

Attitudes toward Electronic Cigarettes in Present-Users, Ever-Users, and Non-Users among High School Students in Songkhla, Thailand

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Abstract: *The study aims to comprehend the aspects of using the e-cigarette in high school students, including present-users, ever-users, and non-users to solve such issues that have occurred in the school. According to the school observation, the number of e-cigarette smokers has still experienced continual growth followed by consecutively decreasing ages every year. Therefore, understanding several aspects from the real users may provide a practical solution for the school to adhere to the e-cigarette problems in-depth and the information that is provided by the non-users may lead to the prevention of using e-cigarettes as well. In addition, e-cigarette cessation and treatment programs for youth should be prepared and implemented. Initially, we conducted a KoboToolbox questionnaire to identify the various variables that contribute to probability factors that can affect the decision of 211 high school students toward e-cigarette usage. 29 students out of 211 responded, or around 13.74%, had used e-cigarettes because of variables including 1. Parental use of e-cigarettes, 2. Peer use of e-cigarettes, 3. Approbation of smoking, 4. Unawareness of the problems associated with e-cigarettes, 5. The belief that quitting was simple, and 6. Life assets (Failed); yourself, family, knowledge, peers, community, etc. Another finding is an acquaintance-social trial has an impact on the average quantity of students who have used e-cigarettes. Additionally, 182 pupils, or around 86.67%, use e-cigarettes to relieve stress, which accounts for another cause for use among teenagers.*

Keywords: E-cigarettes, High school students, Peer approval of smoking, Parental e-cigarette, Life assets (Failed)

1. Introduction

Nowadays, e-cigarette usages represent hidden dangers to all high school students, no matter if they are users or nonusers. Most e-cigarette consumptions are observable in groups of Thai youths according to the manufacturer's marketing strategy of distorted propaganda and unconfirmed research about the harmlessness of e-cigarettes have given advantages as new and safer innovations. Therefore, inadequate research data is an illustration of the potential harms of chemicals unlike regular cigarettes as the phrase goes, "Better the devil you know than the devil you don't." Some producers also create the misleading ideology that e-cigarettes are alternatives to normal cigarettes and are not harmful as they do not contain tobacco extracts. Although they do not externally burn like ordinary cigarettes, and reduce the risk of smokers inhaling tar and carbon monoxide, most e-cigarette liquids contain addictive **nicotine**, the primary cause of aortic stenosis. Moreover, it could increase heart disease and angina risk, depression, anxiety, and detrimental effects on adolescent brain development.

According to the mentioned reasons, this study aims to explore and compare the prevalence and ideas of present-users, ever-users, and non-users among their related factors in high school students in Songkhla, Thailand. Using KoboToolbox, offline software optimized for humanitarian work, we could access lifestyle-risk behaviors and factor surveys, along with ensuring the security of our participants.

2. Methodology

Initially, we conducted a KoboToolbox questionnaire to identify the various variables that contribute to probability factors that can affect the decision of 211 high school

students toward e-cigarette usage. The questionnaire began by asking about the respondent's personal information followed by their lifestyle and behaviors associated with e-cigarettes. 3 choices were given for the lifestyle risk behavior; present-users, ever-users, non-users, and 7 choices from Patanavanich, R., Aekplakorn, W., Glantz, S. A., & Kalayasiri, R. model questionnaires were given for the factors associated with e-cigarette use; parentale-cigarette usage, peer e-cigarette usage, peer approval of smoking, unawareness of risks of e-cigarettes, belief in the ease of quitting, life assets (Failed); yourself, family, wisdom, peers, community, etc and other topics related to e-cigarettes. Of all the several reasons for current e-cigarette use, these selected 7 factors are shown to be the most likely influences to be picked by students. Afterward, the survey participants were asked to give supporting reasons, representing the differences in utilizing e-cigarettes-related factors in school ranging from 9th to 12th or Mathayom 3 to 6 in the Thai educational system.

Table 2.1: Number of respondents

	non-users	ever-users	present-users
No. respondents	182	20	9

Table 2.2: The number of e-cigarette users in each class

Grade	Number of e-cigarette users	Percentage
Grade 9	78	36.97
Grade 10	54	25.59
Grade 11	42	19.91
Grade 12	37	17.54
Total	211	100

Tables above show the total of 211 e-cigarette users classes from between grade 9 and 12, while 9th grade represents the most (78 of 211, 36.97%) followed by 10th grade at 54 of 211 (25.59%), 11th grade (42 of 211, 19.91%), and 12th grade at 37 participants (17.54%).

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3. Results

Ever-users and Present-users

Table 3.1: The reasons for utilizing the e-cigarettes from ever-users and present-users

Cause	Number of the questionnaire chosen	Percentage
trial	18	62.07
stress	5	17.24
concentration	2	6.9
quit real cigarettes	2	6.9
smell	2	6.9
Total	29	100

The table above compares the average percentage of utilizing the e-cigarettes from ever-users and present-users in several factors. Overall, it is apparent that teenage trial is the main reason that can lead to themselves using e-cigarettes. Wherewith, it may be influenced by their friends who are used to it regularly. So they want to try it out because they may think that it is normal to use an e-cigarette, the idea that it looks so cool when I use it, coupled with their curiosity to find out how it feels while using it, and why my friends use it. And another main reason that leads to using it from stress. This is normal to encounter in daily time, whether it is the pressure of studying, illness, blaming, etc. whereof these factors can generate stress. Whilst facing many problems and stress, they may lack contemplation and be pursued by friends that told them to use it to relieve stress because the nicotine in e-cigarettes and nicotine use relieves stress (Gilbert et al. 1989). And when they use it, it might make them feel relaxed and enjoyable. Subsequently, the rest of the user's used e-cigarettes for concentration, quit real cigarettes, and smell. Using e-cigarettes for concentration, because the nicotine in

it will improve basic attentional functions, (Sahakian and Jones 1991; Jones et al. 1992) and make them focus on something for a long period of time. Quit real cigarettes by using e-cigarettes, by the reason of e-cigarettes can give them more enjoyable while vaping and more favor to choose which corresponds to the smell of each favor that coming together, it suggests that flavors may help boost satisfaction and enjoyment with vaping, which may be key factors in helping ease the transition from smoking to exclusive vaping. (Gravelly S, Cummings KM, Hammond D, Lindblom E, Smith DM, Martin N, Loewen R, Borland R, Hyland A, Thompson ME, Boudreau C, Kasza K, Ouimet J, Quah ACK, O'Connor RJ, Fong GT., 2020)

It can be assumed that the main reasons which lead them to use e-cigarettes are their trial and stress. Because 79.31 of them give the reasons that lead them to use e-cigarettes are related to stress and curiosity of them to the e-cigarette. (Table 3.3) Which also includes persuasion from their friend.

Table 3.2: 7 Factors that cover all involving the e-cigarette uses from ever-users and present-users

Factors	Number of the questionnaire chosen	Percentage
Peer e-cigarette usage	19	32.76
Life assets (Failed); yourself, family, wisdom, peers, community, etc	17	29.31
Peer approval of smoking	10	17.24
Unawareness of e-cigarettes' risks	6	10.34
Belief in quitting e-cigarettes was easy	6	10.34
Parental e-cigarette usage	0	0
Others	0	0
Total	58	100

*Can select multiple answers

The table above illustrates the reasons for using e-cigarettes in ever-users and present-users. Based on a survey, the chosen reason among 29 e-cigarette users tends to use e-cigarettes, thus it can be seen that the most common reasons which can lead to vaping e-cigarettes are friends and intimates, with the number being selected by 19 times or about 32.76% as a consequence of seeing friends or intimates using e-cigarettes regularly. As a result, they assumed it was cool and normal for the majority of teenagers to do so.

Subsequently, 29.31% by being chosen 17 times had experienced stress and anxiety from any life assets; hence e-cigarette is a reasonable way to relieve such stress. Followed by measuring the late positive potential (LPP) testing whether cigarette smoking decreased anxiety and the arousal

level faster than non-smoking. (Choi D, Ota S, Watanuki S, 2015).

Moreover, the table shows that 17.24% came from friends' persuasion by being picked 10 times. Furthermore, these factors can be found in our daily life. Therefore, these can lead to e-cigarette uses among adolescents nowadays. It is noticeable that the significant reasons that get around the use of e-cigarettes among teenagers are friends effortlessly.

Surprisingly, the Unawareness of e-cigarette risks and Belief in quitting e-cigarettes was more straightforward than regular tobacco had the same percentage, with approximately 10.34% being chosen 6 times as well. Surveys of e-cigarette users have found that they perceive e-cigarettes as a less harmful, less addictive, and healthier alternative to conventional cigarettes (Pearson JL,

Richardson A, Niaura RS, Vallone DM, Abrams DB, 2012). E-cigarettes were primarily used to quit smoking or reduce the harm associated with smoking (41%) and were effective in assisting surveyed users in achieving these goals, about 66%. The findings of Etter et al. found that nicotine-containing e-cigarettes provided better withdrawal relief and had a greater effect on smoking cessation than non-nicotine. E-cigarettes were primarily used to aid users in quitting smoking or harm reduction, and they were highly successful in assisting users in achieving these goals. The findings support the idea that e-cigarettes have the potential to aid in smoking cessation and harm reduction, and that their safety and efficacy should be evaluated as soon as possible (Goniewicz, M. L., Lingas, E. O., & Hajek, P., 2013).

Nevertheless, parental e-cigarette usage is not the motive for vaping e-cigarettes among youngsters, therefore it can be assumed that family members are not the primary motivator for using e-cigarettes at all.

Table 3.3: Supporting reasons from ever-users and present-users. Due to Table 3.2 (why did the responder pick those factors and other reasons that can be involved)

Examples of the majority reasons were obtained from the Questionnaires

"I was curious to find out more about what e-cigarettes are because my friends were smoking them and I thought it was cool."

Peer influence was the second most cited reason for vaping and had the highest-rated influence, consistent with other studies. Indeed, the majority of survey respondents had shared vapes with their peers. Peer influences have also been documented as a strong determinant of teenage cigarette initiation and continuation in various countries. (Jha V, Kraguljac A., 2021)

"I urged my friend to try it because I was feeling extremely stressed out and having issues with a lot of other things at the time. After using it, I felt much better."

There are interactions between nicotine use and stress experience. An online survey by the American Psychological Association found that adolescents reported their stress levels were higher than what they believed to be healthy, and higher than those reported by adults (Anderson et al. 2014). Teens who experience more stress or just perceive more stress may not matter, as perceived stress is also a predictor of future nicotine consumption, including vaping (Leventhal et al. 2017). Indeed, a bidirectional relationship exists between nicotine and stress; stress and perceived stress are predictors of nicotine use (Leventhal et al. 2017), and nicotine use relieves stress (Gilbert et al., 1989).

"Because of it, I can focus for a shorter period of time, which is preferable to having no concentration at all."

In studies that included nicotine administration to either non-smokers or satiated smokers, nicotine had significant positive effects on fine motor, short-term episodic memory,

and working memory performance (Heishman S.J., Kleykamp B.A., 2010). While nicotine administration improved working memory performance in abstinent smokers, and in a more recent study of non-smokers, nicotine improved basic attentional functions. Nicotine has been shown to improve attentiveness in a variety of disorders. Clinical studies have demonstrated nicotine-induced attentional improvements in Alzheimer's disease (Sahakian and Jones 1991; Jones et al. 1992), ADHD (Conners et al. 1996; Levin et al. 1996b), and schizophrenia (Levin et al. 1996a). Nicotinic stimulation has been shown effectively to improve attentiveness in syndromes of attentional impairment. The current study shows that the attention-improving effects of nicotinic treatment are also clearly evident in non-smoking subjects without pre-existing attentional impairment (Levin ED, Conners CK, Silva D, Hinton SC, Meck WH, March J, Rose JE., 1998)

"I tried an e-cigarette after smelling a friend's and thought it smelled good."

The use of smelling as an alternative approach to vaping was justified in the hedonic assessment of e-liquid flavors; representation of real consumer behavior was still limited due to the use of nicotine-free e-liquids. Nicotine influences sensory perception and liking of e-cigarettes through its bitter taste and irritation, causing the user to experience a more intense bitter taste and harsher "throat hit", which is the term for the scratchy sensation at the back of the throat caused by nicotine. On the other hand, the advantage of having used nicotine-free e-liquids is that it allowed us to purely focus on sensory perception and liking of the flavors, independently of the sensations caused by nicotine. (Erna J.Z. Krüsemann, 2021)

"I use e-cigarettes to quit the regular ones"

There are several reasons why current and former smokers use e-cigarettes: they are helpful for reducing cigarette smoking, for quitting smoking or staying abstinent from smoking, and for satisfaction, pleasure, and enjoyment. Satisfaction, pleasure, and enjoyment with vaping are likely key factors in continuing to vape, and in easing the transition from smoking to vaping. It has been shown that a lack of satisfaction with vaping is associated with stopping regular use (e.g., was not a satisfying substitute for smoking cigarettes). (Gravelly S, Cummings KM, Hammond D, Lindblom E, Smith DM, Martin N, Loewen R, Borland R, Hyland A, Thompson ME, Boudreau C, Kasza K, Ouimet J, Quah ACK, O'Connor RJ, Fong GT., 2020)

"Because I've tried using it for a while and haven't found any disadvantages" Numerous studies show that e-cigs are a source of cardiotoxic metals. Longitudinal studies with repeated measures of metal exposure and subclinical cardiovascular outcomes (e.g. coronary artery calcification) could contribute to determining the long-term cardiovascular effects of e-cigs and the potential role of metals in those effects. (Navas-Acien A, Martinez-Morata I, Hilpert M, Rule A, Shimbo D, LoIacono NJ., 2020)

Non-users

Table 3.1: The reasons for non-utilizing the e-cigarettes from non-users

Cause	Number of the questionnaire chosen	Percentage
Aversion of cigarettes	56	30.77
Awareness of health issues	54	29.67
No environmental factor	4	2.2
Unnecessary to use	18	9.89
No answer	50	27.47
Total	182	100

The table above shows the information about Cause of not using e-cigarette from non-e-cigarette users along with the number of the respondents in the percentage. For example, A dislike e-cigarettes, Fear of affecting their health, No environmental factors, Didn't see any importance in using them. The survey found that the main reason for aversion to cigarettes is a dislike of their smell and vapor because most answers from questionnaires describe their smell and vapor as noisome and unhealthy, which links to the second largest factor, the consciousness of health problems, about 56 votes. There are various supporting opinions regarding all these factors, for example, some opinions suggested that while you use it, it will lead to Lung cancer. Moreover, others said that e-cigarettes have several harmful substances such as Nicotine, Propylene Glycol, etc. Furthermore, the third significant factor is invisibility in the actual uses of e-cigarettes because there are many methods to help release stress instead of vaping the e-cigarettes; also this practice can cause unhealthy life as well. For instance, E-cigarette aerosols may contain propylene glycol, glycerol, flavorings, other chemicals, and, usually, nicotine. Aerosolized propylene glycol and glycerol produce mouth and throat irritation and dry cough which can persuade the disease-causing agents. (Callahan-Lyon P, 2013) In conclusion, the majority of the non-users are recently concerned of health issues and the need for good health.

Table 3.2: 7 Factors that cover all involving the e-cigarette uses from non-users

Reason	Number of the questionnaire chosen	Percentage
Peer e-cigarette usage	152	30.65
Life assets (Failed): yourself, family, wisdom, peers, community, etc	145	29.23
Peer approval of smoking	99	19.96
Unawareness of e-cigarettes' risks	39	7.86
Belief in quitting e-cigarettes was easy	33	6.65
Parental e-cigarette usage	22	4.44
Others	6	1.2
Total	496	100

*Can select multiple answers

The table above illustrates the possible reasons for using e-cigarettes towards non-users in these 7 categories. Based on a survey, the chosen reason among 182 non-e-cigarette users tends to think that friends are the most vital impact because surrounding the e-cig environment, especially with people whom you are intimate with can lead to addiction the e-cigarettes more easily with the number being selected by 152 times or about 30.65%. Subsequently, 29.23% by being

chosen 145 times had experienced any life assets. Moreover, the table shows that 19.96% came from friends' persuasion by being picked 99 times. Unawareness of e-cigarette risks and Belief in quitting e-cigarettes was easier than regular tobacco had nearly the same percentage, with approximately 7.86% and 6.65%, by being chosen 39 and 33 times in order. Nevertheless, parental e-cigarette usage consisted of 4.44% or being chosen by 6 times. However, some individuals had added some other factors that can be involved with the e-cigarette assessment. For example, advertisements can increase the urge to smoke and smoking behavior, followed by the (Maloney, E. K., & Cappella, J. N., 2015) Sick of life, cool norm, convenience to carry around or several smells, curiosity.

Table 3.3: Supporting reasons from non-users. Due to Table 3.2 (why did the responder pick those factors)

Examples of the main reasons were gathered from the questionnaires

"Because most people are unaware of health risks and online advertising has made it easy to access." Among high schoolers and young adults, 60% believed e-cigarettes to be safe or to have minimal health hazards (Anand et al., 2015), 19% believed that smoke from e-cigarettes was only water (Gorukanti et al., 2017), and 23% believed that e-cigarettes were not a tobacco product (Gorukanti et al., 2017).

"In today's Thai society, smokers are admired for their good looks and coolness. And this may be the reason why teenagers are turning to e-cigarettes in order to make themselves look cool and be accepted by their peers." Studies examining Twitter posts have found that e-cigarettes are portrayed in the light of a positive social image (Ayers et al., 2017), and that youth who believed that their friends would have a "friendly" or "very friendly" response to e-cigarette use were significantly more likely to use e-cigarettes than peers who believed that their friends would have an "unfriendly" or "very unfriendly" response (Barrington-Trimis et al., 2015).

"Because e-cigarettes have nicotine, so they can help relieve some stress"

There are interactions between nicotine use and stress experience. An online survey by the American Psychological Association found that adolescents reported their stress levels were higher than what they believed to be healthy, and higher than stress levels reported by adults (Anderson et al. 2014). Whether teens experience more stress or just perceived more stress may not matter, as perceived stress is also a predictor of future nicotine consumption, including vaping (Leventhal et al. 2017). Indeed, a bidirectional relationship exists between nicotine and stress; stress and perceived stress are predictors of nicotine use (Leventhal et al. 2017), and nicotine use relieves stress (Gilbert et al. 1989).

"Considered teenagers as an age with curiosity and desirability for trying new things."

Among committed never smokers at baseline, those who were 'definitely not curious' were less likely to progress towards smoking than both those who were 'probably not curious' (OR_{adj} =1.89; 95% CI=1.03-3.47) or 'probably/definitely curious' (OR_{adj}=2.88; 95% CI=1.11-7.45). Incorporating curiosity into the susceptibility index increased the proportion identified as at-risk to smoke from 25.1% to 46.9%. The sensitivity (true positives) for this enhanced susceptibility index for both experimentation and established smoking increased from 37-40% to over 50%, although the positive predictive value did not improve. (Nodora J, Hartman SJ, Strong DR, Messer K, Vera LE, White MM, Portnoy DB, Choiniere CJ, Vullo GC, Pierce JP., 2014)

"Because it smells like fruit, so people are starting to pay more attention to use e-cigarettes."

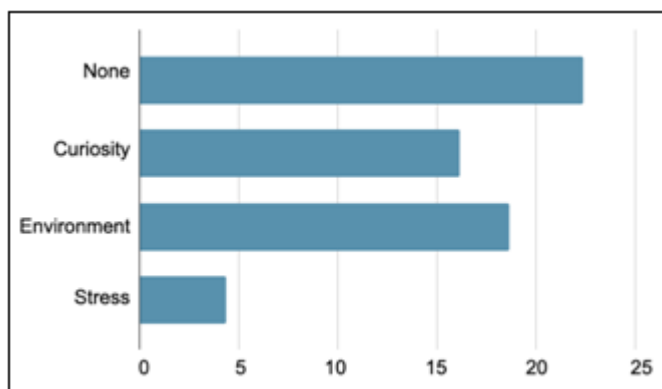
This study found that about two-thirds of vapers (who either smoke or formerly smoked) reported primarily using non tobacco flavors such as fruit, candy, menthol, or other flavors (eg, coffee, spices), although flavor popularity differed by age and smoking status. Younger and exclusive vapers (former smokers) more frequently reported using fruit and candy flavors, whereas older adults and concurrent users reported primarily using tobacco flavor, followed closely by fruit. (Gravelly S, Cummings KM, Hammond D, Lindblom E, Smith DM, Martin N, Loewen R, Borland R, Hyland A, Thompson ME, Boudreau C, Kasza K, Ouimet J, Quah ACK, O'Connor RJ, Fong GT., 2020)

"Because during adolescence, friends are especially influential. Just a friend's persuasion should be able to follow. Because most teenagers want to be accepted by their friends."

Adolescents may harbor misperceptions of peer substance use rates, and their perceptions are often biased in the direction of their own use or non-use, known as the false consensus effect (Henry et al., 2011). As a result, adolescents may overestimate the number of their peers who use various tobacco products (Noland et al., 2016), and these perceptions of perceived norms can influence behaviors and decision-making (Rajiv and Kevin, 2005).

3.3.1 Other reasons that can be involved with the causes of using the e-cigarettes from non-users' perspective

A number of non-user responses in a percentage



None 22.36%, curiosity 16.15%, Environment 18.63% and Stress 4.35%

Based on the bar chart, the most reasons that non-user think that it will lead teenagers to use e-cigarettes are their environment. Many responses were gathered from the questionnaire talking about how their environment can lead them to use e-cigarettes; friends, social, parents, etc. However, the reasons about the environment are most likely to their friends, because friends are the person closest to them and can influence them in many matters. Whether, using e-cigarettes as an example or suggestion to use it is acceptable and looks cool in their peer's perspective. They will start to try with the scents that their friends use, and then will try other scents for instance, strawberry, orange, banana, chocolate, mixed berry, etc. Subsequently, the second-most prominent reason is increasingly advertisement of e-cigarettes by many influencers on online platforms such as, Facebook, Twitter, Instagram, etc. as these media that almost get attention and they are easy to access from adolescents. Many of these influencers are considered as e-cigarettes have less nicotine, more security and more satisfying mood compared with the regular cigarettes. These have been paid more attention by many people; therefore they have imitated behavior to get attention on social media, regardless of health issues.

4. Discussions

Out of 211 students, 29 respondents, approximately 13.74%, have experienced e-cigarettes due to several factors including 1. parental e-cigarette usage, 2. peer e-cigarette usage, 3. approval of smoking, 4. unawareness of e-cigarettes' risks, 5. belief in quitting e-cigarettes was easy, 6. life assets (Failed); yourself, family, wisdom, peers, community, etc. and others. Based on this study we can conclude that the average amount of the majority of students who have used e-cigarettes is affected by an acquaintance-social trial. It is observable to note that even the high schooler's supporting ideas also correlate with the peer trial which is identical to the given bar chart. Subsequently, helping from stress is another reason for using e-cigarettes among the teenagers, accounting for 182 students or about 86.67%.

The correlation between the total number of e-cigarette users and non-users, had the same agreement on the highest related factor which is a peer-social trial, and the second highest reason which is stress relief among Thai teenagers at school. In addition, we can also conclude that the correlation among Thai high schoolers due to acquaintances included social trials.

Regarding to the 7 model factors that associate with the e-cigarette uses; Roengrudee Patanavanich, 1, * Wichai Aekplakorn, 1 Stanton A Glantz, 2 and Rasmon Kalayasiri³ found that parental use of e-cigarettes, peer use of e-cigarettes, peer approval of smoking and unaware of the risk of e-cigarettes were independently associated with the use of e-cigarettes among Thai youth.

For comparison, with the previous studies where the prevalence of current e-cigarette in the school was

influenced by peer e-cigarette usage, life asserts failed and peer approval of smoking.

The association of peer e-cigarette usage was relatively marginal compared with peer approval of smoking then these factors are considered as the significant factor toward e-cigarette use. According to the higher number of peers engaging in e-cigarette use is associated with higher self-use of e-cigarettes (Durkin, K., Williford, D. N., Turiano, N. A., Blank, M. D., Enlow, P. T., Murray, P. J., Banvard-Fox, C., & Duncan, C. L., 2021) then the higher self-efficacy to resist using e-cigarettes of teenagers was higher when they had fewer peers who were using them. This is consistent with adolescents who reported that peers were the vital factor in their decision to initiate using e-cigarettes and other tobacco products (Doran & Brikmanis, 2016; Tsai et al., 2018). Moreover, social norms (peers approve of smoking) can contribute to youngsters smoking (Scalici and Schulz, 2017) and can influence the impact of peer pressure on cigarette-smoking students as well.

According to the previous study, the parental use of e-cigarettes is replaced by the life that asserts failure. This study emphasizes that students who experience stress are more likely to be e-cigarette users. Exposure to a stressor can increase the number of e-cigarette users' purchases and consumers because stress can undermine the ability to resist smoking (Pericot-Valverde, I., Heo, M., Litwin, A. H., Niu, J., & Gaalema, D. E., 2021); especially, cigarette smoking in an unpleasant state may facilitate a decrease in the arousal level faster than with non-smoking (Choi D, Ota S, Watanuki S., 2015). Therefore, the school should be concerned about the stress depression, and anxiety of students to reduce intentions and attitudes toward e-cigarette use and the school should also provide the perception of the risk of e-cigarettes among adolescents who have already experienced smoking and those who have not yet initiated smoking (Noar et al., 2020).

The prevalence of present e-cigarette use among Thai high schoolers did not change significantly and the factors associated with e-cigarette use were consistent. However, ever e-cigarette uses are less than normal cigarettes users, strengthening the efforts to prevent children from e-cigarette use and addiction should be adhered to; The indoctrination of ideas or knowledge related to the negative effects and dangers of e-cigarettes that might be related to the main factors of non-user: Health issues and diseases that are associated with e-cigarettes. On the contrary, users of e-cigarettes are the ones who have not been cultivated with this knowledge but the factors that lead them to use it are persuasion from friends, stress, the environment, and the desire to be accepted by friends who use e-cigarettes; these factors are certainly significant in adolescents (Coleman, M., Donaldson, C. D., Crano, W. D., Pike, J. R., & Stacy, A. W., 2021).

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