

Investigation on the Danger of Electronic Cigarette on Young Adults

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Abstract: It is commonly known that smoking tobacco can lead to adverse health consequences. However, faced with the temptation of tobacco, there are still many tobacco users who choose to ignore the health effect of smoking. Recently, electronic cigarettes (E-cigarettes) have been introduced as a way to remedy the negative consequences of smoking tobacco. E-cigarettes have become a trend, especially among youth populations, given their curiosity about the new product, their pursuit of tobacco culture, and their misconceptions about e-cigarettes' harmful effects. This has caused the number of e-cigarette users to continue rising. However, studies have shown that smoking e-cigarettes can have a harmful effect on their users, and particularly for young smokers, with harmful effects deteriorating not only the physical health of the smoker but also mental and behavioral health. This paper focuses on an investigation into harmful effects that e-cigarettes have on youth, exploring the specific hazards of the chemicals in e-cigarettes. The hope is that this work can offer beneficial insights for youth and the society as a whole concerning the harmful effects of e-cigarettes, thereby reducing or terminating the use of e-cigarettes altogether.

Keywords: *e-cigarettes; health survey; health; research; youth*

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0 Introduction

In recent years, electronic cigarettes (e-cigarettes) have become established as a trend among young

tobacco users in China. Following the gradual increase in tobacco users, the number of e-cigarette users has also skyrocketed. It is especially concerning that companies have begun marketing the e-cigarettes as a “healthy replacement” for conventional tobacco, ignoring the harmful effects that e-cigarettes have on young adults.

0.1 Survey on the harmful effects of e-cigarettes on youth

The external attributes of e-cigarettes are somewhat similar to that of conventional cigarettes. Internally, however, e-cigarettes contain a nicotine solution pipe, as well as a battery, solution evaporation device, and other mechanical parts^[1]. E-cigarettes work by allowing nicotine solution to be vaporized by the evaporation device (powered by the battery), providing the illusion of smoking. In addition, manufacturers provide different flavors of nicotine solutions such as mint, orange, and strawberry, which has greatly increased the appeal of e-cigarettes among young adults today^[2].

This work compiles the harmful effects of e-cigarettes considering current safety features of e-cigarettes in the market and the high usage rate of e-cigarettes among youth. A survey is used to understand why e-cigarettes are so popular among youth. The hope is to mitigate the increasing number of young smokers.

1 Data and methodology

This study worked with several research groups made up of young adults aged between 13 and 20 years old. The participants of the research groups were given questionnaires, and interviews were held to gauge their knowledge about the content and effects of smoking

Table 1. Harmful content of e-cigarette

Content	Effects on human health
Propylene glycol	Difficulty in breathing, lung damage
Nicotine	Irritation and burning sensation in the mouth and throat, increases salivation, nausea, abdominal pain, vomiting, and diarrhea
Heavy metals (cadmium, lead, etc.)	Heavy metal poisoning can be fatal in a large amount. A small amount can lead to nausea, sickness, vomiting, headache, weakness and tiredness, constipation, and achy joints and muscles
Hydroxy compound	Formaldehyde hazards: Possible carcinogenic. Research studies of workers exposed to formaldehyde have suggested an association between formaldehyde exposure and several types of cancers including nasopharyngeal cancer and leukemia
Tin nanoparticle	Some forms of inorganic tin might cause stomach problems including diarrhea, stomach pain, or nausea when a large amount is consumed.

e-cigarettes. A thorough literature review, network data collection, case collection, research data analysis, and other methods were conducted to reach the final survey results. The final section of this text elaborates on the proper use of e-cigarettes by youths.

2 Results

Table 1 shows some of the information obtained from the research of literature on the contents of e-cigarettes and the effects on human health. From the table, it is obvious that despite the large-scale marketing campaigns that trumpet the advantages and benefits of e-cigarettes as a healthier and tastier alternative to conventional cigarettes, e-cigarettes do contain harmful ingredients that can have a detrimental effect on human health. In fact, the nicotine and heavy metal content in e-cigarettes are more harmful compared to that of conventional cigarettes.

Table 2 shows the results of a survey that was conducted with 378 participants aged 13–20 years old regarding their consumption of e-cigarettes. The results shown in the table allow us to better understand the current scenario of tobacco consumption among young adults. From the results, it is clear that among young adults, male smokers vastly outnumber female smokers. Among the age group, a 19–20-year-old age group constitutes the largest number of smokers. Among the frequent smokers, 72% of the smokers tried to quit smoking.

Two of the major reasons, young adults smoke e-cigarettes are curiosity and trendiness. Some e-cigarette smokers may not have tried smoking conventional cigarettes but have taken up the habit of smoking e-cigarettes due to peer pressure, their environment, and their curiosity [Table 3]. Therefore, this group may not be well informed about the health hazards of e-cigarettes.

Table 2.

	Frequent user of e-cigarette (%)	Rare user of e-cigarette (%)
Male	71	19
Female	44	56
Age 13–15	7	11
Age 16–18	16	20
Age 19–20	25	21
Plan to quit	34	66
No plan to quit	44	56
Tried to quit	72	28

3 Discussion

3.1 Adverse health effect

E-cigarette manufacturers often market their products as containing “only water vapor.” However, studies have shown that the ingredients in e-cigarettes are somewhat similar to those in conventional cigarettes: Nicotine, heavy metals, and formaldehyde^[3]. Prolonged consumption of these harmful ingredients could cause adverse health effects on the growth of young smokers: Nausea, vomiting, heavy metal poisoning, and addiction are only some of the issues that might affect young smokers^[4].

3.2 Smoking e-cigarettes leading to smoking conventional tobacco

Results have shown that the main reasons that compel youths to consume e-cigarettes are trendiness and curiosity. This is different from the reasons why adults smoke cigarettes. A large number of the youths do not smoke conventional cigarettes, and they have chosen to smoke e-cigarettes because e-cigarettes are perceived as being cool and trendy. Furthermore,

Table 3. Reasons why young adults smoke e-cigarette

Reasons for using e-cigarettes	Percentage
As a replacement for conventional cigarettes	3
Smoking e-cigarette is trendy	40
Peer pressure	21
It is a convenient way to relax	6
Curiosity	30

some young adults smoke e-cigarettes to reduce stress^[5]. However, according to a study conducted on 2836 teenagers published in the medical journal tobacco control, 70% of youth who use e-cigarettes do not have the prior habit of smoking conventional cigarettes. After a period of smoking e-cigarettes, 37% of youth have attempted to transition to conventional cigarettes. This shows that smoking e-cigarettes have the potential to lead to a transition to smoking conventional cigarettes.

3.3 Smoking e-cigarettes affect the mental health of youths

Teenagers can easily succumb to peer pressure. Young adults' mental health and behavior can be shaped by their environment as well as other people's behavior^[6]. The results in this study show that 21% of e-cigarette smokers started smoking due to peer pressure. This is caused by herd mentality and the immaturity of young smokers who follow their peers blindly^[7]. Left unmitigated, these smokers could go onto affect other non-smokers, thereby creating a chain effect that eventually promotes the habit of smoking.

3.4 Proposals to alleviate the problem of widespread e-cigarettes consumption among youth

3.4.1 Improve relevant laws and regulations on the sale of e-cigarettes

Since 2006, public policies prohibiting smoking among minors have been vigorously promoted. However, the punishment for violating these laws is very vague. At present, the practice of showing proof of identity to purchase tobacco and cigarette products in China is not properly regulated, and therefore, minors and young adults can purchase cigarettes without having to worry about punishment. Moreover, the large economic role that the tobacco industry and cigarette manufacturers play in China also exacerbates

and hinders law enforcement. The government should take initiatives to actively regulate existing policies that require proof of identity, hindering the purchase of tobacco products by minors^[5]. In addition, marketing and taxation policies should also be revised to prevent merchants from directly targeting youths in marketing and sales^[8].

3.4.2 Campaign to ban smoking among minors

As mentioned above, youth who smokes and uses e-cigarettes is mostly compelled by their curiosity and their ignorance about the adverse effects of smoking. To reduce the number of young smokers, it is wise to start with simple publicity – an advertisement about the danger of e-cigarettes, for instance. Another way to campaign against smoking is by enforcing a smoking ban in public places such as cafeterias, restaurants, metro stations, or places often frequented by minors. This way, offending minors are prohibited from trespassing into an area, while their non-smoking peers are allowed to pass through. The goal is that the herd mentality that causes minors to start smoking in the first place could also lead them to quit smoking. Finally, campaigns on the harmful effects of smoking should also be conducted in universities and schools to teach students about the danger of smoking so they can take the initiative to stay away from cigarettes^[9].

4 Conclusion

The use of e-cigarettes can have harmful effects on young adults. It is imperative to change minor's perceptions as well as the image of smoking e-cigarettes so society can become more health conscious and more healthy.

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