Journal of Health Research
eISSN 2586-940X

Manuscript 1111

Effects of the 5A Model toward perceiving self-efficacy of nursing students' counseling for tobacco cessation

Siripan Naknoi

Pirin Nichachotesalid

Songwut Sungbun

Sasithorn Tomon

Krisada Tongtub

Tanawat Ruamsook

ORIGINAL STUDY

Effects of the 5A Model Toward Perceiving Self-efficacy of Nursing Students' Counseling for Tobacco Cessation

Siripan Naknoi [a], Pirin Nichachotesalid [a,*], Songwut Sungbun [a], Sasithorn Tomon [a], Krisada Tongtub [a], Thanawat Ruamsook [b]

[a] Princess Agrarajakumari College of Nursing, Chulabhorn Royal Academy, Bangkok, Thailand
[b] Faculty of Nursing, Kasem Bundit University, Bangkok, Thailand

Abstract

Background: **Tobacco control is a critical global health issue, especially due to the tobacco industry's targeting of youths and children, which challenges educational institutions. This study examined the impact of the 5A model on nursing students' perceptions of smoking cessation counseling.**

Method: **This quasi-experimental study used a one-group pretest-posttest design to evaluate the effect of the 5A model on nursing students' self-efficacy. It involved 30 nursing students from Princess Agrarajakumari College of Nursing at Chulabhorn Royal Academy, Bangkok, Thailand. Over four weeks, students engaged in online learning, simulation-based learning, field training in counseling, and completed a self-efficacy questionnaire based on the 5A model. A repeated measures ANOVA analyzed mean differences in self-efficacy.**

Results: **The participants, primarily female (96.70%) with a mean age of 20.50 ± 0.57, showed significant improvement in perceived self-efficacy in smoking cessation counseling using the 5A model following simulation-based learning ($p < 0.001$). A positive effect was also noted after field training ($p < 0.001$). Their confidence in using the STAR technique for stop-smoking planning and counseling, and employing the 5A model to prevent relapse, significantly increased ($p < 0.001$). The mean scores of perceived self-efficacy post-simulation learning and post-field training did not differ significantly.**

Conclusion: **This study highlights the effectiveness of combining self-efficacy theory and the 5A model with simulation-based learning and field training in smoking cessation programs. The findings emphasize the need for nurse educators to adopt and implement such programs in educational settings and communities.**

Keywords: Tobacco cessation, Self-efficacy, Nursing students, 5A model, Thailand

1. Introduction

Smoking continues to be a significant global health issue. Despite the implementation of the MPOWER strategy under the World Health Organization Framework Convention on Tobacco Control (WHO FCTC) since 2007, smoking prevalence has only decreased from 22.8 percent to 17.0 percent in 2021. Without effective campaigns for smoking cessation and protection from cigarette exposure, the number of smokers might remain as high as 300 million. Notably, secondhand smoke exposure results in approximately 1.3 million deaths annually [1]. According to the 2021 health behavior survey of the population over 15 years of age in Thailand, there were 9.9 million smokers, constituting 17.4 percent of this group. The average initiation age for smoking was 18.5 years. Over 4 million households have members exposed to secondhand and thirdhand smoke, affecting up to 10.3 million people. Alarmingly, the number of new smokers, particularly children and youth in primary and lower secondary schools, is rising, along with the increased use of electronic cigarettes [2]. The effects of cigarettes extend beyond physical and mental health, leading to diseases such as emphysema, COVID-19,

Received 1 February 2024; revised 21 April 2024; accepted 16 May 2024.
Available online 12 December 2024

* Corresponding author.
E-mail address: pirin.nic@cra.ac.th (P. Nichachotesalid).

https://doi.org/10.56808/2586-940X.1111

cancer, bipolar disorder, and cardiovascular diseases. Smoking further complicates treatment and elevates mortality rates from various causes compared with non-exposed individuals [3–7]. Past tobacco control measures, including the enforcement of non-smoker health protection laws, creation of smoke-free zones, increased excise taxes, and bans on advertising and sales promotions (such as warning labels and graphic images about the dangers of cigarettes), have only been effective in a limited number of countries. Addressing the advertising and accessibility of diverse electronic cigarette types is crucial in preventing new addiction cases. Cigarette companies also target children and teenagers through marketing strategies that customize product taste and appearance. This underscores that prevention measures (Protect), assistance in quitting tobacco use (Offer), and strict law enforcement (Enforce) are insufficient. Consequently, the objective of reducing tobacco consumption by 30 percent by 2025 is unlikely to be met.

In Thailand, an evaluation of policy implementation aimed at controlling tobacco use among youths, as guided by a strategic framework, indicates that these measures are currently ineffective. Contributing factors include evolving circumstances such as the lower age of initial tobacco use, which positions youths as prime targets for the tobacco industry. The ease of accessing advertising and purchasing tobacco products online has led to increased smoking in prohibited areas. Consequently, a strategic plan is needed, one that involves collaborative efforts across various network partners at all levels, in order to reduce the smoking prevalence in Thailand. This plan must address the sale of tobacco products to individuals under 18 years of age [8]. The Nurses Association of Thailand and the Nurses Network for Tobacco Control of Thailand play an essential role in health promotion and smoking cessation services. They emphasize the necessity for educational institutions to incorporate tobacco control content into their curricula [9]. Various teaching methods, including videos, case studies, and nursing planning, are employed to link the health impacts of smoking with role-playing activities and assessments of quitting intentions, all underpinned by the 5A principles. Literature reviews indicate that counseling based on the 5A method, including "Ask, Advise, Assess, Assist, and Arrange" is most used for effectively promoting quit smoking patients. The 5A model coupled with community exhibitions, significantly enhances knowledge about smoking cessation among nursing student leaders [10]. However, these methods have not been tailored for specific users, and there remains a skills gap in advising and persuading individuals to quit smoking [11]. The ADDIE model, an instruction system design, helps to improve nursing student leadership and gain confidence in motivating smokers to quit smoking. It consists of 5 phases: 1) Analyze the situation and obstacles, 2) Design potential intervention, 3) Develop problem-solving method, 4) Implement, and 5) Evaluate. Nevertheless, it requires further practice with real case studies of coaching team support [12]. Moreover, Bandura's self-efficacy, which posits that individuals with higher self-efficacy are more likely to succeed and be healthy, is integrated into the program [13]. This integration aims to enhance self-efficacy in tandem with training on the 5A model to promote smoking cessation skills [14]. Online learning and meetings for knowledge exchange showed that the experimental group had higher average scores in self-efficacy and knowledge about cigarettes compared with the control group. Another study integrating self-efficacy theory into a smoking reduction program for addicted students included skills practice in rejection skills, experience sharing, and social support. This approach resulted in a lower nicotine addiction score in the sample group [15]. Additionally, Pungbangkradee et al.'s study [16] demonstrated that video counseling based on the 5A concept for smokers in the hesitation and preparation phases of quitting increased knowledge and self-efficacy. However, practical outcomes among students and addicted individuals are still lacking. The expansion of practical results and skills to enhance confidence in sustainable smoking cessation counseling remains confined to student leaders.

Therefore, the researcher focused on examining the impact of implementing the 5A model on nursing students' perceptions regarding their competency in delivering smoking cessation counseling. This entailed the development of an online instructional module, the provision of consulting videos, the organization of simulated scenarios within a virtual laboratory, and the practical application in real-world settings. The goal is to bolster students' confidence in giving advice, serve as a good role model for young individuals, yield beneficial outcomes for individuals, families, and communities, and evolve the program to incorporate it into the Bachelor of Nursing Science curriculum.

2. Methods

2.1. Study design and participants

This study employed a quasi-experimental research design, focusing on a single group with

repeated measurements conducted before and after the intervention. The intervention involved learning through simulation, followed by practical application among a selected sample group of smokers. The target demographic for this study comprised third-year nursing students enrolled at Agrarajakumari College of Nursing, Chulabhorn Royal College, who were preparing for clinical practicum. We determined the sample size using a one-way Cohen's *t*-test table, setting the confidence level at 95%. With a substantial effect size of 0.8 and a test power of 90%, the required sample size was calculated to be 27 individuals. To compensate for potential attrition, the sample was increased to 30 participants. We then implemented stratified random sampling among 62 third-year nursing students, who were categorized based on their academic performance into three categories based on GPA: good, medium, and weak. From each category, 10 students were randomly selected, culminating in a final sample size of 30 individuals. The selected sample group of smokers, comprising both male and female participants, met the inclusion criteria and agreed to participate in the study until its conclusion.

2.2. Data collection and analysis

This study employed tools consisting of two main components: those utilized for conducting the research and those used for collecting data.

2.2.1. Tools for conducting the research

Online Module: This component, designed to foster tobacco consumption control, is grounded in self-efficacy theory. It encompasses online lessons about health and smoking, information on anti-smoking medications, and counseling guidelines anchored in the 5A's framework.

Simulation-based Learning: Designed to enhance counseling skills for smoking cessation, this model is operationalized through a virtual laboratory environment.

2.2.2. Tools for data collection

The data collection instrument is a questionnaire, which underwent content validity assessment by an expert familiar with the 5A model and a psychiatric nursing instructor. Additionally, three nursing instructors with expertise in tobacco studies evaluated its internal consistency reliability (IOC). Prior to deployment in the main study, the questionnaire underwent testing on a demographic similar to the research sample, consisting of 30 individuals, to confirm its reliability, as evidenced by Cronbach's alpha coefficient.

The questionnaire is divided into two sets

Set 1 - Basic Information: This set encompasses four parts, each addressing different aspects. These include general information about students, beliefs regarding the benefits of quitting smoking, classroom experiences, and attitudes/perceptions related to barriers in activities aimed at controlling tobacco consumption.

Part 1: General Information Questionnaire, which gathers data on gender, age, cumulative grade point average, smoking habits, and self-education about counseling smokers in quitting.

Part 2: Questionnaire on Beliefs about the Benefits of Quitting Smoking. This part includes 6 items, using a 4-point rating scale from “strongly agree” to “strongly disagree.” The reliability of this section, as indicated by a Cronbach's alpha coefficient, is 0.713. Scoring ranges between 4 and 24 points, in which 18−24 indicates a strong belief, 11−17 a moderate belief, and 4−10 a weak belief.

Part 3: Classroom Experience Questionnaire, consisting of 6 questions. It employs a 5-level evaluation scale, ranging from least to most experienced. The Cronbach's alpha coefficient here is 0.806. Scores range 5−30 points, with 22−30 indicating very experienced, 14−21 suggesting moderately experienced, and 5−13 indicating little experience. This part also includes the Field Training Questionnaire about counseling patients or individuals who smoke. It contains 8 questions and employs the same 5-level scale, with a Cronbach's alpha coefficient of 0.886. Scores range 5−40 points, in which 29−40 indicates very experienced, 17−28 denotes moderately experienced, and 5−16 signifies little experience.

Part 4: Questionnaire on Attitudes/Perceptions of Barriers to Activities for Controlling Tobacco Consumption. This section employs a 4-level evaluation scale and includes 5 questions regarding attitudes toward tobacco consumption control activities. The reliability, measured by Cronbach's alpha coefficient, is 0.600, and scores range 4−20 points. A score of 16−20 implies a positive attitude, 11−15 suggests a neutral attitude, and 5−10 indicates a negative attitude. Additionally, this part assesses the perception barriers in controlling tobacco consumption through 6 items, with a Cronbach's alpha coefficient of 0.757. Scores range 4−24 points, in which 18−24 indicates the perception of many obstacles, 11−17 moderate obstacles, and 4−10 few obstacles.

Set 2 - Questionnaires Before and After Participation: This set assesses self-efficacy in nursing students, focusing on their confidence in applying the 5A model for tobacco consumption control. It comprises 11 items on a self-efficacy 4-level evaluation scale, ranging from “not at all confident” to

"extremely confident," and has a Cronbach's alpha coefficient of 0.908.

2.2.3. Collecting data

The data collection was conducted three times, the first week (Basic information and general information), the third week (assesses self-efficacy before and after simulation), and the fourth week (assesses self-efficacy after field training counseling. The experimental procedures were as follows:

2.2.4. Preparatory stage

The researcher organized a team to train third-year students participating in the project. The training provided knowledge on the hazards of smoking and tobacco control legislation, along with smoking cessation counseling techniques. Experts in the 5A model provided comprehensive training to prepare students for its application.

2.2.5. Experimental procedure

A program was administered to third-year nursing students to enhance their skills in applying the 5A model for controlling tobacco consumption. The details are as follows:

Activity 1, Week 1: Basic information was collected from 30 participants who met the inclusion criteria. This information included age, gender, grade, smoking history, self-study on advising smokers to quit, beliefs about the benefits of quitting, classroom learning experiences, field training in patient counseling for smoking cessation, and attitudes/perceptions of barriers to smoking cessation activities.

Activity 2, Week 2: An online lecture was conducted via Microsoft Teams for 1 h. Students engaged with the lesson module, which covered health and smoking, medications for smoking cessation, and counseling guidelines based on the 5A principles. A 30-min video on smoking cessation counseling (16), approved by the Nurses Network for Tobacco Control of Thailand, was also presented. To ensure that the participants attended this activity, they were assigned to Microsoft Teams and signed their names after finishing the online program.

Activity 3, Week 3: A 3-h simulation-based learning activity was conducted. Its aim was to enable students to apply the nursing process in evaluating patients with congenital diseases. In groups of three, students underwent a 5-min orientation and pre-briefing, followed by realistic simulation scenarios utilizing the 5A process for advising patients on smoking cessation. The scenarios included a video recording with standardized patients exhibiting symptoms related to coronary artery disease and a desire to quit smoking. Instructors observed through a one-sided mirror and led a 15-min debriefing session to analyze, summarize, and stimulate learning.

Activity 4, Week 4: After preparing the 3rd year student in activity 1−3. We prepared the volunteer smokers by 1) communicating with the leader of the Lak-Si community, 2) announcing in the Lak-Si community, 30 volunteer smokers who are in both pre-contemplation and contemplation stage who agree with a counseling program. Students applied their skills in practice with the patients one by one, providing individual counseling to volunteer smokers. They used a 30-min counseling technique with the volunteer smoker in the Lak-Si community.

2.3. Statistical analysis

The data were analyzed using SPSS programs. The statistical significance level for hypothesis testing was set at an alpha (α) of 0.05. Descriptive statistics, including frequency, mean, and standard deviation, were employed in the overall data analysis. This analysis encompassed various factors: beliefs about the benefits of quitting smoking, classroom experiences, field training in patient counseling or interaction with smokers, and attitudes toward and perceived barriers in tobacco control activities. To ensure normal distribution of data, the repeated measures ANOVA was utilized to compare the mean scores of nursing students' self-efficacy at three different time points: before the program, after receiving it, and following its application in real situations.

2.4. Ethical consideration

Ethical approval was obtained from the Human Research Ethics Committee of Chulabhorn Royal Academy, in accordance with the Declaration of Helsinki (EC 037/2565).

3. Results

1. *Study population and baseline characteristics*

The majority of the study participants were female, with a mean age of 20.50 (SD 0.57; range 20−22 years). Approximately 93% of the participants reported no history of smoking, and 56.70% had not participated in smoking cessation counseling (Table 1).

In terms of attitudes and experiences related to smoking cessation, most participants acknowledged the benefits of quitting smoking and had learned

Table 1. Personal characteristics of the experimental group.

Personal characteristic	Experimental group (n = 30)	
	n	%
Sex		
Male	1	3.30
Female	29	96.70
Age (years)		
20	16	53.30
21	13	43.30
22	1	3.30
Min–Max	20–22	
Mean (SD)	20.50 (0.57)	
History of smoking		
No	28	93.30
Yes	2	6.70
Have studied about smoking cessation counseling		
No	17	56.70
Yes	13	43.30

SD=Standard Deviation.

about smoking in classroom settings. However, only a few had hands-on field training in smoking cessation counseling. Although they generally held positive attitudes toward smoking cessation, they perceived significant barriers to smoking cessation activities (Table 2).

2. *The effects of the 5A Model on nursing students' perceived self-efficacy in counseling for tobacco cessation*

The repeated measures ANOVA revealed that, following simulation-based learning, students' mean perceived self-efficacy for tobacco cessation counseling was significantly higher than before the program ($p < 0.001$). This increase was also evident when comparing pre- and post-field training counseling scores, with the post-program mean score being significantly higher ($p < 0.001$). These improvements were associated with enhanced abilities to assess a smoker's readiness to quit, set a quit date, assist in planning for smoking cessation, advise on nicotine replacement therapy (NRT), and provide counseling using the "STAR" technique and the 5A model to prevent smoking relapse.

In terms of differences between post-simulation learning and post-field training counseling, a significant improvement in confidence was noted in areas such as assisting with nicotine replacement therapy ($p = 0.017$), using medication for smoking cessation other than NRT ($p < 0.001$), and arranging follow-up sessions to address smoking cessation, coping strategies, and barriers to preventing relapse ($p = 0.009$). However, no significant differences were observed in other aspects (Table 3).

Additionally, the comparison of mean scores for perceived self-efficacy in delivering the 5A model for smoking cessation revealed a significant increase in participants' total scores following both the simulation-based learning and the field training, as opposed to before the program commenced ($p < 0.001$). Furthermore, post-field training scores showed statistically significant differences when compared with post-simulation-based learning scores ($p = 0.001$) (Fig. 1).

4. Discussion

This study demonstrates that the total average perceived self-efficacy score for smoking cessation significantly improved following simulation-based learning and field training counseling before the program, aligning with Bandura's theory [13]. According to this theory, efficacy beliefs are crucial in the generative system of human competence. Individuals with high self-efficacy perceptions tend to be more successful than those with low self-efficacy. Factors influencing perceived efficacy include cognitive, motivational, affective, and selection processes, which in turn affect emotional states and interests. Consistent with these findings, nursing students who held positive attitudes toward

Table 2. The average of personal backgrounds in beliefs about benefits, classroom experiences, field training experiences, attitudes, and perceptions of obstacles in smoking cessation activities.

Personal background	Range	Mean	N = 30	
			SD	Level
Beliefs in the benefits of smoking cessation	4–24	21.30	1.97	Very beneficial method
Learning experiences about smoking in the classroom	5–30	24.07	4.08	Highly experienced
Field training experiences in providing counseling for smoking cessation	5–40	18.50	8.24	Limited experience
Attitude toward smoking cessation activities	4–20	18.90	1.40	Good attitude
Perception of obstacles in smoking cessation activities	4–24	17.87	3.10	High level of obstacles

SD=Standard Deviation.

Table 3. Comparison of mean differences in the 5A model for perceived self-efficacy in tobacco cessation by item and by time: Before-after field training counseling, Before-after simulation-based learning, after simulation-based learning − After field training counseling.

Variables	Perceived self-efficacy			Mean difference	*p*-value
	Before	SBL	Field		
I am confident that I can ask every patient/client I meet whether they smoke	3.10	3.73	3.77		
Before-after simulation-based learning				−0.633	<0.001
Before-after field training counseling				−0.667	<0.001
After simulation-based learning − After field training counseling				−0.033	0.712
I am confident that I can ask every patient/client I meet whether someone close to them smokes	3.33	3.77	3.77		
Before-after simulation-based learning				−0.433	0.002
Before-after field training counseling				−0.433	<0.001
After simulation-based learning − After field training counseling				0.00	1.000
I am confident that I can persuade a patient/client who smokes to quit	2.70	3.70	3.57		
Before-after simulation-based learning				−0.600	0.001
Before-after field training counseling				−0.867	<0.001
After simulation-based learning − After field training counseling				−0.267	0.009
I am confident that I can ask questions to assess a smoker's readiness to quit	2.67	3.63	3.80		
Before-after simulation-based learning				−0.967	<0.001
Before-after field training counseling				−1.133	<0.001
After simulation-based learning − After field training counseling				−0.167	0.057
I am confident that I can talk to the patient to set a quit date	2.57	3.43	3.60		
Before-after simulation-based learning				−0.867	<0.001
Before-after field training counseling				−1.033	<0.001
After simulation-based learning − After field training counseling				−0.167	0.096
I am confident that I can assist the patient/client in planning to stop smoking	2.87	3.57	3.77		
Before-after simulation-based learning				−0.700	<0.001
Before-after field training counseling				−0.900	<0.001
After simulation-based learning − After field training counseling				−0.200	0.056
I am confident that I can assist the patient/client in nicotine replacement therapy (NRT)	2.53	3.30	3.53		
Before-after simulation-based learning				−0.767	<0.001
Before-after field training counseling				−1.000	<0.001
After simulation-based learning − After field training counseling				−0.233	0.017
I am confident that I can assist the patient/client in using medications other than NRT for smoking cessation	2.50	3.37	3.80		
Before-after simulation-based learning				−0.867	<0.001
Before-after field training counseling				−1.300	<0.001
After simulation-based learning − After field training counseling				−0.433	<0.001
I am confident that I can set a schedule to arrange a follow-up on smoking cessation, coping strategies, and barriers to smoking relapse	2.73	3.40	3.67		
Before-after simulation-based learning				−0.667	<0.001
Before-after field training counseling				−0.933	<0.001
After simulation-based learning − After field training counseling				−0.267	0.009
I am confident that I can provide counseling by using the "STAR" technique for planning smoking cessation	2.83	3.77	3.87		
Before-after simulation-based learning				−0.933	<0.001
Before-after field training counseling				−1.033	<0.001

(*continued on next page*)

Table 3. (continued)

Variables	Perceived self-efficacy			Mean difference	*p*-value
	Before	SBL	Field		
After simulation-based learning − After field training counseling				−0.100	0.184
I am confident that I can provide counseling by using the 5A model to prevent smoking relapse	3.00	3.73	3.80		
Before-after simulation-based learning				−0.733	<0.001
Before-after field training counseling				−0.800	<0.001
After simulation-based learning − After field training counseling				−0.067	0.423

SBL = Simulation-Based Learning.
Field = Field training counseling.

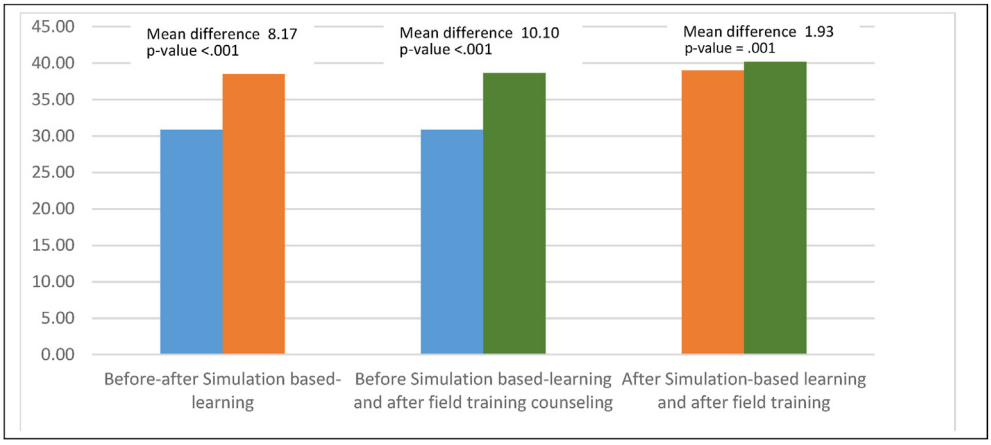

Fig. 1. Comparison of average total scores and mean difference by time for nursing students' perceived self-efficacy in the 5A model for smoking cessation.

smoking cessation benefits and activities, and who had prior classroom learning experiences about smoking, initially supported their intention and learning to succeed in applying the 5A Model for smoking cessation. However, the absence of field training and practical application led to a lack of confidence in their ability to apply the 5A model. This study demonstrated that simulation-based learning could be effective in improving self-efficacy for tobacco cessation counseling, students exhibited higher self-efficacy scores compared with before the program. This improvement can be attributed to the study design, which involved knowledge acquisition through an online lesson module covering smoking cessation, counseling videos, and simulation-based learning before field training, thereby enhancing real-world learning. This study's findings are consistent with those of Karunan et al. [10] who utilized the 5A counseling technique in community smoking cessation among nursing student leaders, and Wongpanarak and Wongpiriyayothar [14], who employed a self-efficacy perception enhancing program in an online classroom. Similarly, Napattaradechanon et al. [15] observed statistically significant reduction in nicotine addiction levels and smoking behavior following a self-efficacy program. Nevertheless, to optimize learning outcomes, diverse learning strategies are necessary [17,18]. For example, a study by Shin and Lee [19] found that online lessons and videos positively influence efficacy beliefs in smoking cessation. Moreover, Lauerer et al.'s study [18] indicated that a role-play with structured feedback in smoking cessation counseling yielded higher OSCE scores than merely watching a video example of counseling based on the 5A model. However, a statistically significant improvement was found only in the "Assist" component, such as setting a quit date, using medication for smoking cessation, informing family and friends, and removing all tobacco products.

Simulation-based learning, grounded in Kolb's experiential learning model [20,21], combines concrete practice experiences with standardized patients and critical reflection. These elements are crucial for meaningful learning, particularly in the debriefing process and application in real-world scenarios. This learning approach is not only effective for short-term knowledge acquisition and self-

confidence enhancement in smoking cessation counseling, but also for developing verbal and non-verbal skills over the long term. In this context, Karabacak et al. [22] observed significant improvement in nursing students' self-efficacy, clinical skills, and decision-making abilities following repeated simulation-based experiences, alongside increased satisfaction. Similarly, a pilot training program for medical students in Turkey incorporated a 4-h theoretical and interactive practical course. This course utilized the "Body Interact" application and standardized patients, based on the 5A model, in an OSCE exam setting. The pre- and post-test improvement rate exceeded 55%, with statistical significance at $p < 0.001$. However, there is a need for students to more promptly apply the 5A model in real-life smoking cessation counseling scenarios [23]. Additionally, institutions should develop more comprehensive counseling curricula with suitable tools to facilitate timely implementation.

The strength of this study lies in its diverse teaching activities, which include simulation-based learning with standardized patients, field training counseling, and practical experience in real situations. Engaging in self-critical reflection after simulations boosts confidence in assisting patients with smoking cessation, fostering sustainable learning in line with Kolb's learning cycle. However, the limitation of this study is that it employs the design of a one-group pretest-posttest model repeated three times, introducing potential biases and familiarity issues. Whether observed behavioral changes or score improvements stem from the program's impact or external factors remains unclear. Additionally, the small sample size of nursing students in this study limited the generalization of the overall population. Hence, further studies should be conducted between groups or RCTs with larger samples to confirm intervention. Practicing in clinical settings might boost students' confidence in communicating with patients. Future research should adopt a randomized controlled trial format to more accurately assess the program's effectiveness. Additionally, monitoring knowledge and counseling skills over an extended period is crucial.

5. Conclusion

Following the complete delivery of the program to the students, utilizing the 5A model alongside simulation-based learning and field training counseling effectively enhances nursing students' ability to manage tobacco consumption in various contexts including personal, familial, community, and societal levels. Particularly, simulation-based learning can help to improve self-efficacy for counseling tobacco cessation. Therefore, the program warrants expansion into both curricular and extracurricular activities. This expansion will enable nursing students to build confidence in smoking cessation counseling and play a pivotal role in tobacco cessation efforts.

Funding

This research was financially supported by the Chulabhorn Royal Academy, Thailand (Grant No. RI-01-2565/002).

Acknowledgments

We would like to thank all the patients who participated in this study. Special thanks to Assoc. Prof. Dr. Vilaiwan Thongchareon, Assoc. Prof. Dr. Surintorn Kalampakorn for consultation, and Lecturer Wuttipong Cheumnok for assistance with the simulation-based program in this study. We also thank Phoebe Chi, MD, from Edanz (www.edanz.com/ac), for editing a draft of this manuscript.

Conflicts of interest

The authors declare no conflicts of interest.

References

[1] World Health Organization [WHO]. WHO report on the global tobacco epidemic, 2023: protect people from tobacco smoke. Geneva: WHO; 2023 [cited 2024 Jan 2]. Available from: https://www.who.int/publications/i/item/9789240077164.
[2] Ruangkanchanasetr S. Situation of smoking consumption in Thailand 2022. Bangkok: Tobacco Control Research and Knowledge Management Center, Mahidol University; 2023 (In Thai).
[3] Ślusarczyk A, Zapała P, Zapała Ł, Radziszewski P. The impact of smoking on recurrence and progression of non-muscle invasive bladder cancer: a systematic review and meta-analysis. J Cancer Res Clin Oncol 2023 Jun;149(6): 2673−91. https://doi.org/10.1007/s00432-022-04464-6.
[4] Jeon J, Inoue-Choi M, Mok Y, McNeel TS, Tam J, Freedman ND, et al. Mortality relative risks by smoking, race/ethnicity, and education. Am J Prev Med 2023 Apr;64(4 Suppl 1):S53−62. https://doi.org/10.1016/j.amepre.2022.12.006.
[5] Watase M, Masaki K, Chubachi S, Namkoong H, Tanaka H, Lee H, et al. Impact of accumulative smoking exposure and chronic obstructive pulmonary disease on COVID-19 outcomes: report based on findings from the Japan COVID-19 task force. Int J Infect Dis 2023 Mar;128:121−7. https://doi.org/10.1016/j.ijid.2022.12.019.
[6] Grunze A, Mosolov S, Grunze H, Born C. The detrimental effects of smoking on the course and outcome in adults with bipolar disorder-A narrative review. Front Psychiatr 2023 Jan 9;13:1114432. https://doi.org/10.3389/fpsyt.2022.1114432.
[7] Jarlstrup NS, Thygesen LC, Grønbæk MK, Rod MH, Tolstrup JS. The impact of the Danish national smoking ban from 2007 on the incidence of eight smoking-related diseases: a nationwide register-based interrupted time series analysis. Nicotine Tob Res 2022;25(4):648−56. https://doi.org/10.1093/ntr/ntac257.

[8] Jankasem S, Kanokthet T. Evaluation of tobacco consumption control policy in Thai adolescents by the MPOWER strategic framework. J Dis Health Risk DPC.3 2021;15(3): 14−29 (In Thai). https://he01.tci-thaijo.org/index.php/JDPC3/article/view/247549.
[9] Boonruksa S, Panjinda W, Supaeng N, Keawduangto S. Teaching and learning activity for tobacco consumption: adult and elderly nursing division. Bangkok: Nurse Network on Tobacco Control of Thailand; 2020 (In Thai).
[10] Karunan K, Makchuchit S, Bunla P, Lertariyaponkul N. Effectiveness of the potential development model based on 5As counseling technique on community smoking cessation in nursing student leaders. Thai J Nurs 2022;71(1):20−7 (In Thai).
[11] Damkliang J, Kritpracha C, Prasartwanakit A, Chinnawong T, Vachprasit R, Thasaneesuwan S, et al. Nursing students' experiences of using the 5A's model for tobacco control among adult and elderly patients. JRN-MHS 2018;38(3):141−5.
[12] Singkhorn O, Natrakul M, Phadaennok N. Coaching student nurse leaders in motivation to smoking cessation based on ADDIE model. Thai J Nurs 2018;67(2):51−9 (In Thai).
[13] Bandura A. Self-efficacy: the exercise of control. New York: WH: Freeman; 1997.
[14] Wongpanarak N, Wongpiriyayothar A. The effects of a self-efficacy perception promoting program for nursing students in knowledge about tobacco and self-efficacy to promote smoking cessation. Nurs J CMU 2022;49(2):140−52 (In Thai).
[15] Napattaradechanon K, Phattharasitisomboo P, Laokompruittajarn J. Effects of a perceived self-efficacy-based smoking reduction program in participatory smoking reduction behaviors among university students addicted to cigarettes. J Health Nurs Educ 2023;29(2):1−15 (In Thai).
[16] Pungbangkadee R, Kalampakorn S, Panpakdee O, Rawiworrakul T. The effects of smoking cessation counseling video on knowledge and self-efficacy of nursing students. Thai J Nurs 2022;71(3):36−43 (In Thai).
[17] Hung CC, Kao HS, Liu HC, Liang HF, Chu TP, Lee BO. Effects of simulation-based learning on nursing students' perceived competence, self-efficacy, and learning satisfaction: A repeat measurement method. Nurse Educ Today 2021 Feb;97:104725. https://doi.org/10.1016/j.nedt.2020.104725.
[18] Lauerer E, Tiedemann E, Polak T, Simmenroth A. Can smoking cessation be taught online? A prospective study comparing e-learning and role-playing in medical education. Int J Med Educ 2021 Jan 28;12:12−21. https://doi.org/10.5116/ijme.5ff9.bccc.
[19] Shin SR, Lee EH. Effects of a smoking cessation counseling education program on nursing students. Healthcare (Basel) 2023 Oct 13;11(20):2734. https://doi.org/10.3390/healthcare11202734.
[20] Morris TH. Experiential learning − a systematic review and revision of Kolb's model. Interact Learn Environ 2020;28(8): 1064−77. https://doi.org/10.1080/10494820.2019.1570279.
[21] Ghali H, Ben Sik Ali H, Ben Cheikh A, Bhiri S, Khefacha S, Ben Rejeb M, et al. Educational effectiveness of simulation in teaching health science students Smoking cessation: A Systematic Review. Tunis Med 2022 fevrier;100(2):102−13.
[22] Karabacak U, Unver V, Ugur E, Kocatepe V, Ocaktan N, Ates E, et al. Examining the effect of simulation based learning on self-efficacy and performance of first-year nursing students. Nurse Educ Pract 2019 Mar;36:139−43. https://doi.org/10.1016/j.nepr.2019.03.012.
[23] Karadoğan D, Ardıç C, Telatar TG, Kanbay Y, Kayaalp E, Dedecan MA, et al. Towards a comprehensive tobacco-cessation approach: A pilot-training using simulation based-learning among medical students in Türkiye. Tob Induc Dis 2023 Sep 25;21:118. https://doi.org/10.18332/tid/170278.