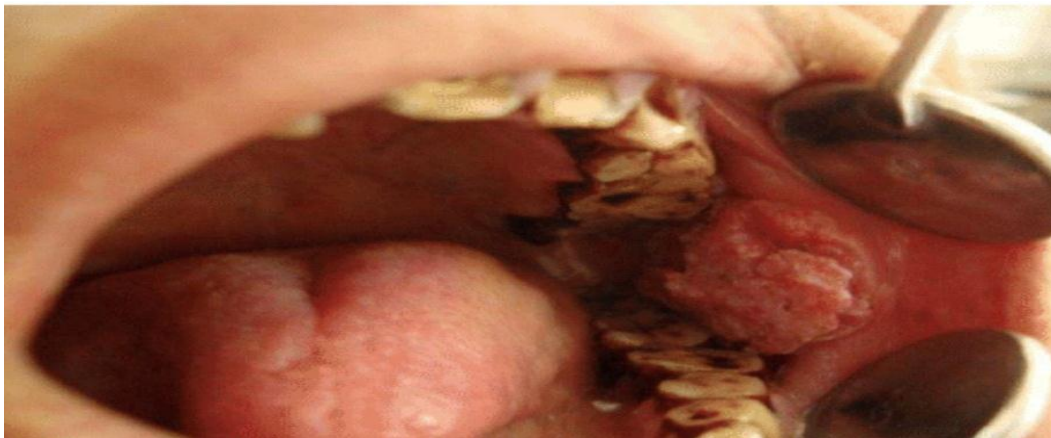
Use of tobacco products is clearly linked to development of oral cancer (see Below). Oral cancers are found primarily in the floor of the mouth (under the



tongue), the sides and underside of the tongue, and the soft palate (the back part of the roof of the mouth). The topic of oral cancer is discussed in a separate Patient Information sheet. The most important key to surviving oral cancer is early detection. The importance of your dentist performing a thorough soft tissue examination cannot be overemphasized. The tissue changes in early cancer can be subtle and it is essential for your dentist to perform a thorough soft tissue examination to detect cancer at an early stage. He or she may want to take a sample of these tissues (biopsy) for diagnosis, or refer you for this procedure. This is the only way to make a diagnosis of oral cancer, and biopsy can also help in determining your long-term outlook.

Left: Cancer of the floor of the mouth Center: Cancer of the lateral tongue. Right: Cancer of the soft palate.

As soon as an individual quits smoking, the risk for oral cancer begins to decrease. It is generally acknowledged that it takes around fifteen years after quitting smoking for the risk of a prior smoker to approach that of someone who has never smoked.



## Chapter three:effect of nicotine on teeth and periodontium

### 1. Effect of tobacco on teeth:

#### A. Teeth stains:

-Smoking forms: Tobacco stain, a brown/black extrinsic stain, is typically found on the enamel surfaces of smokers. It is especially pronounced in cervical areas and the lingual aspects of the mandibular incisors. The extent of staining depends on the duration and frequency of the habit as well as the oral hygiene of the

individual. As a general rule, smokers have almost twice as much tooth staining as non-smokers. Staining of teeth is caused by retention of components of tar and nicotine on the teeth and the reaction of furfural and acetaldehyde present in tobacco smoke with the amino groups of pellicle glycoprotein.



-Chewable forms: Many of the chemicals in chewable tobacco are same as that of smoked tobacco. In addition, nitrosamines, sugar, salt, flavouring agents, abrasives and other chemicals are also present in small amounts. Betel nut has been shown to contain many chemicals like alkaloids, polyphenols, tannins, fat, polysaccharides, protein, minerals and vitamins. The most important of these are the alkaloids arecoline and arecaidine. During chewing, betel nut alkaloids also release areca-derived Nnitrosamines. Initially, a red coloured stain is observed due to oxidation of the polyphenols into red-coloured orthoquinones in an alkaline pH provided by the slaked lime. With time, It gets converted into complex polymerized end products that are brown-black in colour. Another probable mechanism may be the denaturation of pellicle proteins by the tannins and tannic acid present in areca nut. Areca nut is rich in copper and the combination of tannins and copper produce a black-brown precipitate.

B) Dental caries:

-Smoking forms: Schmidt, in 1951, reported that the increase in tobacco smoking was followed by a decrease in caries rate. Smoking increases thiocyanate level in saliva. Thiocyanate, a normal constituent of saliva, was found to have a possible caries inhibiting effect. Most recent investigators, however, have concluded that cigarette smoking is certainly associated with an increased caries rate. The decreased buffering effect of smoker's saliva and the higher number of lactobacilli and S. mutans group may indicate an increased susceptibility to caries. Studies have shown that smoking is associated with lower salivary cystatin activity and lower output of cystatin C during gingival inflammation. Cystatins are thought to

contribute to maintaining oral health by inhibiting certain proteolytic enzymes. It has been suggested that smokers have poor oral hygiene, make fewer visits to dentists, and have lesser overall health standard than non-smokers, leading to increased caries rate, especially cervical, inter-proximal and root surface caries. Chewable forms: More than one-fifth of the content of some brands of chewable tobacco is sugar and a few brands are even capable of serving as growth media for several bacteria implicated in the production of caries. Tobacco chewers, moreover, have significantly greater numbers of caries-associated bacteria at the site of quid placement when compared to nonusers. The caries that results from chewing tobacco is frequently cervical, inter-proximal or root caries.

C) Tooth abrasions: Tooth abrasion resulting in a notching of incisal edges and cusp tips is a well-established consequence of holding a pipe in the same location while smoking. But long-term tobacco chewers also demonstrate excessive and frequently generalized wear of occlusal and incisal surfaces. This wear is produced by sand and other gritty materials remaining in processed tobacco.

D) Tooth erosions. The chemical dissolution of enamel has occasionally been reported in tobacco smokers and chewers. Erosion does not seem to be a serious problem and, in fact, chewers may be somewhat protected by the natural alkalinity of smokeless tobacco.

## 2. Effect of tobacco on the gingiva and periodontium:

### A) Gingivitis:

-Smoking forms: The gingival bleeding in smokers is 'less severe' than in non-smokers (as much as 70%) 14. Tobacco smoke (i) cause acute periodontal vasoconstriction at the end-arterial vasculature of the gingiva by nicotine (ii) inhibit periodontal angiogenesis in response to inflammatory stimuli, and/or (iii) suppress the production of pro-inflammatory mediators 15 iv) suppresses human immune responses, including responses to oral microbial toxins. Smokers also have markedly more calculus than non-smokers. Chewable forms: Tobacco chewers have an incidence of gingivitis and gingival bleeding that is similar to the incidence among non-users. Nevertheless, use of this form of tobacco is known to produce a painless loss of gingival tissues and alveolar bone destruction in the area of chronic tobacco contact, as a result of collagen breakdown due to increased release of collagenase. Nicotine inhibits the growth of gingival fibroblasts and their production of fibronectin and collagen. Furthermore, oral leukocytes, especially neutrophils, may exhibit diminished ability to migrate and phagocytose, and they contribute to the inactivation of tissue proteinase inhibitors

necrotizing ulcerative gingivitis (ANUG): ANUG is strongly correlated with

tobacco use. Ninety-eight percent of ANUG patients are smokers, and persons who smoke more than ten cigarettes per day have a tenfold increase in ANUG prevalence compared to non-smoker . ANUG occurs most frequently in teenagers and young adults and may result from defective neutrophil function allowing bacterial and possibly viral (cytomegalovirus) invasion of gingival tissues. The vasoconstrictive action of nicotine and other tobacco components is thought to contribute strongly to the painful tissue necrosis and ulceration seen in this disease .



C) Effect of tobacco smoke on periodontal tissues: Smokers have deeper pockets, more alveolar bone loss, tooth mobility, and greater tooth loss than non-smokers. Smokers were recorded to have a 2.5 to 3.5 times greater risk of severe periodontal attachment loss. The cytotoxic substances absorbed from tobacco, especially nicotine and cotinine (its major metabolite), are found in secreted saliva and crevicular fluids. Laboratory studies suggest that the attachment of fibroblasts to cementum is altered by nicotine. In addition, emotional stress and poor oral hygiene seem to play an important interactive role with tobacco smoking 27 (Fig. 1). Clot disrupting effect of negative intraoral pressure produced during smoking delays wound healing.

Effect of smoking on periodontal therapy outcomes: Smokers respond less favourable than non-smokers to nonsurgical and surgical periodontal therapy. Smokers exhibited less improvement when compared with non-smokers, in terms of pocket depth reduction, resolution of gingival inflammation, and clinical attachment level. In addition, current smokers have poor healing ability, which is associated with persistent subgingival infection with *Bacteroides* .

chewable forms: Tobacco chewers are also prone to a localized periodontal destruction or recession resulting from the combination of nicotine's chemical effects and the effects of physical abrasion on local gingival tissues .

# Conclusion

# Conclusion

The use of smoking and chewing forms of tobacco negatively influences oral health. Most oral consequences of tobacco use like periodontitis, sub mucosal fibrosis, oral pre-cancers and cancer etc impair the quality of life. It is the responsibility of the dental professionals to motivate the patient to quit the tobacco habit. Smoking cessation should be incorporated as an integral teaching component of the undergraduate dental curriculum, particularly with respect to the prevention and diagnosis of tobacco induced oral lesions and complications. Both dentist and physicians should collaborate in smoking cessation programmes , .There is an urgent need reduce availability of tobacco by implementing provisions of tobacco cessation act. Everyone should emulate some states which have y banned oral forms of tobacco. Educate youth about ill effects of tobacco and prevent them from taking this habit. Early treatment of tobacco related diseases also important in preventing deaths due to tobacco related disorders.

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## تأثير النيكوتين على صحة الفم والاسنان

مشروع تخرج مقدم الى كلية طب الاسنان كجزء من متطلبات نيل شهادة

البكلوريوس في طب وجراحة الاسنان.

من قبل

علي كامل عبد الكاظم غدير غسان كاظم

علي ضياء جاسم غسق سامي حسين

علي سامي عبد الكريم علي عبد الحسين رحيم

المشرف

أ.م. د. جميلة كاظم عبد الحسن العمري

# الملخص

التبغ هو المنتج الأكثر إنتاجاً للأمراض ، حيث تؤثر عادة الإدمان السائدة على سلوك البشر لأكثر من أربعة قرون. يُستهلك التبغ عن طريق الفم بأشكال متنوعة مثل التدخين وأشكال المضغ. يتزايد التدخين بسرعة في جميع أنحاء العالم النامي وهو أحد أكبر التهديدات للصحة العالمية الحالية والمستقبلية. بحلول عام 2030 ، إذا استمرت الاتجاهات الحالية ، سيمتلك التدخين أكثر من تسعة ملايين شخص سنويًا. في المتوسط ، حتى الآن 47.5٪ من الرجال و 10.3٪ من النساء مدخنون. في الهند ، تتوفر منتجات التبغ تجاريًا مع إضافة الروائح وعوامل النكهة التي لا تجذب سكان الريف فحسب ، بل تؤثر أيضًا على سكان الحضر. يرتبط تدخين التبغ بالعديد من الأمراض الخطيرة ، مثل أمراض القلب والرئة ، والسرطان ، وانخفاض الوزن عند الولادة ، بالإضافة إلى العديد من المشاكل الصحية الأخرى ، مما يساهم في حدوث آلاف الوفيات المبكرة كل عام عند التعرض للتبغ اللعابي ، ويفقد اللعاب مضادات الأكسدة. القدرة على أن تصبح بيئة مؤيدة للأكسدة قوية معظم العواقب الفموية لتعاطي التبغ تضعف نوعية الحياة سواء كانت بسيطة مثل رائحة الفم الكريهة أو معقدة مثل العيوب الخلقية الفموية ، أو شائعة مثل أمراض اللثة أو مزعجة مثل المضاعفات أثناء التئام الجروح. لا يتسبب تدخين ومضغ التبغ فقط في تغير لون الأسنان ، والتهاب دواعم الأسنان ، وتسوس الأسنان ، وتغير الطعم ، والتهاب الفم النيكوتين ، بل يتسبب أيضًا في حدوث الطلاوة والسرطان مع ارتفاع معدلات المراضة والوفيات. من المهم بشكل خاص أن نفهم أن الآثار الضارة لمنتجات التبغ تعتمد على الجرعة ، وأنها تعتمد على سوء الاستخدام أكثر من الاعتماد على الاستخدام البسيط. الهدف من هذه المراجعة هو تسليط الضوء على تأثير التدخين ومضغ أشكال التبغ على صحة الفم. والعلاجات التي يمكن التفكير فيها