Perception and Attitude towards Electronic Cigarettes among Rural Thai Young Adults

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ABSTRACT

Objective: This study examined perceptions and attitudes toward electronic cigarettes (e-cigarettes) among young adults aged 15-20 years in Samut Songkhram Province, Thailand, and their relationship.

Materials and Methods: A descriptive cross-sectional study was conducted between July and October 2023. The study included 328 young adults aged 15-20 selected from an educational institution in Samut Songkhram Province using simple random sampling. Data were collected using a self-administered questionnaire and analyzed using descriptive statistics and Pearson's correlation coefficient.

Results: The participants had a good level of knowledge about e-cigarettes. They exhibited a positive attitude towards electronic cigarettes regarding health aspects (M=3.05, SD=0.97) and a positive attitude towards the legal dimensions of e-cigarettes (M=3.12, SD=0.80). However, no statistically significant correlation was found between the perception of e-cigarettes and health-related attitudes toward them (r=0.013, p=0.820). On the other hand, there was a statistically significant positive correlation between the perception of e-cigarettes and legally oriented attitudes (r=0.192, p<0.001). Furthermore, a borderline positive correlation emerged between the perception of electronic cigarettes and the general attitudes toward them (r=0.102, p=0.065).

Conclusion: Young adults in rural Thailand have a good knowledge of e-cigarettes. However, they exhibit positive attitudes towards the health aspects and legal dimensions of e-cigarettes. Moreover, no significant relationship exists between perceptions and health-related attitudes. These insights emphasize the need for targeted strategies to address misperceptions and raise awareness about the health risks of e-cigarette use among rural youth.

Keywords: Attitude; electronic cigarette; perception; young adults (Siriraj Med J 2024; 76: 604-610)

INTRODUCTION

Electronic cigarettes (e-cigarettes) pose significant health risks and can have undesirable consequences, particularly among adolescents. Classified as a new form of electronic tobacco product, e-cigarettes have gained widespread popularity in the last decade.[1] Currently, there is an alarming upward trend in e-cigarette usage among youth in North America and Europe. In the United States, the prevalence of e-cigarette use within the past 30 days among high school students has risen from 1.5% in 2011 to a staggering 20.8% in 2018.[2] The situation is equally concerning in Mexico, where the prevalence of e-cigarette use reached a high of 22% in a sample of middle school students. According to US statistics, the number of e-cigarette consumers has doubled annually since 2008, reflecting the product's sustained popularity as a trendy device promoted for smoking cessation, often as an alternative to traditional nicotine replacement therapies such as snuff and patches.[3] Thailand has also witnessed a concerning rise, with university students exhibiting a 22.2% prevalence of e-cigarette use.[4]

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In Thailand, e-cigarettes have gained widespread popularity, particularly among adolescents, fueled by the misconception that they are nicotine-free, harmless to users and bystanders, and non-addictive. According to a 2021 report by the Tobacco Control Research and Knowledge Management Center (TRC), the number of Thai users of electronic cigarettes grew to 78,742, representing 0.14% of the population aged 15 and over, out of a total of 57 million people in this age group. Of these users, 40,724 smoked e-cigarettes daily, while 38,018 used them intermittently. Alarmingly, 24,050 users of e-cigarettes were between the ages of 15-24, with the majority concentrated in Bangkok and the central region (47,753 users).[4,5] Surprisingly, while 26.7% of Thais who knew about e-cigarettes believed they were more hazardous than conventional cigarettes, 11.3% considered them less dangerous, and 62.0% perceived both products as equally harmful. These figures are derived from the 2021 Health Behavior Survey, which collected data from 73,654 households nationwide, encompassing a sample of 164,406 individuals.[5]

To shed light on this alarming trend, the 2021 Thai Youth Survey in Educational Institutions investigated e-cigarette use among the high-risk age group of 15-24 years in various educational levels, surveying 12,948 participants throughout the country. The findings revealed significant regional variations, with the northern region showing the highest prevalence of 4.6%, followed by Bangkok and its vicinity (4.1%), the northeastern region (3.6%), the central region (2.3%), and the southern region (2.2%). When stratified by education level, university students exhibited the highest prevalence (4.6%), followed by vocational education students (4.2%), while high school students had a lower rate (1.6%).[5,6] In particular, the proportion of women using e-cigarettes increased by a concerning 3.6-fold compared to previous levels. A significant risk factor identified was frequent exposure to social media content that promotes the use of e-cigarettes, with those who access this content almost daily having a 3.7% probability of using e-cigarettes themselves, a remarkable 7.7 times higher probability than non-viewers.[6] Personal factors, perceptions and attitudes toward cigarettes, access to cigarettes, and legal knowledge were found to have an impact on smoking behavior.[7]

The report summarizing the performance of the Department of Disease Control revealed that Nakhon Pathom Province had an e-cigarette use rate of 11.24%, Ratchaburi Province had a rate of 9.61%, and Samut Songkhram Province had a rate of 7.76% among the public health office provinces in region 5. Focusing specifically on Samut Songkhram Province, which is the area of this study, 2020 statistics highlighted an overall prevalence of smoking of 7.76% among people aged 15 and over, with the highest rate of 16.03% observed in Muang Samut Songkhram District.[8] The increasing prevalence of e-cigarette use among Thai youth, particularly in the central region where Samut Songkhram Province is located, together with conflicting beliefs about their role in smoking cessation, underscores the need for further research. Therefore, this study aims to examine perceptions and attitudes toward electronic cigarettes among young adults in the rural community of Samut Songkhram province and to explore the relationship between these factors.

MATERIALS AND METHODS

Study design and population

This descriptive cross-sectional study investigated perceptions and attitudes toward electronic cigarettes among young adults in Samut Songkhram Province. Data collection was carried out between July and October 2023.

The study population consisted of young adults studying at an educational institution in Samut Songkhram Province, totaling 2,602 individuals. The sample size was determined using Krejcie and Morgan's formula[10], resulting in a required sample of 328 participants. Simple random sampling was used for participant recruitment. The inclusion criteria were young adults aged 15-20 years, currently enrolled in the selected educational institution in Samut Songkhram province, capable of communicating and completing the questionnaire comprehensively and providing informed assent/consent. Parental consent was also obtained for participants under 18 years old. The exclusion criteria were individuals who felt uncomfortable or distressed when answering the questionnaire and those with mental health issues.

Data collection

Data were collected using a self-administered questionnaire distributed through Google Form between July and October 2023. The researchers conducted briefing sessions with participants to explain the questionnaire completion process, provide details on response methods, and obtain informed consent. Participants were given 20-30 minutes to complete the questionnaire, and researchers ensured that the required sample size was achieved.

Measurements

The questionnaire was developed based on a review of the literature on young adults' perceptions and attitudes towards e-cigarettes. It comprised three sections:

1. General information: This section included questions about personal details such as sex, age, educational level, smoking status of the e-cigarette, and the status of parental use of e-cigarettes.

2. Perception of e-cigarettes: The perception of e-cigarettes refers to the beliefs, awareness, and understanding of the effects and risks associated with e-cigarette use. The perception of e-cigarettes was evaluated through a closed-ended 10-item questionnaire adapted from previous studies.[11] Respondents used a 5-point Likert scale, ranging from 'strongly agree' to 'strongly disagree', to indicate their level of agreement with statements related to the dangers, addictiveness, health impacts and other properties of e-cigarettes. A higher score indicates a more accurate and comprehensive perception aligning with established facts about the harms of e-cigarettes. The mean scores were classified as follows: 4.21-5.00 = highest perception, 3.41-4.20 = high perception, 2.61-3.40 = moderate perception, 1.81-2.60 = low perception, and 1.00-1.80 = lowest perception. These perception levels were further grouped into good (arithmetic mean 3.41-5.00), moderate (arithmetic mean 2.61-3.40), and low (arithmetic mean 1.00-2.60) for analysis purposes. The validity of the content of this questionnaire was verified by three e-cigarette research experts, resulting in an Item Objective Congruence (IOC) score of 0.93. A pilot test with 20 individuals similar to the sample group evaluated the reliability of the questionnaire, yielding a Cronbach alpha value of 0.91.

3. Attitudes toward e-cigarettes: Attitude refers to the favorable or unfavorable evaluations, feelings, and tendencies towards e-cigarettes. This questionnaire, adapted from previous research[7,11], consisted of 10 closed-ended questions rated on a 5-point Likert scale from "strongly agree" to "strongly disagree." The questions were divided into two domains:

Legal (5 questions, e.g., "I find it inappropriate that possessing and using e-cigarettes in Thailand is illegal") – this measures attitudes towards the legal status and regulations around e-cigarettes. A higher score indicates a more positive attitude towards making e-cigarettes legally accessible.

Health (5 questions, e.g., "I believe e-cigarettes allow control over nicotine concentration, making them less harmful to health") – this measures attitudes towards the perceived health impacts of e-cigarettes. A higher score suggests a more positive attitude towards e-cigarettes being less harmful than combustible cigarettes.

The arithmetic mean scores were interpreted as follows: 4.21-5.00 = the most positive attitude, 3.41-4.20 = positive attitude, 2.61-3.40 = neutral attitude, 1.81-2.60 = negative attitude, and 1.00-1.80 = most negative attitude. The attitudes were further classified into positive (arithmetic mean 2.61-5.00) and negative (arithmetic mean 1.00-2.60). The content validity was evaluated by three experts in e-cigarette research, achieving an index of item objective congruence (IOC) score of 0.86. A pilot test was conducted with 20 individuals similar to the sample group and reliability was tested using Cronbach's alpha, yielding a value of 0.94.

Statistical analyses

Data analysis was performed using SPSS software. Descriptive statistics, including frequency, percentage, median, arithmetic mean (M), and standard deviation (SD), were used to analyze the general characteristics of the sample. Pearson's product-moment correlation coefficient was employed to examine the relationship between perceptions and attitudes toward e-cigarettes among young adults.

Ethical Considerations

This study received ethical approval from the Research and Development Institute of Suan Sunandha Rajabhat University (COA.1-34/2023).

RESULTS

The sample consisted of 328 young adults residing in Samut Songkhram Province. The majority were male (68.9%), with a mean age of 17 (SD = 1.38). Most of the participants (64.6%) studied at the vocational certificate level. The majority (81.4%) did not smoke e-cigarettes, and most (80.8%) reported that family members did not smoke e-cigarettes. However, 69.5% had friends who smoked e-cigarettes (Table 1).

Regarding perceptions of e-cigarettes, the overall level of perception between the sample was good (M = 3.63, SD 0.73). The specific ratings for each perception item are shown in Table 2.

Regarding attitudes towards e-cigarettes, the sample exhibited a positive attitude toward the health aspects of e-cigarettes (M = 3.05, SD 0.97) and a positive attitude towards the legal aspects of e-cigarettes (M = 3.12, SD 0.80) (Table 3).

Analysis of young adults' perceptions and attitudes toward electronic cigarettes revealed no statistically significant negative correlation between perceptions of electronic cigarettes and health-related attitudes ($r = 0.013$, $p = 0.820$). However, there was a significant positive correlation between perceptions of electronic cigarettes and attitudes about legality ($r = 0.192$, $p < 0.001$). In general, although there was a positive correlation

TABLE 1. Demographic variables of the participants. (n=328).

Demographic Variables	N (%)
Gender	
Male	226(68.9)
Female	102 (31.1)
Age (years) [Mean±SD]	17.69±1.38
Education	
Vocational Certificate	212 (64.6)
Diploma/High vocational Certificate	110 (33.5)
Bachelor's degree	6(1.9)
Smoking electronic cigarettes	
Smoking	61(18.6)
Stop smoking	267 (81.4)
There is someone in the family who smokes electronic cigarettes.	
Yes	63(19.2)
No	265(80.8)
I have a friend who smokes electronic cigarettes.	
Yes	228(69.5)
No	100(30.5)

TABLE 2. Level of Perception towards e-cigarette in participants (n=328).

Variables	Mean	S.D.	Level
E-cigarettes are considered a new type of drug and contain toxins that are more dangerous than cigarettes	3.68	1.08	Good
E-cigarettes are as dangerous as heroin and cocaine	3.33	1.17	Moderate
E-cigarette smoke is harmful to people around you and can cause heart disease and blood pressure	3.75	1.05	Good
E-cigarettes can cause serious diseases such as cancer, emphysema, heart disease, etc	3.81	1.09	Good
E-cigarettes are causing more problems for new young smokers	4.21	0.93	Good
Smoking an e-cigarette is equivalent to smoking 15 regular cigarettes and contains more nicotine than traditional cigarettes	3.44	1.09	Good
E-cigarettes contain ingredients that are harmful to the body, such as heavy metals and arsenic	3.48	1.07	Good
The long-term effects of rolled cigarettes are more dangerous than e-cigarettes	3.82	0.97	Good
Nicotine is a substance that promotes relaxation	3.61	0.99	Good
Smoking e-cigarettes does not lead to cancer	3.12	1.26	Moderate
Overall Perception towards e-cigarette	3.63	0.73	Good

TABLE 3. Level of attitudes towards e-cigarettes in participants (n=328).

Variables	Mean	S.D.	Level
Overall attitudes towards e-cigarettes	3.08	0.82	Positive attitude
Health attitudes towards e-cigarettes	3.05	0.97	Positive attitude
Legal attitude towards e-cigarettes	3.12	0.80	Positive attitude

between perceptions and attitudes about e-cigarettes, it did not reach statistical significance (r = 0.102, p = 0.065) (Table 4).

DISCUSSION

The finding that participants exhibited a good overall level of perception (M = 3.63, SD = 0.73) about e-cigarettes suggests they have an accurate understanding and awareness of the facts surrounding the dangers and health risks of e-cigarette use. This aligns with the increased dissemination of information about e-cigarette harms from governmental sources and health campaigns accessible to youth through various media channels, such as social media platforms like Facebook, TikTok, Line, and YouTube.[12] The behavioral pattern of mobile phone use among young adults also influences their perceptions of e-cigarettes.[12] This finding is consistent with previous research[11] suggesting that perception comprises three components: 1) selective attention, where individuals selectively attend to stimuli that align with their needs and attitudes; 2) organization, where individuals organize information from various sources into a coherent whole for better understanding and appropriate response; and 3) interpretation, the individual process of assigning meaning through thoughts, speech, and expression.[13] The most crucial principle of perceptual organization is that individuals interpret stimuli based on their beliefs, attitudes, and experiences, which shape their thoughts, speech, and behavior.[14]

However, this positive perception did not translate into negative attitudes towards e-cigarettes, as the participants exhibited a positive attitude towards both the health aspects (M=3.05, SD=0.97) and legal dimensions (M=3.12, SD=0.80) of e-cigarettes. This discrepancy between perception and attitude could be attributed to the influence of various communication technologies and information sources that promote positive attitudes towards e-cigarettes, including scientifically credible evidence and unsubstantiated opinions from certain groups.[13] Additionally, government dissemination methods may not be attractive enough to effectively communicate the dangers of e-cigarettes to late adolescents and young adults.[15] Furthermore, adolescence is characterized by a quest for peer acceptance and experimentation despite knowing the risks of smoking, which can contribute to more positive attitudes towards e-cigarettes.[16,17]

The lack of a statistically significant correlation between perceptions of e-cigarettes and general attitudes

TABLE 4. Relationship between perception and attitude towards electronic cigarettes in participants (n=328).

Variables	Perception toward electronic cigarette	
	Pearson Correlation (r)	p-value
Health attitudes towards e-cigarettes	0.013	0.820
Legal attitude towards e-cigarettes	0.192	<0.001*
Overall attitudes towards e-cigarettes	0.102	0.065

*p-value < .05

towards them (r = 0.102, p=0.065) aligns with previous research.[12,18] This can be explained by the varying individual perceptions and interpretations of stimuli, which contribute to diverse attitudes towards e-cigarettes.[12,19] Despite understanding potential health risks, adolescents may not immediately prioritize or perceive these consequences as concerning.[20]

However, the positive correlation between perceptions of e-cigarettes and legally oriented attitudes (r=0.192, p<0.001) suggests that individuals with a better understanding of e-cigarettes tend to have more positive attitudes toward their legal accessibility. This finding highlights the need for robust legal frameworks and enforcement mechanisms to regulate e-cigarette use, particularly among vulnerable populations like rural youth.

Our results indicate an urgent need for multifaceted initiatives to educate rural Thai youth and reshape their positive attitudes toward e-cigarette health aspects and legality. Suggestions include developing engaging multimedia educational campaigns via youth's preferred channels, incorporating interactive peer-to-peer elements to counter misinformation, integrating e-cigarette education into school curricula with teacher/mentor involvement, and involving youth representatives in program design for sustained relevance. Coupling these initiatives with stricter regulations restricting youth e-cigarette access and marketing can create a coherent environment reinforcing negative attitudes. Periodic evaluations are crucial to adapt strategies based on evolving youth attitudes and behaviors.

A notable strength of this study is the use of validated questionnaires with good content validity and reliability to assess perceptions and attitudes toward e-cigarettes among the target population of rural Thai youth. Additionally, the decent sample size of 328 participants enhances the generalizability of the findings to similar rural settings. However, certain limitations should be acknowledged. First, the cross-sectional design precludes causal inferences about the relationships between perceptions, attitudes, and e-cigarette use behaviors over time. Longitudinal studies are warranted to establish temporality. Second, the study relied on self-reported data, which may be subject to social desirability or recall bias. Finally, the findings may have limited generalizability beyond the study's rural setting and age range of 15-20 years.

CONCLUSION

While young adults in rural Thailand have a good overall perception of the dangers of e-cigarettes, they exhibit positive attitudes towards both the health aspects and legal dimensions of e-cigarettes. In addition, there was no significant correlation between their perceptions of e-cigarette risks and health-related attitudes. These findings emphasize the need for a multifaceted strategy to address misperceptions, change attitudes, and prevent e-cigarette use among this vulnerable rural youth population.

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Conflict of Interest

The authors declare that they have no conflict of interest.

Author Contributions

All authors approved the final article. The authors were involved with the study: N S: Conceptualization, Methodology, Investigation and data collection, Writing-Original draft. P W: Conceptualization, Writing-Original draft, Writing-Review and editing. P L: Methodology, Investigation and data collection. WD: Methodology, Investigation and data collection. W K: Methodology, Investigation and data collection. S S: Methodology, Investigation and data collection. K S: Methodology, Investigation and data collection.

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