The Effects of Vaping

Miles A. Peña

Bellevue University

DSC 500 Introduction to Data Science

Matthew Metzger

October 23, 2023

***Topic:***

Are the advantages of vaping as a means to quit smoking diminished by the number of individuals more willing to take up e-smoking *because* of these advantages?

***Questions:***

1. How many individuals claim to have quit smoking with the help of a vape or electronic cigarette?
2. How many more individuals state they “vape” as opposed to how many individuals smoked prior to the rise of e-cigarettes? Has the number of smokers/vapers increased since the introduction of vaping?
3. How many individuals have become addicted to nicotine through vaping?
4. How likely is one to develop lung cancer from smoking as opposed to from vaping?
5. How difficult is it to quit smoking in comparison to the difficulty of quitting vaping?
6. Are there other forms of assistance that might be more beneficial to health than vaping? Are they as effective?
7. Why do individuals take up vaping if it is as or similarly addicting as smoking?

The Effects of Vaping

Smoking and its effects have been a topic of debate in the United States (and the World) for many years. Back in the day, smoking was done everywhere and by mostly everyone it seemed as the media portrayed smoking as a statement. Marketing and advertising in the 30s, 40s, and 50s even included health claims such as being gentle on one’s throat or even that they could aid digestion. It wasn’t until nearly the mid 60s that people started to become informed on the effects on one’s health that accompanied smoking due to the Surgeon General’s report. Since then, people have continued to educate themselves on the effects of smoking and have also resorted to alternatives in order to assist them with quitting their addiction. Electronic cigarettes entered the market in about 2007 and many have switched over to these with many others taking up e-smoking since it was deemed safer than smoking. The question now is if vapes are more effective in helping smokers quit or if they are more likely to entice non-smokers to take up vaping due to it not being as risky to one’s health.

Due to these health warnings by the Surgeon General as well as individuals researching more on their own, it is now more common for individuals to vape nicotine than smoke cigarettes. In 2021, “among people aged 12 and older, 15.6% (or about 43.6 million people) reported smoking **cigarettes** in the past 30 days and 4.7% (or about 13.2 million people) reported **vaping nicotine** in the past 30 days” (Tobacco, Nicotine, and E-Cigarettes Research Report, 2022). The data presented makes it all that much more worrisome since it seems that smoking of both kinds is still very popular specifically among the younger generations. The numbers show that vaping is most popular among younger individuals (ages 12-17) due to the taste, ease of access, convenience and as we saw in the past, the media.

A graph of different colored bars

Description automatically generated with medium confidence

(National Survey on Drug Use and Health, 2021)

Although the research since the 60s shows that smoking cigarettes has decreased over time and that it will continue to do so since it is the older generation that continues to mostly smoke cigarettes, it is clear that the introduction of vapes into the market leads to the potential addiction for the younger generations.

The issue is not only that vapes are creating addictions in individuals but also that while they are safer than smoking, they are still not considered safe and can still create an addiction to nicotine. “There has been an outbreak of lung injuries and deaths associated with vaping. In February 2020, the Centers for Disease Control and Prevention (CDC) confirmed 2,807 cases of e-cigarette or vaping use-associated lung injury (EVALI) and 68 deaths attributed to that condition” (Blaha, n.d.). The popularity of vaping continues to gradually increase as shown by the graph below from Google Trends regardless of these facts in a similar way that the popularity of cigarettes worked all those years back. Individuals should continue researching before they start vaping and risk addiction and potentially their health as well.

A graph on a white background

Description automatically generated

(Google Trends, 2023)

There have been several studies conducted in hopes of finding an answer to this question. Unfortunately, there still doesn’t seem to be a consensus of whether or not vaping assists with quitting conventional smoking, or if it’s doing the opposite and enticing more and more individuals from younger generations to take up smoking when they otherwise wouldn’t have done it.

The first study we will talk about was conducted by the University of California San Diego in which they tried to “assess the effectiveness of e-cigarettes in smoking cessation in the USA from 2017 to 2019” (Chen et al., 2017-2019). The sale of e-cigarettes increased between 2013 and 2017 as more and more teenagers took up vaping as well as more individuals attempted to quit smoking with replacing their traditional cigarettes with those of the electronic kind. The study claims that “a recent PATH Study analysis found that those who switched to e-cigarettes between 2014 and 2016 were more likely to relapse to cigarette smoking by 2017 than those who were free from all tobacco including e-cigarettes between 2014 and 2016” (Chen et al., 2017-2019) which points to the direction that at least throughout those years, vaping was not a successful replacement for those wanting to quit smoking. The limitation of the study was that prior to 2016, the nicotine concentration in vapes was not equivalent to that of a regular cigarette which made it more likely for individuals to resort to their old ways to get their fix. The study would need to be conducted again in order to get a better idea if higher nicotine concentrations have assisted with the cessation of smoking through vaping.

To contrast this study, another one which was led by Dr. Karin Kasza and Dr. Andrew Hyland at the Roswell Park Comprehensive Cancer Center examined data collected between 2014 and 2019 again to try to determine how vaping assists with quitting. Their study was quite different to the one shown in the paragraph above. This one “looked at 1,600 adults who smoked cigarettes daily, did not use e-cigarettes, and were not planning to quit smoking at the beginning of the study. About 6% quit cigarettes altogether during the study. Another 4.5% reduced their smoking to less than one cigarette a day. The team compared quit rates between those who took up e-cigarettes and those who did not. Those who were using e-cigarettes daily at the end of the study were 8-fold more likely to quit cigarettes altogether. They were also almost 10-fold more likely to stop smoking cigarettes every day” (Doctrow, 2022). This study took data from 3 additional years as opposed to the previous one which might explain the difference in conclusions but there is still not enough evidence to reach a concrete answer in regard to this problem.

One last study I want to showcase is one that shows the increase of adolescents, particularly of the male gender, that have taken up vaping since its introduction. The study shows that “teenagers who used e-cigarettes for 30 days were twice more likely to start conventional cigarette smoking” (Alotaybi et al., 2022) and that “the use of e-cigarettes in the last 30 days increased 10-fold from 1.5% in 2011 to 16% in 2015 among high school students in the United States, exceeding the prevalence of traditional cigarette smoking (9.3%)” (Alotaybi et al., 2022). The visualization below shows the tobacco use among high school students in 2018 with e-cigarettes leading the way.

A chart of cigarettes and cigarettes

Description automatically generated

This particular study also talks about the effects of vaping on the health of the individual partaking in the act. While there is not much evidence proving or disproving the negative health impacts of vaping, there are preliminary studies that suggest that vaping does pose both health and safety issues. “E-cigarette smoking was found to be associated with 2.1 times more obstructive lung function impairment, and computed tomography (CT) scans performed on e-cigarette smokers showed local inflammation with impaired gas exchange caused by aerosolized oils from e-cigarettes” (Alotaybi et al., 2022). In addition, there have been many instances and reports where an individual has been injured physically in relation to vaping such as having the e-cigarette explode or self-combust.

One of the main assumptions in relation to vaping is that because vaping is being branded as a cessation tool for cigarettes, then it must mean that these will not come off as enticing/addicting to non-smokers since these are not the target consumers. The problem, as stated in the previous paragraphs, happens when these e-cigarettes are so readily available and accessible, it makes it easier for teens to purchase them and become addicted to nicotine themselves. The variety of flavors makes it that much more enticing for individuals to pick up smoking who wouldn’t have otherwise taken up smoking cigarettes. Unfortunately, because of assumptions like this and how accessible the product has become, we are putting more of the population at risk of addiction when the original intent was to help smokers quit their vice.

The main ethical concerns with using vaping as a form of smoking cessation are related to the fact that the long-term health effects of vaping are still largely unknown. It is unethical that vape companies market their products to claim that they are for adults in order to aid with the quitting of smoking yet more and more ads targeting the younger generation are surfacing. Their main tactic being the candy-like flavors that they offer as well as the vaping mechanisms themselves making them more enticing to children/teens. It is unethical to allow a consumer to make a decision that is misinformed due to the fact that the effects of vaping are still being researched. Another unknown health concern is that of how second-hand vaping affects bystanders. Since the smell of vapes is not as disturbing to most as that of cigarette smoke, people are more likely to experience second-hand effects from vaping since these are done both indoors and outdoors as opposed to cigarettes mostly being smoked outside.

As previously mentioned, the long-term effects of vaping are still uncertain making it difficult to compare how vapes affect one’s health and body compared to how cigarettes do. Until more data is gathered, we cannot determine whether vapes or cigarettes are more or less likely to cause things such as breathing problems, lung cancer, heart disease, and diabetes. It is also difficult to compare which of the two is harder to quit once you start since vaping is still fairly new in comparison and there doesn’t seem to be a whole lot of individuals looking to quit vaping as of yet. Much more research will need to be done regarding vaping and its effects to truly see how impactful it is and whether it is a good alternative to smoking cigarettes but because currently we do not have enough data, we cannot make a fair comparison between vaping and cigarettes.

In conclusion, nicotine addiction is still very possible with vaping. While vaping seems to be the “healthier” option of the two, there are still health risks associated with vaping and electronic cigarettes. The reality is that vaping is drawing in the younger generation at a rapid rate and since it is still fairly new, we do not know all the effects that vaping might have on the body over prolonged periods of time. It is important that we listen to medical research and professionals and take their warnings seriously instead of taking all the information from the media as people did with smoking decades ago.

References:

Alotaybi M, Alzahrani SS, Algethmi AM, Alamri NS, Natto YS, Hashim ST, Altammar A, Alzubaidi AS, Alzahrani IB, Alghamdi AA. E-cigarettes and Vaping: A Smoking Cessation Method or Another Smoking Innovation? Cureus. 2022 Dec 12;14(12):e32435. doi: 10.7759/cureus.32435. PMID: 36644067; PMCID: PMC9833272.

Blaha, M. J. (n.d.). 5 Vaping Facts You Need to Know. *Johns Hopkins Medicine*. <https://www.hopkinsmedicine.org/health/wellness-and-prevention/5-truths-you-need-to-know-about-vaping>

Chen R, Pierce JP, Leas EC, et alEffectiveness of e-cigarettes as aids for smoking cessation: evidence from the PATH Study cohort, 2017–2019Tobacco Control 2023;32:e145-e152.

Cummings, K., & Proctor, R. N. (2014, January 12). The Changing Public Image of Smoking in the United States: 1964–2014. *National Library of Medicine*. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3894634/#:~:text=In%20the%201960s%20and%20even,planes%20(1%2C%204).>

Doctrow, B. (2022, January 25). E-cigarette use may lead some to quit traditional cigarettes. National Institutes of Health. https://www.nih.gov/news-events/nih-research-matters/e-cigarette-use-may-lead-some-quit-traditional-cigarettes

Electronic cigarette. (n.d.). *Google Trends*. Retrieved September 17, 2023, from <https://trends.google.com/trends/explore?date=all&geo=US&q=%2Fm%2F02vlckk>

2021 NSDUH Annual National Report. (2023, January 4). *Substance Abuse and Mental Health Services Administration*. <https://www.samhsa.gov/data/report/2021-nsduh-annual-national-report>