

A Review on E-cigarettes - The Fog & Haze Around The Debate:

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Introduction

Electronic cigarettes (also called e-cigarettes or electronic nicotine delivery systems) are battery-operated devices designed to deliver nicotine with flavourings and other chemicals to users in vapor instead of smoke.¹ Their benefits and health risk are uncertain. There is tentative evidence that they can help people quit smoking, but have not been proven better than regulated medication.²

Mechanism Of Action

Most e-cigarettes consist of three different components, including: A cartridge, which holds a liquid solution (containing varying amounts of nicotine, flavorings, and other chemicals like propylene glycol), a heating device (vaporizer) and a power source (usually a battery).¹

The Nicotine Issue: The addictive stimulant nicotine in e cigarette is available in different amount, ranging from 0 to 72 mg/ml of liquid.³

Chemical Concern: In many e cigarettes, puffing activates the battery powered heating device.¹ To use, one must load the liquid and apply electricity, heating the liquid until it vaporizes. At this temperature, the chemicals inside the fluid (propylene glycol) undergoes a breakdown process and are converted into other chemicals (formaldehyde), a troubling result as formaldehyde is a known carcinogen.³

Are E- Cigarettes Safer Than Conventional Cigarettes?

Unfortunately, this question is difficult to answer because enough information is not available.

Explanations in favouring shifting to e-cigarettes:

1. No flame- no smoke- no pollution- no smell-

Abstract:

The use of electronic cigarettes (e-cigarettes) continues to dramatically increase, so do the unknowns about its potential impact on public health. The health risks of e-cigarettes are uncertain. US Food and Drug Administration (FDA) regulated that nicotine replacement products are safer than e-cigarettes, but e-cigarettes are probably safer than smoking. So it remains to be seen if the products will be a boon to smoking cessation or a setback toward the goal of cutting out nicotine for good

no ash- reduced nicotine content- flavouring agents to make it taste nice.^{4,5}

2. Easy to use (can be activated by taking a puff or pressing a button).²
3. No fire risk.¹
4. Sense of smoking is similar to vaping so they accomplish their goal very well.
5. Economical (amount of nicotine present in 1 e-cigarette= 20 conventional cigarettes).
6. E cigarettes don't burn and users inhale an aerosol produced (called vaping).² So they produce the tar that clogs the lungs and carbon monoxide which is linked to heart diseases², chances of teeth being stained is also minimised.³
7. Available in varying strength- If e cigarette user willing to quit one can start from 18mg, to 12mg, then to 6mg cartridge and eventually to no nicotine at all.
8. E cigarette user inhales aerosol so does not pose a risk to people around.
9. Vaping (not smoking) is associated with e-cigarettes so can be used in most non smoking places as the product is not banned.
10. Variety of toxins present in the conventional cigarettes are responsible for smokers cough, with e- cigarette the risk is completely diminished.¹

E- Cigarettes And Quitting:

E cigarette products may help smokers lower nicotine cravings while they are trying to discontinue their tobacco use, but it is unclear whether e- cigarette may be effective as smoking- cessation aids or can perpetuate the nicotine addiction and interfere with quitting.⁴ Currently they are not marketed either as tobacco products or as devices having a therapeutic purpose. In addition, there is currently no regulation of the liquids that are used in e- cigarette. So, there are no accepted measures to confirm their purity or safety.¹

Government Regulations On E- Cigarettes:

E cigarettes are designed to stimulate the act

of tobacco smoking by producing an appealingly flavoured aerosol that looks and feel like tobacco smoke and delivers nicotine (a highly addictive drug) but with less of toxic chemicals from vaporizing mechanism.

Another worry is the refillable cartridges used by some e- cigarette users. It may expose them to potentially toxic levels of nicotine when refilling them. The cartridges can be filled with substances other than nicotine, thus serving as a new and potentially dangerous way to deliver other drugs.⁴

Conclusion

We risk losing hard won ground in the battle on smoking by acceptance of e- cigarettes. There is no evidence that e- cigarettes are safe, and there is some evidence that they may in fact be harmful. It took decades for the professionals to recognize, prove, and accept that cigarettes are a major health hazard; so now the young generation must not make the same error with e-cigarettes. With the haze around the debate it is better to conclude by saying that, to minimise nicotine craving it is not advisable to increase the dependency on e- cigarettes. Different therapeutic products are available in market that should be considered as a healthy option to get rid of craving.

References:

1. DrugFacts: Electronic Cigarettes (e- Cigarettes) <https://www.drugabuse.gov/publications/drugfacts/electronic-cigarettes-e-cigarettes> as on 5/26/2017 at 11.11am
2. [http://everything.explained.today/Vaporizer_\(inhalation_device\)/as on 5/31/2017 at 2:29pm](http://everything.explained.today/Vaporizer_(inhalation_device)/as%20on%205/31/2017%20at%202:29pm)
3. The facts behind e- cigarettes and their health risks http://www.washingtonpost.com/national/health-science/the-facts-behind-e-cigarettes-and-their-health-risks/2016/02/22/b18b2684-8c9a-11e5-ae1f-af46b7df8483_story.html as on 5/26/2017 at 11.05am
4. The Hidden Dangers of E- Cigarettes as on 5/26/2017 at 1:05pm
5. Bhattacharya et al, E- CIGARETTES: SOLUTION TO A PROBLEM OR A NEW MENACE ITSELF, World Journal of Pharmaceutical Research, Volume 5, Issue 4, 2016. Pg 514. As on 5/26/2017 at 11.49am