Cigarette Smoking Behaviors among Residents of a Semi-Urban Community in Ubon Ratchathani Province, Thailand

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Abstract
This research aims to study the cigarette smoking behavior of individuals living in semi-urban communities in Ubon Ratchathani Province, Thailand. The study employed a quantitative research design, with a sample consisting of 276 participants. The primary data collection tool was a smoking behavior questionnaire, which demonstrated a Cronbach's alpha coefficient of 0.75. Statistical methods were used in data analysis to determine frequency counts, percentage distributions, mean scores, and standard deviations. The majority of the sample were male (80.43%), with an average age of 45.45 years (S.D. = 13.36). Among the participants, 48.92% were employed, and 53.98% identified as smokers. Most smokers reported initiating their smoking habit between the ages of 19 and 21 (24.64%), while the youngest age at which participants began smoking was 12 years or younger (0.36%). The majority of smokers consumed 3 to 5 cigarettes per day (16.30%), and a significant proportion (96.38%) had observed smoking in public places. The study found significant relationships between gender, education level, and occupation with smoking behavior and e-cigarette use (p-value ≤ 0.05). The results indicate that smoking is more prevalent in semi-urban areas. Therefore, government entities, local authorities, and community organizations must play crucial roles in implementing tobacco control measures and preventing the emergence of new smokers in these semi-urban communities.

Keywords: Cigarettes, Cigarette Smoking Behaviour, E-Cigarettes, Semi-Urban Community, Good Health and Well-being

1. Introduction

The tobacco epidemic is one of the most significant public health threats the world has ever faced, causing more than 8 million deaths annually worldwide. Over 7 million deaths result from direct cigarette use, while approximately 1.3 million deaths are attributed to second-hand smoke [1], which increases the risk of non-communicable diseases (NCDs) such as hypertension, coronary artery disease, stroke, diabetes, cancers, chronic obstructive pulmonary disease, and emphysema.

NCDs represent the foremost health problem globally, both in terms of mortality and overall disease burden [2]. In Thailand, NCDs continue to be the leading health issue, mirroring the global situation [3]. Smoking impacts not only the health of smokers but also poses economic and social challenges due to second-hand smoke exposure [4]. According to the 2021 health behavior survey of the Thai population, approximately 9.9 million people (17.4%) aged 15 years and older (out of a total of 57 million) reported smoking. The highest smoking rates were found in the 25-44 age group (21.0%), with males smoking 26 times more than females. Additionally, the smoking rate among individuals living outside municipalities is higher than that of those living within them [5].

In Ubon Ratchathani Province, the smoking rate is 19.4%, ranking 18th in the country [6]. Besides tobacco smoking, there is a growing concern regarding e-cigarette use. The nicotine in e-cigarettes is synthetic and does not irritate the throat, being absorbed more quickly than nicotine from traditional tobacco [7]. The 2021 Population Health Behavior Survey conducted by the National Statistical Office of Thailand found that the population aged 15-24 had the highest proportion of e-cigarette users compared to other age groups [8].

According to the Department of Health Service Support, Ministry of Public Health in Thailand, 9.1% of Thai youths currently smoke e-cigarettes, and many young people still have misconceptions about the dangers of e-cigarettes [9]. Comparative studies on smoking in urban and rural areas indicate that Thailand, as an upper-middle-income country, is trending toward increased urbanization, resulting in more semi-urban societies and communities.

The research team aimed to study both tobacco and e-cigarette smoking behaviors and analyze the relationship between personal characteristics and smoking behaviors among individuals living in semi-urban communities in Thailand. This research was conducted in the Kham Khwang sub-district, Warin Chamrap District, Ubon Ratchathani Province, Thailand. This area was selected due to its semi-urban characteristics, proximity to the city of Ubon Ratchathani, and closeness to two universities. While there are five factories in the area, some residents still engage in farming. Therefore, this semi-urban community presents an opportunity to apply the study's results to develop models for controlling cigarette and e-cigarette smoking in similar contexts across Thailand.

2. Methods

2.1 Study Area

The research area was the Kham Khwang sub-district, Warin Chamrap District, Ubon Ratchathani Province, Thailand (Figure 1). The population consisted of 5,643 individuals, including 2,924 males and 2,719 females aged 15 years and older, whose names were registered in the civil registration of Kham Khwang Sub-district, Warin Chamrap District, Ubon Ratchathani [10]. A review of related literature indicates that the population aged 15 years and older in Kham Khwang Sub-district is 5,643 [10]. The proportion of tobacco consumption behavior in Ubon Ratchathani Province, Thailand, is 19.4% [6] ($p = 0.22$).

2.2 Research Methodology

This study employed a quantitative research design, with a sample size of 251 participants calculated using a formula for estimating proportions based on a known population. However, to account for potential loss or incomplete data during the collection process, the sample size was increased by 10% [11], resulting in a final sample size of 276 participants.

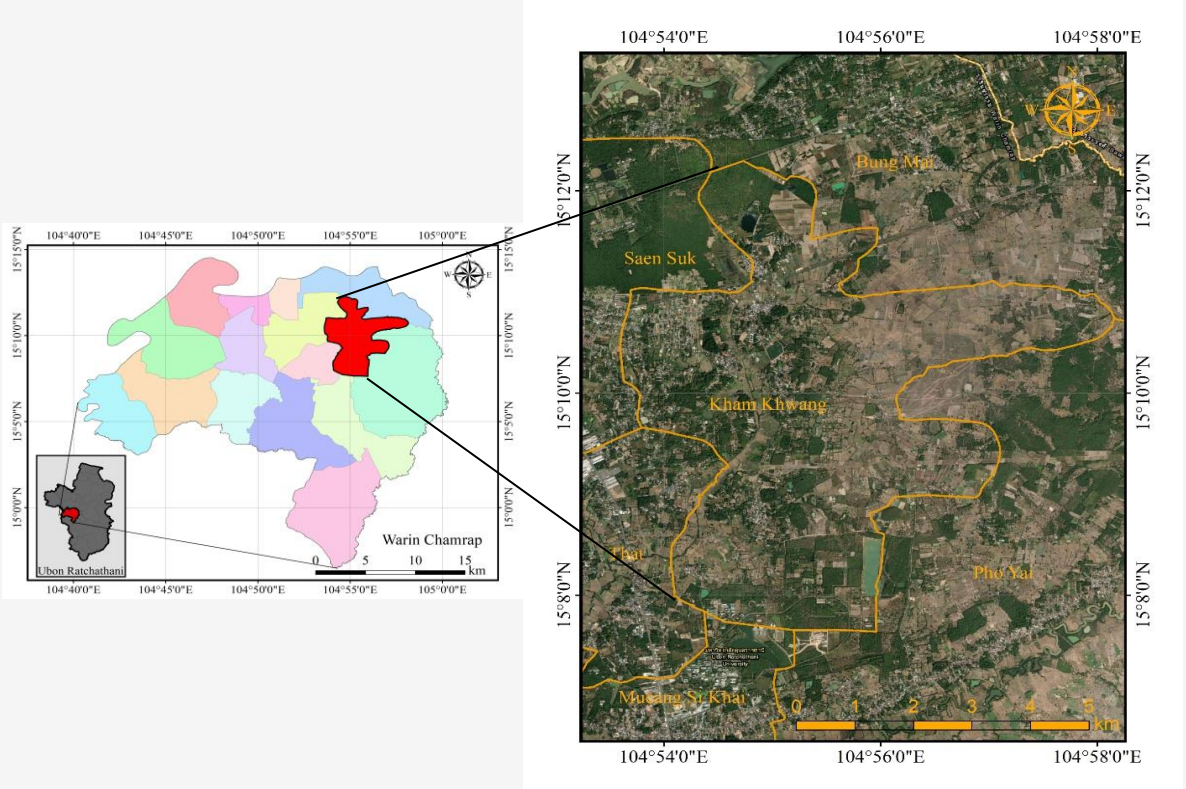

Figure1: Kham Khwang Subdistrict, Warin Chamrap district, Ubon Ratchathani province

Multi-stage sampling was conducted as follows:
Step 1**:** Determine the proportion of the sample according to the population size of individuals aged 15 years or older in each village.

Step 2: Conduct simple random sampling within each village until the specified sample size was obtained. Participants were required to be 18 years of age or older and capable of reading and writing. Informed consent was obtained from all participants prior to their involvement in the study.

The instrument used in this research was a questionnaire on cigarette and e-cigarette smoking behavior, adapted from the 2017 Population Smoking and Alcohol Drinking Behavior Survey [12]. The quality of the instrument was assessed by five experts, who checked the accuracy of the questionnaire using an expert tool quality inspection form. The index of item objective congruence (IOC) for each item ranged from 0.60 to 1.00, and a pilot test was conducted with a group of 30 individuals similar to the sample. Cronbach's alpha coefficient for the instrument was 0.75.

Data were analyzed using statistical methods to determine values, percentages, frequencies, mean scores, and standard deviations. Relationships between personal factors such as gender, age, education level, marital status, occupation, and smoking behavior were analyzed using the Chi-square test, with a statistical significance level set at 0.05.

This research is part of a model development initiative for temples, schools, and communities to control cigarette and alcohol consumption in the Kham Khwang Sub-district, Warin Chamrap District, Ubon Ratchathani Province, Thailand. The study is currently in the exploratory phase, focusing on synthesizing issues related to cigarette and e-cigarette consumption behavior among community members. The research received ethical approval for human studies from Ubon Ratchathani University, with certificate number UBU-REC-142/2566, granted on September 26, 2023.

3. Results

3.1 General Information about the Sample

The sample consisted of 276 participants, with an average age of 45.45 years (S.D. = 13.36). The youngest participant was 18 years old, while the oldest was 89. The majority of the sample were male, comprising 222 individuals (80.43%). The highest level of education attained by participants was primary school, with 138 individuals (50.00%). Among the participants, 163 (59.06%) were married, and 135 (48.92%) were employed. A total of 149 participants (53.98%) were smokers, including 147 male smokers (53.26%) and 2 female smokers (0.72%). Additionally, 144 participants (52.17%) smoked only traditional cigarettes, while 5 (1.81%) smoked both traditional and e-cigarettes. Details are shown in Table 1.

3.2 Smokers in the Study Area

According to Table 2, the total population aged over 15 years in the seven villages (Moo) is 5,643 people, while the sample size is 276 individuals. In this context, the ratio of smokers to the sample is 149:276, or approximately 1:1.85, which equates to 53.98%.

3.3 Smoking Behavior

A total of 161 individuals currently smoke both cigarettes and e-cigarettes. There are 12 people who previously smoked but have since quit. Most participants started smoking between the ages of 19 and 21 (24.64%). The youngest age at which someone began smoking was 12 years or younger (0.36%). Initial smoking experimentation was the primary reason for first-time cigarette and e-cigarette use (42.75%). The most significant reason for quitting smoking was concern for the health of non-smokers exposed to second-hand smoke (11.23%). Details are shown in Table 3. Regarding smoking behavior, the sample group reported smoking 3 to 5 cigarettes per day (16.30%) and using electronic cigarettes less than three times per day (1.09%). Most participants purchased cigarettes and e-cigarettes from grocery stores (46.74%) and had observed smokers in public places (96.38%). The top five reasons for smoking cessation failure, whether for cigarettes or e-cigarettes, were enjoyment of smoking (53.26%), anxiety after quitting (16.68%), environmental influences (8.33%), stress (8.33%), and lack of awareness regarding the dangers of tobacco (6.88%).

In terms of perceptions about the dangers of e-cigarettes compared to traditional cigarettes, 40.94% of the sample believed e-cigarettes were more dangerous than traditional cigarettes. Conversely, 59.06% perceived e-cigarettes as less dangerous, equivalent in danger, or expressed uncertainty. Regarding whether e-cigarettes can assist in quitting traditional cigarette smoking, 55.44% of the sample disagreed that e-cigarettes help in quitting, while 44.56% agreed or were uncertain about their effectiveness.

Table 1: General information about the sample (n=276)

General information	Numbers	Percentage
Sex		
Male	222	80.43
Female	54	19.57
Education level		
Primary education	138	50.00
Junior high school	79	28.62
High school	34	12.32
Vocational certificate/associate Degree	12	4.35
Bachelor's degree	13	4.71
Marital status		
Single	73	26.45
Married	163	59.06
Separated	19	6.88
Divorced	10	3.62
Widowed	11	3.99
Occupation		
Agriculture	73	26.45
Paid-worker	135	48.92
Government employee	2	0.73
Private employee	10	3.62
Unemployed	40	14.49
Government officer	1	0.36
Merchant	15	5.43
Smoking behavior		
Do not smoke	127	46.01
Smoke every day	126	45.65
Smoke some days	23	8.33
Gender of smokers		
Do not smoke	127	46.01
Male	147	53.26
Female	2	0.73

Table 2: Smokers in villages in Khamkwang subdistrict Warinchamrap Ubon Ratchathani (n=276)

Village (Moo)	Number of Population more than 15 years (people)	Samplings (people)	Smokers (People)	Ratio of Smokers per Samplings	Percentage (%)
1	745	36	10	1:3.60	3.62
3	384	19	8	1:2.38	2.90
4	997	49	35	1:1.40	12.68
5	1,099	53	24	1:2.21	8.69
6	1,014	50	30	1:1.67	10.87
7	689	34	26	1:1.31	9.42
8	715	35	16	1:2.19	5.80
Total	5,643	276	149	1:1.85	53.98

3.4 The Relationship between Personal Factors and Smoking Behavior

The results indicate that gender, education level, and occupation were significantly related to smoking behavior regarding both cigarettes and e-cigarettes (p-value ≤ 0.05). Details are shown in Table 4. The research found that most of the sample was male (80.43 %) with an average age of 45.45 years (S.D.= 13.36). Most had the highest education level (50.00 %) in primary school, and 48.92 % were a paid-worker. The research area in the semi-urban community has five different kinds of factory, resulting in a large male working-age population living in the community.

Table 3: Smoking behavior (n=161)

Smoking behavior	Smoking cigarettes and e-cigarette behavior					
	Do not smoke		Smoke every day		Smoke some days	
	Number	Percentage	Number	Percentage	Number	Percentage
Smoking status						
Used to smoke but quit	0	0.00	7	4.35	5	1.92
Smoking	0	0.00	126	78.26	23	14.27
First time smoking						
≤ 12 years	0	0.00	1	0.62	0	0.00
13-15 years						
16-18 years	2	1.24	12	7.45	2	1.24
19-21 years	5	3.11	46	28.57	5	3.11
≥ 22 years	5	3.11	52	32.30	11	6.83
	0	0.00	15	9.32	5	3.11
The most crucial reason for first- time smoking						
Experiment	12	7.45	91	56.52	15	9.32
Stress	0	0.00	13	8.07	1	0.62
Peer persuasion	0	0.00	21	13.04	7	4.35
Imitation from family members	0	0.00	1	0.62	0	0.00
The most crucial reason to quit smoking						
Anxiety when not smoking	2	1.24	11	6.83	5	3.11
Concern for the health of second-hand smoke	6	3.73	24	14.91	1	0.62
Awareness of smoking hazards	3	1.86	12	7.45	4	2.48
Concerned about health problems	1	0.62	18	11.18	7	4.35
No smoking cessation idea	0	0.00	61	37.89	6	3.73

Table 4: The relationship between personal factors and smoking behavior

Personal factors	x^2	p-value
Age	45.532	0.785
Sex	68.328	0.000*
Education level	13.384	0.010*
Marital status	5.251	0.262
Occupation	17.236	0.008*

In addition, the population is people aged 15 years and over whose names are registered in the civil registration at the research area, and there are more males than females. Therefore, the majority of the sample in this research were working-age population male as a wage labour.

4. Discussion

The study showed that 53.99% of the sample smoked cigarettes and e-cigarettes. This percentage is higher than the provincial tobacco consumption rate of Thai individuals aged 15 years and older (19.4%) [6]. It can be concluded that the rate of smoking both traditional cigarettes and e-cigarettes in semi-urban communities is greater than the provincial average. Gender and occupation were significantly related to smoking behavior regarding both cigarettes and e-cigarettes ($\chi^2 = 68.328$, p-value = 0.000*, $\chi^2 = 17.236$, p-value = 0.008*). No significant relationships were found between age, marital status, and smoking behavior ($\chi^2 = 45.532$, p-value = 0.785; $\chi^2 = 5.251$, p-value = 0.262). This finding is consistent with studies examining factors related to cigarette exposure in Nakhon Si Thammarat Province, Thailand [13], which also found that gender and occupation were associated with smoking behavior, while age and marital status were not.

Additionally, education level was significantly related to smoking and e-cigarette behavior ($\chi^2 = 13.384$, p-value = 0.010*), aligning with studies on youth smoking behavior in Ta Sala District, Nakhon Si Thammarat Province, Thailand [14], which found that educational level significantly influenced youth smoking behavior. The reasons for initiating smoking included experimentation, peer persuasion, stress, and imitation from family members.

This aligns with previous studies that identified stress levels as significantly related to smoking behavior [15] and found that having family members who smoke is associated with smoking behavior [13]. The primary motivation for using e-cigarettes was curiosity, with risk factors for e-cigarette use including a lack of understanding of their dangers, peer influence, and other social and environmental factors, such as the availability of e-cigarettes in stores [16].

This research also found that during the past 30 days, 96.38% of the sample had observed smokers in public places. To control smoking in Thailand, the Tobacco Product Control Act of 2017, Section 42, prohibits smoking in designated non-smoking areas, such as public places, workplaces, and vehicles. Violating this section can result in a fine of up to 5,000 baht [17]. Environments with a high prevalence of smoking, such as communities with many smokers, increase the risk of smoking among adults [18].

Regarding perceptions of the dangers of e-cigarettes compared to traditional cigarettes, 59.06% of the sample believed e-cigarettes were less dangerous. A significant risk factor for e-cigarette use was a lack of understanding regarding their dangers [16]. Previous literature suggests that e-cigarettes can be more hazardous than traditional cigarettes due to their essential components. E-cigarette liquids contain nicotine, which is highly addictive, similar to substances found in traditional cigarettes, and nicotine levels can be adjusted to be 50 to 100 times higher. Furthermore, the nicotine in e-cigarettes is synthetic and does not irritate the throat, leading to faster absorption compared to traditional cigarettes [7]. When asked whether e-cigarettes can assist in quitting smoking, 44.56% of the sample expressed uncertainty. Currently, there is insufficient research evidence to conclusively determine whether e-cigarettes effectively aid in smoking cessation [19].

5. Conclusion

Semi-urban communities exhibit a high prevalence of smoking. In the research area, there were five factory-type establishments. It is recommended that community development guidelines be implemented to reduce smoking in communities with such establishments. It is crucial for these factories to establish regulations or policies to control smoking, such as creating smoke-free zones around their premises. Additionally, projects should be organized to promote knowledge and foster appropriate attitudes regarding cigarettes and e-cigarettes for those working in these factories, as well as initiatives aimed at encouraging behaviors to reduce, stop, and quit smoking. The primary reason for the sample's desire to quit smoking was concern about secondhand smoke. Public awareness campaigns should emphasize the dangers of secondhand cigarette smoke and its negative health impacts on family, friends, and the public. Furthermore, promoting smoking reduction and cessation at the individual level should involve family participation.

This research found that the youngest age at which individuals began smoking was 12 years or younger. This finding aligns with reports from the Non-Smoking Campaign Foundation, as cited in the Thai Teacher Network for Smoke-Free Schools [20], which indicates that more elementary school students are entering the smoking cycle, with some becoming addicted to half a pack to a pack of cigarettes per day, a trend that was rare in the past. Additionally, this study identified the reasons for initial smoking as a desire to try it, peer influence, stress, and imitation of family members. This situation suggests that teenagers may begin smoking at a young age and be exposed to secondhand smoke within their homes. Therefore, it is recommended that health education regarding the dangers of tobacco and e-cigarettes, as well as anti-tobacco campaigns, be consistently implemented in primary schools. This will help students develop strong self-immunity against smoking and avoid exposure to others' cigarette smoke.

The study also revealed a high prevalence of smoking in public places within semi-urban communities, such as markets, temples, and government buildings, despite the ban on smoking in indoor public spaces, workplaces, and public transport according to the Tobacco Products Control Act of 2017. It is recommended that communities establish rules prohibiting smoking in public areas, such as schools, temples, and villages, similar to practices in Roi-Et municipality [21]. Community members should be actively involved in monitoring compliance with the Tobacco Products Control Act of 2017, ensuring that violations do not occur. Additionally, no-smoking signs should be displayed in every public place within the community.

The research findings indicate that in the semi-urban areas studied, 149 respondents (53.98%) were smokers, with 147 being male (53.26%) and 2 female (0.72%). This suggests that government and related agencies should focus more on smoking control in semi-urban areas and enforce the prohibition of smoking in public spaces. Future studies on smoking behavior should investigate hidden populations in semi-urban settings. Lastly, to support smoking cessation, local governments should play an important role by allocating budgets to assist smokers in quitting. This could involve providing services

from trained professionals, which would significantly enhance grassroots efforts in smoking cessation.

6. Recommendations

Community education programs should be developed to raise awareness about the dangers of both traditional cigarettes and e-cigarettes. These programs should target various demographics, particularly young people, emphasizing the health risks associated with smoking and secondhand smoke exposure. Additionally, initiatives that support individuals wishing to quit smoking, such as access to counseling and nicotine replacement therapies, should be launched to facilitate cessation efforts. Family involvement is crucial in smoking prevention. Programs educating families about the dangers of smoking and the importance of maintaining a smoke-free home can effectively reduce smoking rates among adolescents. Strengthening community monitoring systems will ensure compliance with existing tobacco control laws, engaging community members in monitoring activities to report violations.

Peer influence can also play a positive role in discouraging smoking. Peer-led initiatives in schools and community settings can promote smoke-free behaviors among youth. Future research should include longitudinal studies to track smoking behaviors over time, particularly among vulnerable populations, providing insights into the effectiveness of intervention strategies.

Lastly, special attention should be given to prevention strategies aimed at younger demographics, particularly those under the age of 18. Collaborating with local health organizations, NGOs, and schools to design and implement anti-smoking campaigns will enhance the reach and impact of these efforts. By taking these actions, stakeholders can create a healthier environment in semi-urban communities and significantly reduce the prevalence of smoking and its associated health risks.

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References

[1] World Health Organization, (2023). *Tobacco*. [Online]. Available: https://www.who.int/news-room/fact-sheets/detail/tobacco. [Accessed: May 28, 2024].

[2] United Nations, Thailand, (2022). Preventing and Controlling Non-Communicable Diseases in Thailand, The Case for Investment. [Online]. Available: https://www.undp.org/sites/g/files/zskgke326/files/migration/th/UNDP_TH_WHO_THAILAND_NCD-IC-REPORT_v06_231121.pdf. [Accessed: May 28, 2024].

[3] Drug and Medical Supply Information Center, Ministry of Public Health, (2019). Summary of Essential Statistics 2019. [Online]. Available: http://dmsic.moph.go.th/index/detail/8306. [Accessed: May 28, 2024].

[4] National Statistical Office, Thailand, (2019). *Population Health Behavior Survey 2021*. Bangkok: Forecasting statistics, Division National Statistical Office, Thailand; 2019. [Online]. Available: https://www.nso.go.th/nsoweb/storage/survey_detail/2024/20230505110449_60642.pdf. [Accessed: May 28, 2024].

[5] Hfocus, (2022). Thai Health Promotion Foundation is Concerned About Thai Teenagers Drinking and moking Heavily and Risking their Health. [Online]. Available: https://www.hfocus.org/content/2022/05/25176. [Accessed: May 28, 2024].

[6] National Statistical Office. (2021). Health Behaviour Population Survey 2021. [Online]. Available: https://www.nso.go.th/nsoweb/downloadFile/survey/7bT/20230505110449_84709.pdf. [Accessed: Jan. 19, 2024].

[7] Pipattanachat, V., Charoenca, N., Ruangkanchanaset, S. and Kasemsup, V., (2023). Case Studies from International E-Cigarette Control Measures and Reasons Why Thailand Should Maintain Measures to Ban E-Cigarettes. *Public Health Policy & Law Journal*. Vol. 9(3), 567–580.

[8] Thai Health Report Committee. (2022). E-Cigarette [Online]. Available: https://www.thaihealthreport.com/th/articles_detail.php?id=139. [Accessed: Jan. 19, 2024].

[9] Thai Health Promotion Foundation. Ramathibodi Doctors Concerned About the Increase in Young People Smoking Electronic Cigarettes. [Online]. Available: https://www.thaihealth .or.th/. [Accessed: May. 28, 2024].

[10] Ministry of Public Health, Thailand, (2024). Population Pyramid, Kham Khwang Sub-district. [Online]. Available: https://dashbo ard.anamai.moph.go.th/dashboard/populationp yramid/tambon?year=2020&tb=341515. [Accessed: Jan. 15, 2024].

[11] Lemeshow, S., Hosmer, D.W. and Klar, J., (1990). *Adequacy of Sample Size in Health Studies*. Chichester, England: John Wiley & Sons.

[12] National Statistical Office, Thailand, (2018). *Survey of Smoking and Alcohol Drinking Behavior of the Population 2017*. Bangkok: Pimdee Printing Company.

[13] Chinpong, S., (2021). Relationship between Cigarette Exposure Behavior Among People in District, Nakhon Si Thammarat Province, Thailand. *Journal of Health Sciences and Pedagogy*. Vol. 1(2);45–56.

[14] Luksanavimon, L., Petsirasan, R., Aekwarangkoon, S. and Noonil, N., (2020). Factors Related to Smoking Behavior Among Youths in Thasala District. Nakhon Si Thammarat Province. *Thai Journal of Nursing*, Vol. 69(1), 1-9. https://he02.tci-thaijo.org/ind ex.php/TJN/article/view/240797.

[15] Meekun, Y., Lumpiya, O. and Huaisai, W., (2023). Factors Associated with Smoking Behaviors of Ubon Ratchathani University Students. *Lanna Public Health Journal.* Vol. 19(1), 76–88.

[16] Zhao, S., Li, Z., Zhang, L., Yu, Z., Zhao, X. and Li, Y., (2023). The Characteristics and Risk Factors of E-Cigarette Use Among Adolescents in Shanghai: A Case-Control Study. *Tobacco Induced Diseases*. Vol. 21, 1–9. http://dx.doi .org/10.18332/tid/166131.

[17] Mahidol University. Tobacco Product Control Act, 2017. [Online]. Available: https://mahidol. ac.th/temp/2022/04/smoke1.pdf. [Accessed: May 26, 2024].

[18] Dunbar, M. S., Nicosia, N. and Kilmer, B., (2021). Exposure to New Smoking Environments and Individual-Level Cigarette Smoking Behavior: Insights from Exogenous Assignment of Military Personnel. *Social Science and Medicine*, Vol. 280. http://dx.doi. org/10.1016/j.socscimed.2021.113983.

[19] Meelarp, S., (2021). E-cigarette and Smoking Cessation: Limitations and Suggestions from Previous Research. *Journal of Primary Care and Family Medicine*. Vol. 5(2), 75-82.

[20] Teachers Network for Smoke-Free Schools, (2019). Smoke-free School Learning Management Guide Elementary Level. [Online]. Available: https://drive.google.com/ file/d/1e_o6m91zgyN6fK8vEKSQSI9J5kG0pi 6I/view?usp=sharing. [Accessed: May 28, 2024].

[21] Non-Smoking Campaign Foundation, (2022). Community Constitution-Roi-Et Municipality. [Online]. Available: https://www.ashthailand. or.th/content/detail/72/466/1. [Accessed: May 28, 2024].