

Electronic- Cigarettes and their Growing Impact on Oral Health

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- Electronic devices that vaporize propylene glycol or polyethylene glycol based liquid, and flavoring agents into an aerosol mist delivering varied concentrations of nicotine.
- Introduced to North America in the early 2000's
- Initially introduced as an aid to smoking cessation
 - Little evidence to support this claim
 - American Heart Association issued a policy statement that suggests that clinicians should not recommend e-cigs as primary cessation aids, and if a patient is using e-cigs, he or she should be advised to consider a quit date for using them and not plan to use them indefinitely
 - Scott L. Tomar et. al.
- Increased use of e-cigarettes and vaporisers (vapes) especially among youth
- Less data and information is known about these devices because they are relatively novel
- Increased pressure by WHO to regulate and restrict use of these devices
- The FDA issued a rule categorizing all electronic cigarettes as “tobacco” products thus subjecting them to the same regulatory requirements as traditional cigarettes.
- No information available regarding the effects of e-cigs on periodontal/gingival oral health effects, especially in response to e-cig flavoring agents and nicotine.
- Little is known and taught in dental schools about the harmful effects of e-cigarettes
 - Dental students surveyed about their knowledge of these devices, and 38% stated they would feel “somewhat uncomfortable” educating patients about the health effects of cigarettes

Martín Carreras-Presas. Et al.

Sundar, Isaac K. et al.:

- Periodontal ligament and gingival fibroblasts as well as epithelial cells are the most abundant structural cells in periodontal tissue, and are the direct targets of e-cigs upon vaping
- There is more data surrounding conventional cigarette smoke and has shown to cause more deleterious effects on oral and periodontal health
- Conventional smoking is associated with tooth loss, periodontal attachment loss, deeper periodontal pockets, more extensive alveolar bone loss and destruction of connective tissue - leading to an increased risk of periodontitis
- In vitro study showed e-cigs with flavorings cause increased oxidative/carbonyl stress and inflammatory cytokine release in human periodontal ligament fibroblast
- E-cigarettes affect the regenerative potential of human progenitor cells due to increased inflammatory
- However, the role of e-cig vaping and its association with carbonyl stress, inflammation, and DNA damage-triggered senescence on oral/periodontal epithelium remains unknown.
- Data showed that e-cig aerosol cause increased oxidative/carbonyl stress and inflammatory responses in gingival epithelium, with greater response by flavored e-cigs

Tatullo, Marco et al

- Conversely, Tatullo, Marco et al. argue that there was a progressive improvement in the periodontal index and general health perception of patients who switched from conventional smoking to e-cigarette smoking
- Many patients reported an interesting reduction in the need to smoke.
- According to the study the e-cigarette can be considered as a valuable alternative to tobacco cigarettes, but with a positive impact on periodontal and general health status

- Limited long term success of the study because patients were only followed for 120 days, and small sample size (350 patients)

Conclusion:

- According to some studies, ECs are less harmful than conventional cigarettes
- Because they are relatively novel devices when compared to conventional smoking, little evidence is available about their long term effects on general and overall health.
- Epidemiologic research of health outcomes also has not caught up with expanding use of e-cigs
- A Food and Drug Administration (FDA) study concluded that ECs contain carcinogens at lower levels in comparison to conventional cigarettes, while a second FDA study stated that ECs are safer than conventional cigarettes because carcinogenic substances are reduced
- The high levels of nicotine dosing suggest these products may increase the risk of experiencing periodontal damage
- E-cigs carry their own range of health risks that have not yet been fully understood
- Although they are “more safe”, the increased use of these devices warrants more research to allow health professionals to educate patients on the risks

References:

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4. Tatullo, Marco et al. "Crosstalk between Oral and General Health Status in E-Smokers." Ed. Ediriweera Desapriya. *Medicine* 95.49 (2016): e5589. *PMC*. Web. 27 Aug. 2018.