

# **E-CIGARETTES: BOON/BANE TO THE SALUBRIOUS MANKIND TAHIR NASIR SHEIKH, PRACHI HARISH TRIVEDI**

## **Abstract**

An electronic cigarette is an advanced form of conventional cigarettes that can be used for tobacco smoking. These cigarettes look alike with the conventional tobacco and nicotine packed one but they don't actually burn the smoke. E-cigarettes are being marketed as the improved and better form of the traditional cigarettes. These provides the smoking person the almost same effect of the nicotine intake without literally ingesting the carcinogenic components like tobacco, carbon monoxide that harms human body especially the respiring organ lungs.

The study reveals the effects and affects of these E-cigarettes, and tells about evil effects on kids and adults and unveiling the bane prospects.

**Keywords:** E-Cigarettes, Mechanism, Electronic Cigarette Aerosols, vaping

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## I. PROLUSION

The product was introduced in order to replace the carcinogenic tobacco and nicotine filled cigarettes by a healthier version. But so far studying it profoundly reveals its many disadvantages and reveals that it's not any healthier version but a pack with lesser nicotine which also leads to addiction to smoking. And can really lead to many extremely dangerous human diseases like: lung cancer, cardiovascular disease, and also COPD. It is not yet confirmed that these E-cigarettes can be used as a termination tool for traditional cigarettes instead some studies have shown that there are 'dual users' that is some smokers who have become addicted to both conventional as well as E-cigarettes.

### 1. E-cigarettes

- E-cigarettes are available in many sizes and shapes. Most of them possess a battery and a heating element and also a place to hold a liquid.
- These produce an aerosol by heating the liquid that will contain nicotine, cigars, and other tobacco products—flavorings, and other chemicals also that help in production of the aerosol. Users inhale this aerosol into their lungs. Bystanders can also breathe in this aerosol when the user exhales into the air process leading to passive smoking.
- Some e-cigarettes are made to look like regular cigarettes or cigars. Some resemble pens, USB sticks, and other everyday items also. Larger devices such as tank systems, or “mods,” do not resemble other tobacco products.
- Using an e-cigarette is sometimes called as “vaping.”
- E-cigarettes can be used to deliver marijuana and other drugs into our lungs.

**2. Constituents of E-cigarettes:** E-cigarettes come in many shapes and sizes. Most have a battery, a heating element, and a place to hold a liquid. Some e-cigarettes also possess a light emitting diode at the tip which illuminates bright red when the user inhales, giving exact same look of the burning end of a conventional cigarette. Chemicals introduced into the liquid produce aromas and flavors of tobacco, chocolate, mint, fruit, and coffee.

**3. Electronic cigarette aerosols:** The aerosols of electronic cigarettes that users inhale from the device and exhale can contain dangerous and potentially harmful substances, including:

- Weed.
- Ultrafine particles that can be inhaled into our lungs.
- Various flavoring such as diacetyl, which can pose serious lung disorders.
- Volatile organic compounds commonly called as VOCs.

**4. Mechanism:** While inhaling the electronic cigarettes, when the user puffs in the mouthpiece, the solution inside starts vaporizing with the help of warming element. As soon as the solution is vaporized it is inhaled by the smoker. The solution might sometimes contain nicotine which can either be very high or even zero. Talking about the flavors this varies widely from traditional to watermelon or menthol which is marketed heavily, the only advantage of these over old cigarettes is that it does not transfers the tar or chemicals inside our body which can cause serious illness on the other hand it contains

a cartridge which is replaceable and has additives or flavors. Flavors can be chocolate, fruity, minty, etc. while exhaling, vapors are released which is visible but it does not contain harmful effluents like the old cigarettes, which has become a marketing strategy of the vendors calling it safer and better which can even be used at nonsmoking zones and there are no chances of passive smoking.

**5. Security towards health:** In practical as the electronic cigarettes are being manufactured and distributed by various industries so this is unregulatory activity which results in varied contents of these cigs from different manufacturer. Sometimes this is also possible that the actual content in cigs does not resemble the labelling on it. There are two possibilities in using these i.e. some smokers inferred that the use of these resulted in positive effect on them that the smokers while vaping resulted in reducing the carboxyhemoglobin levels after 2 weeks. But no more positive effects were found to be available or discovered but several other ill effects were reported. A survey conducted by FDA showed that e-cigs components suspected of being harmful to humans. The FDA also found that e-cigs which mention no nicotine content in them in fact had lower concentration of nicotine in them. Therefore, the inhaled carcinogen vapor contains impurities that are really dangerous or fatal to its customers. Also, the major diseases caused by E-cigarettes are:

- Lung disease
- Cardiovascular (heart) disease, and many more.

E-cigarettes also contained acrolein, an herbicide which is used to kill weeds. It also causes acute lung injury and Chronic Obstructive Pulmonary Disorder.

**6. Virtues of Electronic cigarettes:** The effects of these in long run are not at all fully understood till date, and research is ongoing to assess their actual health impacts. While electronic cigarettes are often considered to be innocuous alternative to conventional ones, it is essential to approach the topic with caution, as they are not entirely risk-free. Here are some potential positive effects that have been suggested by certain studies and experts:

- **Harm reduction:** They work by delivering nicotine through a vapor, which may reduce the exposure to harmful chemicals found in tobacco smoke.
- **Smoking cessation aid:** Some studies have indicated that e-cigarettes might be helpful for individuals trying to quit smoking. They can serve as a transitional tool to wean smokers off traditional cigarettes, potentially reducing the overall harm associated with smoking.
- **Reduced secondhand smoke exposure:** E-cigarette vapor tends to have fewer toxicants than tobacco smoke, leading to reduced exposure to harmful chemicals for those around the user. However, this doesn't mean that e-cigarette vapor is entirely harmless, as it may still contain some potentially harmful substances.

- **Convenience:** E-cigarettes provide a more convenient and discreet way to consume nicotine compared to traditional cigarettes. They do not produce ash or require matches or lighters, which may be considered advantages for some users.
- **Aromas and flavors:** There are a number of flavors available, which some people find appealing and enjoyable. This may also be relevant for users who are looking for alternatives that offer a different taste experience.

However, it is important to emphasize that the health effects in long run of these electronic cigarettes are not at all well-established. Some concerns associated with these uses include:

- **Nicotine addiction:** Electronic cigarettes contain nicotine, which is obsessively addictive and will lead to dependence, especially in young users.
- **Respiratory issues:** Inhaling e-cigarette vapor can still cause respiratory problems, particularly in individuals with pre-existing lung conditions.
- **Unknown long-term effects:** Since electronic cigarettes have not been on the market for an extended period of time, their long-term health effects, including potential links to cancer and other diseases, are not yet fully understood.
- **Youth usage:** The popularity of e-cigarettes, especially flavored ones, has raised concerns about attracting young people to use these products, potentially leading to nicotine addiction and subsequent tobacco use.

While electronic cigarettes may have some potential benefits as harm-reduction tools for adult smokers trying to quit, they are not without risks. It is crucial to approach their use with caution and continue to monitor research and health guidelines to make informed decisions about their potential benefits and risks.

7. **Unpleasant effects on human brain:** Almost all electronic cigarettes have nicotine as the drug which can be addictive like cigars, and other tobacco containing products. A Centers of Disease Control and Prevention study found that 99% of the e-cigarettes sold in assessed venues in the United States did contain nicotine. Nicotine can harm developing human brain. The brain keeps developing until one turns 25 and using nicotine during this age can harm the parts of the brain that control attention, learning, mood, impulse control and various other vital functions.

Young youths' mind builds synapses faster than adult brains. The Nicotine replaces the way all synapses are formed. Using this in adolescence may also increase risk for future addiction to other drugs which may result in physical and mental self-destruction.

Also, when a certain smoker, relies on nicotine i.e. addicted to smoking and suddenly stops smoking, their body as well as brain gets used to the fact that no nicotine is being intake. This can many a times leads to temporary symptoms of a disease known as

nicotine withdrawal. The symptoms include craving nicotine, restlessness, anxiety, depression, insomnia, loss of concentration or focus in some work or life, etc.

- 8. Major concerns regarding E-cigarettes:** Case study from 2013-14 disclosed the fact that amongst the maximum early aged children smoking e-cigs, the major reason for smoking was the n number of flavors available.

The FDA on 2 Jan 2020 concluded an implementation agenda that restricts the trade of prefilled cartridge e-cigs of all flavors except *Nicotiana tabacum* and menthol, unless authorized by Food and drug administration.

And most recently, survey of 2022 unveils that most youth i.e. 84.9% used flavored cigars. And to highlight the fact the majorly used flavors were, 69.1% for fruity candy flavor, 38.3% sweet flavor, 29.4% mint flavor and 26.6% menthol flavor. The data was shown for school students of age 15 to 25 years.

The youth generation starts using e-cigs because of curiousness and excitement of the usage of these stuffs. Advertisement of e-cigs all over the world, which includes media on which advertisement of conservative *Nicotiana tabacum* stuffs are prohibited (e.g., TV and other technical devices), and the e-cigs of low cost or which are cheap in comparison to daily usage of cigarettes has become common in the new generations.

## 9. Motives to quit E-cigarettes

- E cigarettes usually contains Nicotine (carcinogen).
- Chances to contain other toxin like: acetaldehyde, formaldehyde, acrolein, benzene (compound present in exhaust of cars), heavy metals like lead or chromium, antifreeze agent like propylene glycol, etc.
- Higher percentage of secondhand smoking is prevalent.
- Harmful after effects on brain.

E-cigs usage in the name of replacement of conservative available cigarettes, is dangerous to health. Youths and adults both the groups of people are at major health risk if addicted to smoking.

Extensive studies should be carried and words should be given against the usage of E-cigs, and other norms should be legally formed.

- 10. Comparative portrayal of E-cigarettes and regular cigarettes:** E-cigarette is harmless as its native aerosol usually encloses comparatively lesser toxic compounds over the lethal. But, e-cigarette aerosol is rather little unsafe and offensive as it comprises injurious and potentially detrimental ingredients like nicotine, heavy metals like Pb, Cd, Ni and some volatile organic compounds which are viably for causing cancer in severe and chronic conditions.

- 11. E-cigarettes relief quit smoking:** E-cigarettes are not presently sanctioned by the FDA as a quit smoking option. The U.S. A. Preventive Services Task Force, a assembly of

health authorities certifies recommendations about preventive health care, concluded evidences remains insufficient to indorse e-cigarettes for smoking cessation in adults, comprising pregnant adults.

Although, e-cigarettes may affect non-pregnant adults especially who smoke and can be used as a complete additional way for all cigarettes and remaining smoked tobacco products.

- Till date, numerous studies on this concern are diversified. A Cochrane Review establish evidence from two randomized controlled trials that e-cigarettes with nicotine ,may aid adults who smoke and stop smoking which are in the long term associated with placebo (non-nicotine) e-cigarettes. Still, numerous boundaries to the existing research, including the minimum number of trials, small sample sizes, and wide margins of error nearby the estimates.
- Most recent CDC survey found that many adults usage of e-cigarettes in an effort to quit smoking. Though, many adult e-cigarette consumers do not avoid smoking cigarettes and are instead continuing to use both products (known as “dual use”).Dual use may not be an operative way to defense mankind health, whether you’re using e-cigarettes, smokeless tobacco, or other tobacco products in addition to regular cigarettes. Because smoking even a few cigarettes a day can be dangerous, quitting smoking completely is very important to protect your health.

**12. E-cigarettes consumers:** Most commonly used tobacco product among youths is E-cigarettes.

- In 2022, 2.55 million U.S. middle and high school students used e-cigarettes in the past 30 days, including 3.3% of middle school students and 14.1% of high school students.
- In 2021, 4.5% of U.S. adults currently used e-cigarettes.
- In 2019, among adults who currently used e-cigarettes overall, 36.9% also currently smoked cigarettes, 39.5% formerly smoked cigarettes, and 23.6% had never smoked cigarettes.
- Among adults who currently used e-cigarettes, the percentage who have never smoked cigarettes is highest among those aged 18–24 years (56.0%), and is lower in older age groups.

## II. OUTLINE

The debate surrounding e-cigarettes is complex and multifaceted, and opinions on their overall impact vary significantly. E-cigarette holds a battery, a lit section, and a place to grip a liquid which are viable to create an aerosol by means of liquid heating typically has nicotine addictive compound in normal cigarettes/cigars, or other tobacco stuffs flavorings, chemicals aiding in aerosol formation.

## 1. Boon

- **Reduce Harm:** Advocates of e-cigarettes argue that they are a less harmful alternative to traditional tobacco cigarettes. They do not produce tar, which is one of the most harmful components of tobacco smoke, and may reduce the risk of certain smoking-related diseases.
- **Smoking End:** Some studies suggest that e-cigarettes can help some individuals quit smoking or reduce their tobacco intake. For smokers who have struggled to quit through other means, e-cigarettes may serve as a useful tool in their cessation efforts.
- **Reduced Secondary Smoke Exposure:** E-cigarettes produce vapor rather than smoke, which may lead to lower exposure to harmful chemicals for both the user and those around them.
- **Ease and Access:** E-cigarettes can be more convenient than traditional cigarettes since they don't require matches or lighters. They are also often available in places where smoking is prohibited.

## 2. Bane

- **Health Menaces:** While e-cigarettes are generally considered less harmful than traditional cigarettes, they are not entirely risk-free. The long-term health effects of vaping are still being studied, and some studies suggest potential risks to cardiovascular health and lung function.
- **Youth Plea:** E-cigarettes have been criticized for their popularity among young people, leading to concerns about the potential for nicotine addiction and the gateway effect to traditional smoking.
- **Lack of Directive:** The e-cigarette market has faced challenges with inconsistent regulations and quality control. This lack of oversight can lead to the sale of substandard products and potentially harmful substances.
- **Dual Usage:** Some users end up using both e-cigarettes and traditional cigarettes, which may negate some of the potential harm reduction benefits of vaping.

## III. CONCLUSION

Recent evidences designates that consuming e-cigarettes is harmful and also fatal, specifically for youths and people who never smoked. While they may help some people stop smoking, vaping products do not have Trusted Source FDA approval as a tool for quitting. E-cigarettes even keep persons from trying confirmed practices of quitting smoking. Several states have imposed restrictions on the sale of e-cigarettes. There are also restrictions on liquids with flavors that may be more attractive to younger people. Since the end of 2019 Trusted Source, it is illegal to sell vaping products to people younger than 21 years. E-cigarettes are nicotine-based products, and no nicotine use is safe. Until we know more, it is probably best to avoid these products whenever possible, including secondhand smoke. Though, complete knowledge about e-cigarettes or electronic nicotine delivery systems (ENDS) and concerns about their safety and public health impact have raised important concerns about their use. ENDS are extensively available, they are specifically not FDA approved as quit smoking devices in the market of smoking.

#### IV. STATE-OF-THE-ART

- 1. Safety and Health:** Research had shown that e-cigarettes generally considered less harmful than traditional combustible cigarettes. However, concerns remained about potential health risks, especially in long-term use and among non-smokers, as well as the possible presence of harmful substances in e-liquids. Research studies are being done in order to assess the safety and potential health impacts of e-cigarettes.
- 2. Smoking Cessation:** E-cigarettes are being frequently explored as a potential tool for smoking cessation to quit smoking as another option. Some studies suggested that e-cigarettes could be effective in helping smokers quit or reduce smoking when used as a cessation aid. However, long-term cessation rates and the comparative effectiveness of e-cigarettes versus other cessation methods were still under investigation.
- 3. Regulation and Policy:** Governments and health organizations worldwide were grappling with how to regulate e-cigarettes. Balancing the potential benefits for smokers seeking alternatives to combustible tobacco with the need to protect non-smokers, particularly young people, from the risks associated with nicotine use was a challenge. Regulations varied across different countries and regions.
- 4. Flavorings:** E-liquids came in a wide variety of flavors, which appealed to both adult smokers seeking alternatives and youth experimenting with vaping. The presence of appealing flavors raised concerns about potential attraction to non-smokers and the risk of initiating nicotine use among youth.
- 5. Technology Advancements:** E-cigarette technology continued to evolve, with improvements in device design, battery life, and e-liquid delivery systems. Some devices even allowed for more precise control over nicotine delivery, catering to varying nicotine preferences. **Dual Use:** The phenomenon of dual use, where individuals used both e-cigarettes and traditional cigarettes, was being studied to understand its impact on overall health outcomes and smoking cessation efforts. **Youth Vaping:** The rise in youth vaping was a significant concern for health authorities. Studies were examining the factors influencing youth vaping and the potential long-term consequences of nicotine use during adolescence.
- 6. Public Perception:** Public perception of e-cigarettes varied widely. Some viewed them as a valuable harm reduction tool, while others raised concerns about their long-term safety and potential to undermine efforts to reduce smoking rates.

Whether e-cigarettes are viewed as a boon or a bane depends on the context and the specific aspects being considered. While they have the potential to be a useful harm reduction tool for adult smokers trying to quit, concerns about health risks and youth usage warrant careful consideration and effective regulation. Further research is needed to fully understand the long-term effects of e-cigarette use on public health. It is essential to strike a balance between promoting harm reduction options for smokers while safeguarding against potential risks, especially for younger populations.



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