

ANALYSIS OF THE DRIVING FACTORS FOR THE USE OF E-CIGARETTES (VAPES) AND THEIR IMPLICATIONS FOR THE LIFESTYLE OF GENERATION Z

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ABSTRACT

E-cigarettes are electronic devices similar to cigarettes that use batteries to generate energy. E-cigarettes pose significant health risks, especially for adolescents whose brains are still developing. Nicotine and various other hazardous chemicals are contained in e-cigarettes that can threaten the health of friends. The purpose of this study was to evaluate the factors that impact children's behavior towards the using electronic cigarettes and the impact of Electronic cigarettes on health. The methodology used for this investigation was a literature review. The literature used in this study uses 2 electronic databases, namely Google Scholar and PubMed. The time span of the journals used was the last 5 years. This research was carried out between March and April 2025 and published in "open access" journals in Indonesian and English. The main keywords in the source search were e-cigarettes, factor analysis, and adolescents. Articles were referred to inclusion criteria that were relevant to the topic. The analysis's findings revealed that there were two types of factors that influenced vaping: internal and external. Knowledge, beliefs, and gender are examples of internal factors; peers, parental support, and accessibility of e-cigarettes are examples of external factors. Excessive nicotine intake from vaping can result in nicotine poisoning, which is evident as headaches, nausea, and heart palpitations. Although many students believe that vaping is a safer option than smoking, vaping has a number of adverse impact on health, such as increased risk of addiction, depression, lung cancer as well as further respiratory issues. In conclusion, smoking not just tampers with the respiratory system, but also increases the chances of lung disease in young children.

Keyword: *E-cigarettes, Factor Analysis, Teenage*

INTRODUCTION

Government Regulation of the Republic of Indonesia Number 109 of 2012 concerning the Protection of Materials including Addictive Substances includes cigarettes, health tobacco, and other tobacco materials including tobacco that is burned and the smoke is smoked or inhaled, such as clove cigarettes, white cigarettes, or cigars made from plants such as *Nicotiana glauca*, *Nicotiana glauca*, and other types of plants or combinations that contain nicotine and tar in their smoke. Cigarettes are toxic components that evoke a feeling of relaxation and positivity. E-cigarettes are electronic devices similar to cigarettes that use batteries to generate energy. These cigarettes, however, do not burn tobacco like regular cigarettes (Samad et al., 2023).

One of the most common risk factors for death in the world is cigarettes. Smoking causes a variety of diseases. Since smoking is already part of their life routine, it is difficult for a smoker to quit smoking. The smoking habit in people of various ages is very concerning. Without exception in teenagers. Adolescence is a condition in which a person experiences transitions and changes behind emotional, physical, interests, and ways of acting (Purwanti et al., 2021). Teenagers apply a contemporary lifestyle of smoking. Although it is generally

only men who smoke, many women, including female students, smoke, and this is seen as a rational action in society. Teenagers today also have the highest rates of smokers (Maulidia & Musniati, 2023).

The habit of smoking among school-age children in Indonesia occurs more in high school students. Because this age group is the period between youth and adulthood. Adolescence is so important because children experience many physical and mental changes. Adolescents experience vague psychological changes, which lead to mood swings and mental distress. Therefore, they are more likely to deviate from the prevailing societal norms and rules. There is a relationship between knowledge about cigarettes and smoking behavior, about 70.7% of adolescents in Jakarta (Agus Alamsyah et al., 2023). Adolescents who smoke more at a young age do not know the consequences and lack of awareness so they are not aware of the impact. Observations indicate that a number of reasons for adolescents who smoke are trial and error, joining, curiosity, loneliness, wanting to feel, imitating parents, pranks, relieving tension, avoiding the image of a weak figure, and looking for inspiration. Other causes can also be stress relievers, saturation relievers, prestige, environmental influences,

neutralizing sour tastes, desserts, and enjoyment.(Purwanti et al., 2021).

E-cigarettes have serious health risks, especially for adolescents whose brains are still in the developmental stage. Nicotine and a number of chemicals are other harmful components of e-cigarettes that are capable of threatening the health of friends. Based on research, long-term nicotine use can result in cognitive impairments such as impaired concentration, remembering, and decision-making. In addition, respiratory problems and impaired heart function are more often experienced by adolescents who use e-cigarettes. In addition, a number of studies prove that aerosols obtained from e-cigarettes can contain harmful metals such as lead and uranium. During development, exposure to these metals can pose a negative risk to brain health and other organs (Rosidi et al., 2025).

From 2001 to 2003, Indonesia was the fifth largest country in the world in terms of cigarette use. From 1960 to 2003, cigarette consumption in Indonesia increased by 3.8 times, increasing from 35 billion cigarettes to 171 billion cigarettes every year. In 2020, the World Health Organization estimated that smoking was the biggest health problem, causing 8.4 million deaths each year. Cigarettes remain an unresolved problem. Although the public has been

informed about the various impacts and dangers of smoking, the habit of smoking is constantly difficult to eradicate. Smoking has a negative impact not only on a person who smokes, but also on the people around those who do not smoke. Calls to quit smoking have been widely made as the number of smokers increases, even more so in adolescence. The World Health Organization (WHO) is implementing various efforts to reduce the tobacco epidemic. Among other things, using e-cigarettes as a substitute for tobacco cigarettes, also known as Electronic Nicotine Delivery Systems (SPNE), vaping, vapor, or e-cigarettes. This will make it easier for active smokers to completely quit smoking (Setiawan & Sunaringtyas, 2023).

In the last ten years, the proportion of e-cigarette users in Bali Province has been higher than the national average of 2.8%. The proportion in the age group of 15-19 years is 20.3%, and 12.85% in the age group of 20-24 years. The first-generation devices, dubbed "cig-a-likes", have a conventional cigarette-like shape and are non-refillable; The second generation, called the "e-pen", has a pen-like shape and is rechargeable; and the third generation, called "mods", have a tank shape with a more powerful and rechargeable battery (Adults et al., 2024). The purpose of community service activities

is to inform adolescents about the dangers of smoking, both e-cigarettes and conventional cigarettes. It is hoped that this activity will increase adolescents' knowledge and understanding of the dangers of smoking (Purwanti et al., 2021).

METHODS

Using the literature review method, this study identified, collected, and analyzed various academic sources, including journals, literature, books, encyclopedias, and other documents, which discussed the Analysis of Factors Driving E-cigarette Use (VAPE) and its Implications for the

Lifestyle of Generation Z. This study was conducted from March to April and was published in "open access" journals in English and Indonesian. The keywords "E-cigarettes", "Analysis of factors", and "Adolescents" were taken from the "Google Scholar" and "PubMed" databases. There is some literature that was reviewed by several researchers and then reduced. This research has gone through the ethics review process of Faculty of Public Health, Muhammadiyah University of Jakarta with ethics review number No.10.027.C/KEPK-FKMUMJ/V/2025. Below is a table that combines the results and the discussion.

RESULTS AND DISCUSSION

Table 1. Shows a list of literature used in the study

NO.	Researcher Name	Heading	Publications and Years	Method	Conclusion
1.	<i>Weni Nur Aisyah, Amrita Cahyani Rahayu, Devrina Jasmine, Anggraeni Dian Ciptaningrum, Cahya Kharin Herbawani</i>	Factors Affecting E-Cigarette Use and Its Impact on Adolescent Lung Health : <i>Literature Review</i>	Miracle Journal of Public Health (MJPH), Vol. 7 NO. 2 December 2024 Pages 176-190	Rivew literature	The results of the study show that the use of e-cigarettes or vaping by adolescents is influenced by various factors. These factors are divided into internal and external factors. Knowledge, beliefs, and gender are internal factors.

					Meanwhile, the influence of parents, peers, and the availability of e-cigarettes are external factors.
2.	Salma Nadia Rahmani, Rachmah Indawati	Factors Influencing the Use of E-Cigarettes among Adult Smokers in Indonesia	Medical Journal (Health Information Media), Vol. 11 No. 1 May 2024	Quantitative Methods	The results of the study revealed that nicotine addiction , cigarette perception, and use in places where e-cigarettes are prohibited in a cheaper capacity than tobacco cigarettes, and that adults are relevantly more likely to smoke e-cigarettes than tobacco cigarettes . In general, this study found that people and policies affect the use of e-cigarettes.
3.	Monifa Putri, Fitriyani Bahriyah	Factors Affecting the Use of E-Cigarettes (<i>Vape</i>) in Students of the Indragiri Institute of Technology and Business	Midwifery Zone, Vol.13 No. 3 August 2023 Page 10	Analytical Method with <i>a cross sectional approach</i>	The results of the study showed that of the 96 people who participated in the study, the majority of women (62.5%) used e-cigarettes

					(vapes). The reasons for using e-cigarettes or vapes vary, as many as 29.2% of people consider themselves sociable, mature, authoritative, respected, cool, and great. Family environment variables affected 33.3%, lifestyle variables affected 30.2%, and social environment variables affected 30.2%.
4.	SWATI AND BHAVE, NICHOLAS CHADI	<i>E-cigarettes and Vaping: A Global Risk for Adolescents</i>	Indian Pediatrics, VOL.58, NO. 4. APRIL 15, 2021: 315-319		The results show, Consuming large amounts of nicotine through vaping can cause nicotine poisoning, which is characterized by headache, abdominal pain, nausea, vomiting, heart palpitations, hand tremors, problems concentrating, and sometimes seizures and cardiac

					arrhythmias. A long-term risk factor for cardiovascular disease is nicotine.
5.	Ahyar Rosidi, Anatun Aupia, Suhaemi, Apriani Susmita Sari, Intan Azkia Paramitha.	Education on the Dangers of E-cigarettes (<i>Vape</i>) for Adolescent Health at SMAN 01 Wanasaba	Indonesia Journal of Community Dedication (IJCD), Vol. 7 No. 1 January 2025, Pages 12- 16	Educational Methods	The results of the study show that adolescents better understand the dangers of e- cigarettes have undergone changes. Now they know that the use of e- cigarettes has a significant negative impact on their health. There needs to be high public awareness and stricter rules for limit the use of e-cigarettes, especially for teenagers.
6.	Hesti Yuningrum, Heni Trisnowati	Overview of Determinants of E-cigarette Use in School Children in Yogyakarta City, Indonesia	Journal of Formal (Scientific Forum) KesMas Respati Vol.9 No.1, January 2024, pages 41- 47	Quantitative Methods	The results of the study showed that the methods used for electronic smoking were divided into three, namely limited to using electronic cigarettes; using conventional and electronic cigarettes; and not using electronic

					cigarettes at all. Most of the respondents' parents are smokers, and cigarettes are cheap and easily accessible. Policies to reduce tobacco consumption should be socialized, including increased cigarette prices, incentives for health, and regulations governing the distribution of e-cigarettes.
7.	Ni Nyoman Putri Wantini, Ni Made Dian Kurniasari, Putu Ayu Swandewi Astuti, Desak Nyoman Widyantini, Made Kerta Duana	Analysis of Desire to Quit Smoking in Young Adult E-cigarette Users in Bali Province	Arc. Com. Health, Vol. 11 No. 2, August 2024 pages 432-449	Observational Analytics	The results showed that most of the users in the study had a desire to someday reduce or quit e-smoking. Almost all users have a good perception of quitting e-cigarettes, and most of them have experienced complaints or acquired support from their friends and family regarding

					quitting smoking.
8.	Wiga Jatih Asgara, Heni Trisnowati, Hesti Yuningrum, Naomi Nisari Rosdewi	Predictors of E-cigarette Use in Adolescents in Sambelia District, East Lombok	Formal Journal (Scientific Forum) KesMas Respati, Vol. 8 No. 1, January 2023, pages 82-90	Quantitative Methods	The results of the study revealed, with a p-value of $0.002 < 0.05$, it was found that smoking families encouraged teenagers in Sambelia District, East Lombok to use e-cigarettes. Peer peers did not affect
					adolescents who used e-cigarettes in Sambelia District, East Lombok, and exposure to e-cigarette advertisements did not affect the use of e-cigarettes in adolescents in Sambelia District, East Lombok, with a p-value of $0.547 > 0.05$
9.	Genevieve Mylocopos, MSc, Erica Wennberg, BSc, Anna Reiter, Andrea Hebert-Losier, MSc, Kristian B. Filion, PhD, Sarah B.	Interventions to Prevent Cigarette Use Electricity Among Children and Adolescents: A Systematic Review	American Journal of Preventive Medicine Am J Prev Med 2024; 66(2): 351–370		The results of this study collected information on how effective efforts are to prevent children and adolescents vape at the

	Windle, MPH, Genevieve Gore, MLIS, Jennifer L. O'Loughlin, PhD, Roland Grad, MD, MSc, Mark J. Eisenberg, MD, MPH				individual, school, and community levels. Other individual interventions do not have sufficient or diverse evidence to support early prevention of vaping. School-based peer leader programming and social-emotional skills curriculum are promising enough to prevent people from starting e-cigarettes.
10.	Ika Setya Purwanti, Ni Luh Putu Devhy, Diah Prihatiningsih, Ni Wayan Desi Bintari, A. A Gde Oka Widana	Prevention of Adolescent Smoking Behavior Through Counseling on the Dangers of E-Cigarettes and Conventional Cigarettes	Journal of UNDIKMA Service, Vol. 2, No. 2 (November 2021) pages 259-264	Online using <i>zoom meeting</i>	The results showed that counseling about the dangers of cigarettes increased adolescents' awareness of the negative effects of ok skirts on their health. The results of the pre-test questionnaire showed that About 40.5% of students did not know the dangers of cigarettes, and

					59.5% knew about it.
11.	Putu Pirda Puspitawati, Urge Nyoman Widyantini	Logistic Regression Analysis of Factors Affecting the Use of Electronic Cigarettes in Adolescents Aged 18-25 Years in Denpasar City in 2020	Arc. Com. Health, Vol. 8 No.2, August 2021 Pages 237-253	Crosssectional Study <i>Plan</i>	The results showed that there were factors that were not related to the use of electronic cigarettes including age, employment status, last level of education, income, parental income, and knowledge. Factors related to e-cigarette use also include gender, perception, peers who smoke e-cigarettes, families who smoke e-cigarettes, affordability, and allowances
12.	Dessy Abdullah, Rinita Amelia, Indra Kertati, Riki Nova, Maryeti Marwazi, Zamsari Chan	Counseling on the Dangers of E-Cigarettes in Adolescents: Why We Should Care	Journal of Science and Technology Collaboration and Innovation Service, Vol. 2, No. 5, October 2024	Socialization Method	The results of the activity showed that participants had gained significant knowledge about the dangers of smoking after participating in the program.

					This knowledge is expected to encourage adolescents to quit smoking and adopt a healthy lifestyle.
13.	Lilik Setiawan, Widyasih Sunaringtyas	Relationship of Adolescent Knowledge Levels about Dangers of E-Cigarettes (<i>Vapes</i>) and Adolescent E-Smoking Behaviors	Journal of Emergency Management, Vol. 5 No. 2, December 2023, pages 165-174. LPPM Kendal College of Health Sciences	Correlative Analytics	Of the 168 people who responded, as many as 128 (76.2%) respondents were aware of the dangers of e-cigarettes , and 153 (91.1%) said they were polite. Based on the results of Spearman Rho's statistical test, there was a relationship between the level of knowledge of adolescents in
					Darungan Pare Village about the dangers of e-smoking (vape) and e-smoking behavior, with a p-value = 0.020 less than 0.05.
14.	Nanda Afriska Maulidia, Nia Musniati	Factors Related to E-Smoking Behavior in Students in SMA Negeri 1 Tarumajaya,	Journal of Health Education, Vol. 13 No. 1, April 2024, pages 83-97	Quantitative Methods	Of the 109 people surveyed, 53.2%, or 58 people, stated that they were e-smokers,

		Bekasi Regency in 2023			while 46.8%, or 51 people, stated that they did not have the same e-smoking behaviors very. Univariate analysis proved that the sample of respondents was distributed by gender, knowledge, attitudes, access to social media, personal money, friends, teachers, and family. In contrast, with a P-value of 0.05, bivariate results showed a significant association between e-smoking behavior and attitudes, peer influence, and gender.
15.	Firdi Devin, Muhammad Faaiq Maburur	The Influence of Vaping on the Health of Gen Z	Scientific Journal of Psychology and Public Health (JIPKM), Vol. 1, No.1, (January-June 2023) Pages 20- 25	Qualitative	The results of the study show that teens are still avoiding vaping, and there may be more users in the future. Because research shows that friends and the

					environment are influenced by children who vape. Many Gen Z are affected by promiscuity, including vaping, when the social environment is not supportive. Although vaping has many dangers, such as being able to harm the lungs due to nicotine in the liquid, as well as other dangers.
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Based on the results of table 1 with 15 research journals above, E-cigarettes are one of the biggest problems of all countries, especially in Indonesia as a developing country. The percentage of conventional smokers and e-cigarettes (vapes) is increasing day by day and is accompanied by an increase in passive smokers. There are many factors that trigger the use of e-cigarettes or vapes in teenagers, These components are divided into internal and external factors. Knowledge, beliefs, and gender are internal factors. External factors such as parental support, peers, and access to e-cigarettes are external factors (Aisyah et

al., 2024). These findings are similar to external factors (Puspitawati & Widyanthini, 2021, Maulidia & Musniati, 2023, Yuningrum & Trisnowati, 2024), Asgara et al., 2023) Respondents, who included family members, became interested in e-cigarettes because they saw their family members smoking e-cigarettes every day, encouraging respondents to try e-cigarettes as well. Furthermore, because there is a significant relationship between family influence and e-smoking behavior, peer influence is included in the risk factor for e-smoking behavior. The findings are similar to (Setiawan & Sunaringtyas, 2023) Internal

factors, namely lack of environmental information, will have an impact on the lack of awareness of adolescents about the dangers of e-smoking. Teenagers only learn about the dangers of e-cigarettes through pictures, which gives them less knowledge. These findings are similar to (Putri & Bahriyah, 2023) The social environment has a relationship with each other and has a task or role in interacting. In fact, the social environment should have the ability to function and play a role in accordance with the applicable rules. The social environment influences the way a person thinks, either directly or indirectly, and often these influences are not realized by everyone.

The use of e-cigarettes by adults is strongly influenced by nicotine addiction. The use of electronic cigarettes as a therapy to quit smoking can result in permanent nicotine dependence because of its high nicotine content and protonated so that it is easier to inhale (Nadia Rahmani & Indawati, 2024). These findings are similar to (Bhave & Chadi, 2021) and (Devin & Maburur, 2023) Consuming large amounts of nicotine through vaping can lead to nicotine poisoning, which is characterized by headaches, abdominal pain, nausea, vomiting, heart palpitations, hand tremors, difficulty concentrating, and sometimes seizures and cardiac arrhythmias. Nicotine

dependence can make quitting smoking more difficult. So, you will experience physical symptoms such as fatigue and nausea. The process of forming new memories or skills that are built up among brain cells can be disrupted by nicotine. In fact, this process occurs faster in children's brains than in adult brains. E-cigarettes produce nicotine smoke that contains substances that increase the production and amount of the hormone adrenaline, which can increase the risk of heart attack and sudden death. Nicotine is also a long-term risk factor for heart disease.

Vaping has many negative effects on health, although many students consider it a safer alternative to cigarettes. Vapes have health hazards because the various ingredients in them, such as nicotine contained in cigarettes can cause the effects of opium and can cause depression, shortness of breath, lung cancer, permanent lung damage, and death. The glycol content in vapes also causes eye and lung irritation, and can cause respiratory tract problems such as asthma, shortness of breath, and airway obstruction. In addition, nicotine or flavor enhancers for vaping can be the cause of obstructive pulmonary disease (Rosidi et al., 2025). This finding is in line with (Key, 2024) Many studies show that e-cigarettes

have adverse effects on long-term health, such as respiratory problems, heart disorders, and a high risk of addiction. However, conventional cigarettes are often considered safer than e-cigarettes.

CONCLUSIONS AND SUGGESTIONS

Smoking not only disrupts the respiratory system, but also increases the chances of adolescents developing lung disease. The mistaken view that e-cigarettes have a higher level of safety compared to traditional cigarettes is the main cause of the increase in e-cigarette use by adolescents. Other factors that influence this behavior include the influence of peers and parents, as well as the ease of obtaining the product. Therefore, it is necessary to take comprehensive measures to prevent and address smoking behavior among adolescents, involving the government, parents, schools, and others. By using the right education, supervision and policy programs, it is hoped that it will reduce the number of adolescents who smoke. This will allow a physically and mentally healthy generation to grow and develop.

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