

The reasons young smokers choose to use e-cigarette

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Abstract

Background: Electronic cigarettes (e-cigs) are battery-powered handheld devices that simulate tobacco smoking. Since its discovery in 2007, e-cigs have become a popular product in the market, especially among young smokers. With various programs that promote the dangers of smoking, the e-cigs industry takes this opportunity to offer products claimed to be alternatives to smoking with lighter side effects. The number of e-cigarette users is increasing exponentially.

Method: This research was done using a descriptive cross-sectional study design and it was conducted in Jakarta. The target population includes every e-cigs user that are accessible in Jakarta. Data were obtained through interviews conducted by two medical students on respondents in the electric smoker community scattered in several locations in Jakarta.

Results: From 937 subjects, the average age of respondents using e-cigs was 27.8 ± 6.3 years old. Most of the users of e-cigs were male 95.8%. Only 34.2% of 937 subjects were conventional smokers before using e-cigs, and it means more novice who immediately become smokers by using e-cigs (65.8%). We have analyzed the reasons of 321 current smokers who had moved to become an electrical smoker; the most common reason was NRT (79.1%), followed by better taste (13.7%), trick (2.8%), and following the trend in youth (1.8%).

Conclusion: Electric cigarettes contain nicotine and other substances that endanger the health of the airway and can be a risk of lung cancer. The use of e-cigs as a transitional period for quitting conventional smoking is not the right choice.

Keywords: e-cigarette, young smoker, reasons

Abstrak

Latar belakang: Rokok elektrik (*e-cig*) merupakan alat portable untuk merokok yang dioperasikan menggunakan baterai. Ditemukan sejak tahun 2007, dan rokok elektrik ini menjadi populer di pasaran, terutama pada kalangan perokok generasi muda. Berbagai program dan penyuluhan berhenti merokok serta kampanye bahaya rokok konvensional membuat industri rokok elektrik mengambil kesempatan mempromosikan produk mereka yang diklaim sebagai alternatif dari merokok konvensional dengan efek samping dan risiko yang lebih ringan. Pengguna rokok elektrik meningkat secara eksponensial

Metode: Penelitian ini dilakukan dengan desain potong lintang dan dilakukan di Jakarta. Populasi target dari penelitian ini adalah pengguna rokok elektrik yang dapat diakses di Jakarta. Data diambil melalui wawancara oleh 2 orang mahasiswa pada komunitas perokok elektrik di beberapa lokasi di Jakarta

Hasil: Dari 937 responden rerata usia $27,8 \pm 6,3$ tahun. Sebagian besar pengguna rokok elektrik adalah laki laki 95,8%. Hanya 34,2% responden mengaku menggunakan rokok konvensional sebelum menggunakan rokok elektrik. Dan sebagian besar 65,8% perokok pemula langsung menggunakan rokok elektrik. Dan dari 321 perokok mengemukakan alasan terbanyak pindah menjadi perokok elektrik adalah sebagai pengganti rokok konvensional (NRT) (254 responden 79,1%), kedua rasa rokok elektrik yang lebih enak 44 responden (13,7%), trick (permainan asap) 9 responden (2,8%), karena trend di kalangan muda 6 responden (1,8%)

Kesimpulan: Rokok elektrik mengandung nikotin dan substrat lain yang dapat mempengaruhi kesehatan paru dan memiliki risiko terkena kanker paru. Penggunaan rokok elektrik sebagai alternatif transisi sebelum berhenti merokok bukan pilihan yang tepat

Kata kunci: rokok elektrik, perokok muda, alasan

Background

Tobacco smoking is one of the world's largest health problems. Over the course of the 20th century, it killed around 100 million people, most of them in today's rich countries. The health burdens of smoking are now moving from high-income to low-to-middle income countries; some estimates have suggested that one billion people could die from tobacco over the 21st century.¹⁻³ Indonesia is the country with the largest cigarette consumption in the world, which is in the third place after China and India. Tobacco consumption has increased significantly, due to factors increasing household income, population growth, low cigarette prices and mechanization of the kretek industry. The prevalence of male adult smokers has increased from year to year. Likewise, the proportion of female adult smokers have increased. Very concerning 32.1% students have used smoky tobacco products. According to the Global Youth Tobacco Survey report 2014, adolescents under the age of 15 years old, 43.2% start smoking and 11.4% at 14-15 years old.³

In this modern era, the development of technology produces a trend and a new way of smoking in the form of electronic cigarettes (e-cigs). Electric cigarettes are innovations from conventional cigarettes and equally produce aerosol substances. In conventional cigarettes, the aerosol substance is smoke as a result of the combustion process, whereas in electric cigarettes there is steam as a heating process.⁴ Electric cigarette does not contain smoke, tar or carbon monoxide like conventional cigarettes. that is what causes the wrong perception in the community that e-cigarettes are relatively safer even though there are still many other toxic substances.⁵ The main toxic substance in e-cigs that is also found in conventional cigarettes is nicotine.⁶ Smokers are starting to switch to e-cigs because not only is it more modern and varies in flavor, e-cigs are believed to be one of the nicotine therapy methods to overcome their dependence.⁷

Smoking and lung cancer in younger population. In many countries we see a significant rise, peak and then decline in lung cancer death rates in the 20th century. In the United States, the death rate peaked

in the 1980s in men. In Spain this peak was later, only in the 1990s. These trends are driven by the trends in smoking. Smoking is the biggest risk factor for lung cancer and we see that the trends in lung cancer follow those in smoking with a lag of around 20 years. In 2017, it has been shown that 7 million people globally died a premature death because of smoking. The fact that smoking causes lung cancer is the major reason for the high death toll of smoking.^{8,9} Interesting and important thing is, research from Europe and Japan has shown a trend of increasing incidence of lung cancer in young adults^{9,10} The incidence of early-onset lung cancer differs according to geographical region and over time. In a cohort study in China, the incidence of lung cancer in the young population (aged 18-35 years) was 1.37%.¹¹

The main prevention efforts for cancer, especially lung cancer is not to be exposed to cigarette smoke and prevent the increasing number of smokers. The effort is not easy because it involves many sectors that sometimes conflict with each other. In recent years, efforts have begun to aggressively attract more beginner smokers by using e-cigs. Because the use of e-cigs is still relatively new, there are not much data that states the number of e-cigs users in Indonesia. Moreover, this research was conducted to find out the characteristic and reasons young people use e-cigs.

Methods

This research was done using a descriptive cross-sectional study design and it was conducted in Jakarta. The target population in this research includes every e-cigs user in Jakarta the accessible population. Data obtained through interviews conducted by 2 medical students on respondents in the electric smoker community scattered in several locations in Jakarta.

Results

In this study, we have found that of the 937 respondents using e-cigs was young. It was found that most of the users of e-cigs were male and the most of them novice smoker.

Table 1. General characteristics of research subjects

Variables	N	%
Gender		
Male	898	95.8
Female	39	4.2
Age (years old)		
Mean	27.8 (SD 6.3)	
Range	18 - 57	
Occupation		
Student	212	22.6
Public employee	40	4.2
Entrepreneur	403	43
Private employee	216	23
Others	66	7
Education		
Elementary diploma	8	0.8
Junior high school diploma	28	3.0
High school diploma	448	47.8
Associate degree	73	7.8
Bachelor's degree	356	38.0
Master's and Doctoral degree	24	2.6
Income		
<IDR. 3.500.000,00	186	19.8
>IDR. 3.500.000,00	751	80.2

Table 2. History of cigarette

	N	%
History Smoker		
Yes	321	34.2
No	616	65.7
Type of E-cigs		
Mechanical vaporizer	170	18.1
Electric vaporizer	671	71.6
Others	96	10.2
Duration of E-cigs usage		
< 3 months	51	5.4
3-6 months	72	7.7
6-12 months	103	10.9
>12 months	711	75.9

Table 3. The reason of current smoker changes to use electric cigarette

	N (n= 321)	%
NRT	254	79.1
Taste	44	13.7
Smoke trick	9	2.8
Trends	6	1.9
Others	8	2.5

Discussion

Electronic cigarettes are battery-powered handheld devices that simulate tobacco smoking. E-cigs heat a solution (i.e., e-liquid/e-juice) containing a mixture of propylene glycol, vegetable glycerin, concentrated flavors, and optionally, variable concentrations of nicotine into inhalable vapor. Electronic cigarettes use is commonly referred to as “vaping”, and e-cig users are interchangeably termed “vapers”. Since its discovery in 2007, e-cigs have become a popular product in the market, especially among smokers and the younger generation. With various programs that promote the dangers of smoking for both modern smokers and nonsmokers, the e-cigs industry takes this opportunity to offer products that are claimed to be alternatives to smoking with lighter side effects. The number of e-cigarette users is increasing exponentially. In 2016, the sales of e-cigs increased 14 times from 2008.^{12,13} In this study, of the 937 subjects studied, the average age of respondents using e-cigs was 27.8±6.3 years old. It was found that most of the users of e-cigs were male with a rate of 95.8%. Very surprising only 34.2% of 937 subjects were conventional smokers before use e-cigs, and it means more novice who immediately become smokers by using e-cigs (65.8%). Electronic cigarette users vary in terms of age with a fairly high number in the group of young adults. It shows the success of the businessman with his incessant so that in a short time be able to instill an image that is right for the younger generation about the coolness of using e-cigs According to the results of Corey et al, the use of e-cigs in the United States among adolescents and young adults increased 9-fold from 2011 to 2015.¹¹ Similar results related to gender in the use of e-cigs were also found in the study of Pineiro et al, where out of all respondents 66.8% of the subjects were male. Judging from the level of education, high school graduates obtained as the highest proportion, followed by undergraduates as the top 2 groups.¹² Compared to a study conducted by the American Heart Association (AHA) in 2018, the results found showed a similar pattern. Judging from the level of education, even though both are in the top 2 positions, undergraduates are obtained as the group with the highest proportion followed by high school graduates. This component can be affected by various variables including one of the factors of different levels of education in developed and developing countries. In addition to reviewing age groups and education levels, financial levels include factors that affect an individual's ability to buy and consume e-cigs. Judging from their work, respondents with the highest proportion are classified as entrepreneurs and are followed by private

employees and students. In the study, it was found that around 80% of the subject's income was above the minimum wage set at IDR 3,500,000.00. When compared with studies in the United States, the highest proportion was found in the income group of \$ 20,000 - \$ 44,999 per year, or roughly with multipliers of IDR 14,000.00 per dollar, then a figure of around IDR 23,000,000 - 52,500,000.00 per month.¹³ Of course, many factors affect the income of respondents, especially comparing developed and developing countries. But what the researchers want to emphasize is that the average respondent has enough income to be able to buy and consume e-cigs regularly, with a variety of prices that are adjusted to the selection of types, liquids, and the number of e-cigs used.

To find out the reasons for choosing e-cigs in this study, respondents may only choose one reason. In This study, only a small portion of them claim to use e-cigs because they follow trends 16 of 937 (1.7%), are attracted by taste 161 of 937 (17.2%), or because they can play a smoke trick for fun 32 of 937 (3.4%). The mostly reasons for choosing e-cigs were related to the nicotine content which was said to be lower than conventional cigarette, and can be a method for nicotine replacement therapy 719 of 937 (76.7%). There seems to be no discrepancy between the reasons for choosing electric cigarettes because the number of respondents who were conventional smokers before were 321 of 937. It is possible for novice smokers the reason for choosing it is because the nicotine content in electric cigarettes over conventional cigarettes is lower, rather than choosing the smoking cessation method as in previous conventional smokers. There may be misperceptions about NRT in novice smokers because it only applies to current smokers who intend to stop smoking. One way is through the NRT method in the transitional transition process. To make it clearer we analyzed only those groups that had previously used conventional cigarettes. The reasons 321 conventional smokers who had moved to become an electrical smoker, the most of reason were NRT 254 (79.1%) as the reason for the method of stop smoking with the NRT method is stronger. Followed by reasons were of the taste, smoke trick, trend, and other (Table.3). Electric cigarette enters the market as a healthier alternative to smoke with minimal impact on health. But, the statements about e-cigs have lower nicotine compositions than tobacco cigarettes are still being debated. One component that is the main focus is the content of nicotine as an addictive substance which is the main factor for cigarette users to have an addiction. Besides,

different combustion methods also affect the distribution of nicotine itself. Although it varies and depends on the type of e-cigs, the nicotine compositions in e-cigs are generally lower than in tobacco cigarettes. The Department of Pulmonology and Respiratory Medicine Universitas Indonesia have done a study. The study had shown that the urinary cotinine (uCOT, product of nicotine metabolism) and nicotine dependence level on the regular e-cigs male user was significantly correlated, of which age, nicotine level, and flavor of e-cigs liquid significantly influenced in the uCOT. The uCOT of regular e-cigs male user was significantly higher than non-smoker.¹⁴

The important issues that are hidden from e-cigs users are other carcinogenic substances that trigger cancer such as cigarette smoke.¹⁵ Cigarette smoke is a complex mixture of chemicals including multiple genotoxic lung carcinogens. The classic mechanisms of carcinogen metabolic activation to DNA adducts, leading to miscoding and mutations in critical growth control genes, applies to this mixture but some aspects are difficult to establish because of the complexity of the exposure.^{16,17} The question of whether the use of e-cigs has a lower risk for cancer such as statements that say e-cigs has a lower carcinogen content. An animal study, the carcinogenicity of e-cigs was tested in mice. They found that mice exposed to e-cigs for 54 weeks developed lung adenocarcinomas (9 of 40 mice, 22.5%) and bladder urothelial hyperplasia (23 of 40 mice, 57.5%). These lesions were extremely rare in mice exposed to vehicle control or filtered air. Current observations that e-cigs induces lung adenocarcinomas and bladder urothelial hyperplasia, combined with our previous findings that e-cigs induces DNA damage in the lungs and bladder and inhibits DNA repair in lung tissues, implicate e-cigs as a lung and potential bladder carcinogen in mice. While it is well established that tobacco smoke poses a huge threat to human health, whether e-cigs poses any threat to humans is not yet known and warrants careful investigation.¹⁷

Conclusion

This study reveals that young people use e-cigarettes due to misinformation regarding their safety. Low nicotine content and its role as a transition towards cessation of smoking seem to underline their reasons for its use.

It is only through correct information and open communication that the younger generation can be made to understand that e-cigs is not the right way to stop smoking so that prevention efforts for lung cancer can be done earlier. Although the jury is still

out regarding its carcinogenicity, e-cigs still contain carcinogen which can be a trigger for cancer, especially lung cancer.

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