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Teaching and learning of smoking cessation and tobacco control in the pharmacy program: A cross-sectional survey study

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ABSTRACT

Introduction: Pharmacists play an important role in smoking cessation programs. A lack of knowledge among pharmacy students can create a barrier to providing smoking cessation support. Pharmacy training programs should integrate smoking cessation techniques into the core curriculum. **Objective:** We aimed to explore the current teaching practices for smoking cessation and tobacco control in pharmacy curricula in Thailand. **Methods:** A questionnaire surveying tobacco control curricula and teaching techniques were distributed to faculty members in all 19 pharmacy departments in Thailand. **Results:** Twenty-nine faculty members participated in this study. Most pharmacy programs start teaching smoking cessation and tobacco control in the 3rd and 4th years of the 6-year pharmacy program. This instruction totals between 2 and 3 h integrated with other topics. Lecture was the primary teaching method, comprising at least 50% of instruction according to 97% of respondents. Programs exhibited high uniformity in curricula with 8/13 surveyed topics covered by 100% of respondents. Multiple-choice examination was the most common method for evaluating students. **Conclusions:** All pharmacy faculties in Thailand are teaching and assessing pharmacy students on smoking cessation and tobacco control in alignment with Thai smoking cessation practice guidelines. Content and teaching techniques did vary slightly between institutions.

Keywords: Smoking cessation, teaching, curriculum, pharmacy

INTRODUCTION

Smoking has long been a significant public health problem in Thailand. In the Thai population, smoking has a prevalence of 19.08% (10.68 million) among those above 15 years of age, and over 50,710 people in the country die of smoking-related diseases each year. Further, approximately 1.0 million Thai people are sick or disabled with serious chronic diseases from smoking.[1,2]

Smoking cessation warrants sincere attention from health-care professionals and smokers alike. It is an important intervention to reduce hospitalization and mortality due to tobacco use. At present, Thailand is making a substantial effort to control tobacco smoking. For example, Thailand has joined the World Health Organization Framework Convention on Tobacco Control and has passed and promulgation the Tobacco Products Control Act 2017.[3] Smoking cessation programs play a central role in this effort.

Health-care professionals can help encourage smoking cessation among patients.[4,5] Pharmacists are in a unique position to encourage smokers to reduce and quit smoking.[6] Moreover, pharmacists can access a wide range of patients in need of support. Smokers who receive advice and assistance from pharmacists have higher rates of cessation.[7,8]

A lack of knowledge among pharmacists can create a barrier to providing smoking cessation support, but this barrier can be overcome with better smoking cessation training in pharmacy

training programs.[6] Moreover, there is hope that smoking cessation is being increasingly recognized as an important component in medical training. In two worldwide surveys conducted 10 years apart, it was found that medical schools had a specific module on smoking cessation and medical programs integrated smoking cessation into the curricula of other modules. With respect to pharmacy training specifically, there are no comprehensive data available, but smaller scale studies are promising.[5,9,10] For example, in the United Kingdom, 100% of pharmacy training programs dedicate time to teaching about smoking cessation, and 76% spend over 3 h on the topic.[11]

An additional barrier to overcome has to do with the effectiveness of teaching programs. Effective teaching techniques can enhance competency.[12,13] Specifically, hands-on pharmacy clerkships[13] and experience-based learning,[12] in general, have been shown to yield the highest level of competency. In Thailand, all 19 pharmacy faculties have offered their pharmacy curricula as a 6-year Doctor of Pharmacy (PharmD) program. The PharmD curriculum provided students with the scientific knowledge during the first 5 years and clinical skills necessary during the 6th year with the specialized clerkships.[14] This encouraged that all pharmacy graduates have been equipped with the knowledge and skills to provide practical smoking cessation advice and support. Published evidence revealed that 78% of medical schools utilize lectures to teach about smoking cessation.[15] This is likely a problem in pharmacy programs as well, and a study of students in one pharmacy program found that <½ exhibited a high level of knowledge or practical ability.[5]

Considering Thailand's current focus on smoking cessation and the lack of knowledge on smoking cessation programs in pharmacy faculties generally, we conducted a cross-sectional survey of all 19 Thai pharmacy programs to explore current teaching practices for smoking cessation and tobacco control in pharmacy curricula in Thailand.

METHODS

This study was approved by the Research Ethics Committee of Payap University, Thailand (Ethics Ref: PYU_REC No. 633/070).

The self-administered questionnaire was developed from literature reviews and guidelines for pharmacists in smoking cessation counseling and a practical manual for the treatment of tobacco addiction.[7,16,17] It has two sections. The first assessed curriculum content with respect to smoking cessation (open question). The Thailand Qualifications Framework 3, a course syllabus that proposes information involved the priority of course management, was used to fill out the survey information. The second was divided into four parts: 1. Demographic characteristics of respondents (open questions), 2. Topics of teaching and learning smoking cessation and tobacco control including course contents and educational methods (open and multiple-choice question), 3. Learning assessment methods (multiple-choice question), and 4. Comment on the current course and suggestions for a future course (yes/no and open questions). A major goal of this section was to assess the current situation of teaching and learning topics, teaching methods, and students' learning assessments. Content validity tests and usability testing were conducted by three experts, including three pharmacy faculty members (none of whom participated in the survey). The questionnaire took approximately 30 min to complete.

Through faculty coordinators at all 19 pharmacy faculties in Thailand, we distributed the questionnaire to appropriate staff. Specifically, we targeted all lecturers who currently teach the topic of smoking cessation and tobacco control as well as faculty leaders in charge of curriculum decisions. We also required lecturers to have at least 2 years of experience teaching tobacco and smoking cessation. Three copies of the questionnaire were sent to each pharmacy faculty. The questionnaire could be duplicated if needed.

The survey took place between January 2021 and February 2021. Statistical Package for the Social Sciences software package was used to analyze the data. Descriptive statistics were used to summarize the data (frequency, percentage, mean, and standard deviation) as appropriate. The content analysis method was used to analyze qualitative data. Two researchers checked the adequacy of the analysis and discuss any divergent opinions.

RESULTS

In total, 29 faculty members from all 19 pharmacy faculties in Thailand participated in this survey. The demographic characteristics of respondents are shown in Table 1. Most pharmacy faculties have returned at least one complete questionnaire (12/19; 63.2%). The majority of the participants graduated with doctoral degrees (16/29; 55.2%). More than half of the participants held academic positions as assistant and associate professor (15/29; 51.4%). The mean experience on smoking cessation and tobacco control was 6.65 years.

Teaching and Learning Smoking Cessation and Tobacco Control

Individual institutions featured smoking cessation in the curricula of between 1 (4/19) and 9 subjects (1/19). Most

Table 1: Demographic characteristics of respondents (n=29)

Characteristic	Number (%)
1. Highest academic qualifications	
Bachelor's degree	4 (13.8)
Master's degree	5 (17.2)
Doctorate	16 (55.2)
Board Certified Pharmacotherapy Specialist	2 (6.9)
Postgraduate Diploma	2 (6.9)
2. Academic position	
Lecturer	14 (48.3)
Assistant professor	12 (41.4)
Associate professor	3 (10.3)
3. Number of respondents/faculties	
1	12 (63.2)
2	4 (21.0)
3	3 (15.8)
4. Experience on the topic of smoking cessation and tobacco control	Min-Max: 1–15 years Mean: 6.6±4.2 years

pharmacy programs start teaching smoking cessation in the 3rd year (6/19) and the 4th year (10/19) of the 6-year pharmacy program. One program starts teaching smoking cessation in the 1st year. All faculties of pharmacy in Thailand offer the topic of smoking cessation and tobacco control. Across institutions, smoking cessation featured in 52 topics of instruction. Total instruction time for each smoking cessation topic was typically either 2 or 3 h (27/52). In addition, some subjects are lectured and taught in conjunction with practice. Teaching involving practice typically lasted 3 h (17/52) [Table 2].

Course Content

We surveyed respondents about the inclusion of 13 specific topics concerning smoking cessation. The data indicated that curricula were fairly uniform across institutions with eight topics being taught in 100.0% (19/19) of pharmacy faculties. Only 57.9% (11/19) of pharmacy faculties taught tobacco control legislation as the lowest ranking topic [Table 3].

Table 2: Teaching and learning smoking cessation and tobacco control in Thai pharmacy program

Teaching and learning characteristics	Number
1. Number of subjects that integrated smoking cessation topics	(*n*=19)
1 subject	3
2 subjects	10
3 subjects	2
4 subjects	2
7 subjects	1
9 subjects	1
2. Year of started teaching smoking cessation	(*n*=19)
1st year	1
2nd year	1
3rd year	6
4th year	10
5th year	0
6th year	1
3. Time devoted to each smoking cessation topic (range);	(*n*=52) lecture, practice
5–30 min	9, 4
31–59 min	2, 0
1–<2 h	5, 4
2–3 h	27, 17
>3 h	2, 7
4. Teaching style on the topic of smoking cessation	(*n*=52)
Lecture only	21
Practice only	2
Clerkship only	2
Lecture and practice	18
Lecture, practice, and clerkship	5
Others (i.e., assignment and extracurricular activities)	4

Some programs reported additional topics beyond the 13 specifically questioned. Specifically, communication skills in advising on smoking cessation, counseling/motivational interview techniques, the role of a pharmacist in a smoking cessation clinic, and drug-tobacco interaction. They also teach the topic of smoking cessation monitoring tools such as population, intervention, control, and outcomes and cotinine strip tests.

Educational Methods

The most common education technique was the lecture, which was reported at 96.6% (28/29) of faculty members. The second and third were problem-based learning (PBL) and experiential learning (ExL) at 72.3% (21/29) and 41.4% (12/29), respectively. The least used educational method was game-based learning (2/29; 6.9%). When considering the amount of time spent using different teaching techniques, the survey found that 69.0% (20/29) of faculty members use direct instruction over 50% of the time. For PBL, 31.0% (9/29) of faculty members use this method for about 50% of their course instruction time and 17.2% (5/29) of them use PBL more than 50% of their course. ExL accounted for a small share of teaching methods used; 20.7% (6/29) of faculty members reported using it <50% of the time [Figure 1].

Learning Assessment

Most of the faculty members choose multiple-choice examinations to evaluate students' learning. For 12/13 of the learning topics shown in Table 2, multiple choice was the primary method of evaluating students' learning. Objective

Table 3: Proportions of topics teaching and learning smoking cessation and tobacco control in Thai pharmacy program (*n*=19)

Teaching topics	Teaching and learning offer in the pharmacy programs	
	n	(%)
General information about tobacco products	19	100.0
The 5A's technique for brief interventions to quit smoking	19	100.0
Identifying stages of readiness to change	19	100.0
The 5R's model to increase quitting motivation	19	100.0
The 5D's technique for behavioral support to quit smoking	19	100.0
Assessing nicotine dependence	19	100.0
Pharmacotherapy for smoking cessation	19	100.0
The use of herbs and supplements to help quit smoking	19	100.0
The STAR techniques to assist patient to quit smoking	18	94.7
Health effects of smoking	18	94.7
Electronic cigarettes	17	89.5
Effects of cigarette smoking on the environment	15	78.9
Tobacco control legislation	11	57.9

structured pharmacy examination (OSPE) was the second most common evaluation technique (6/13), and six out of 13 topics were evaluated using the questions and answers (Q&A) technique [Figure 2].

Faculty Assessment of Programs

The faculty members rated their programs as generally appropriate to the goals. Specifically, they indicated approval

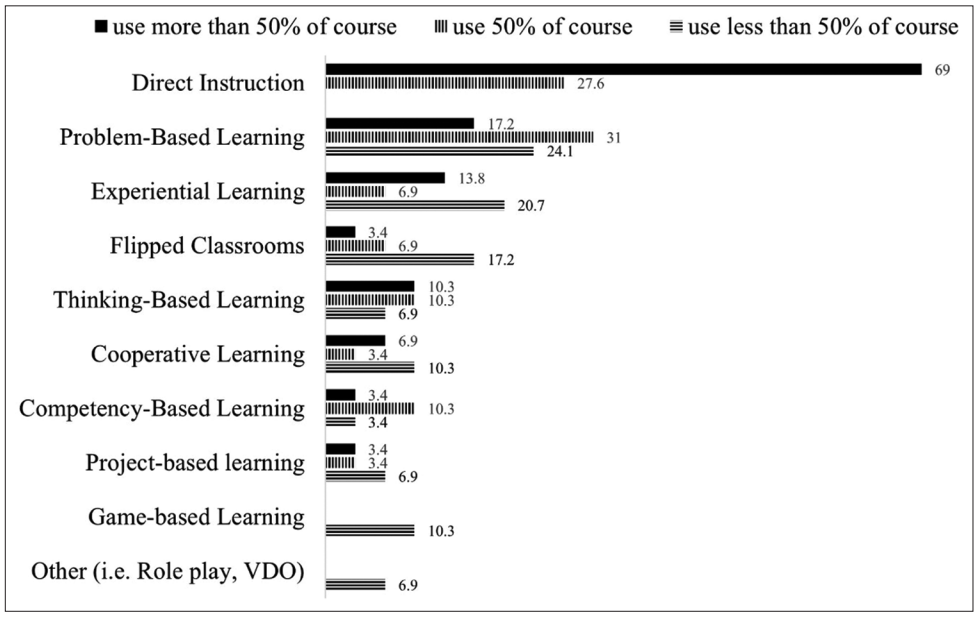
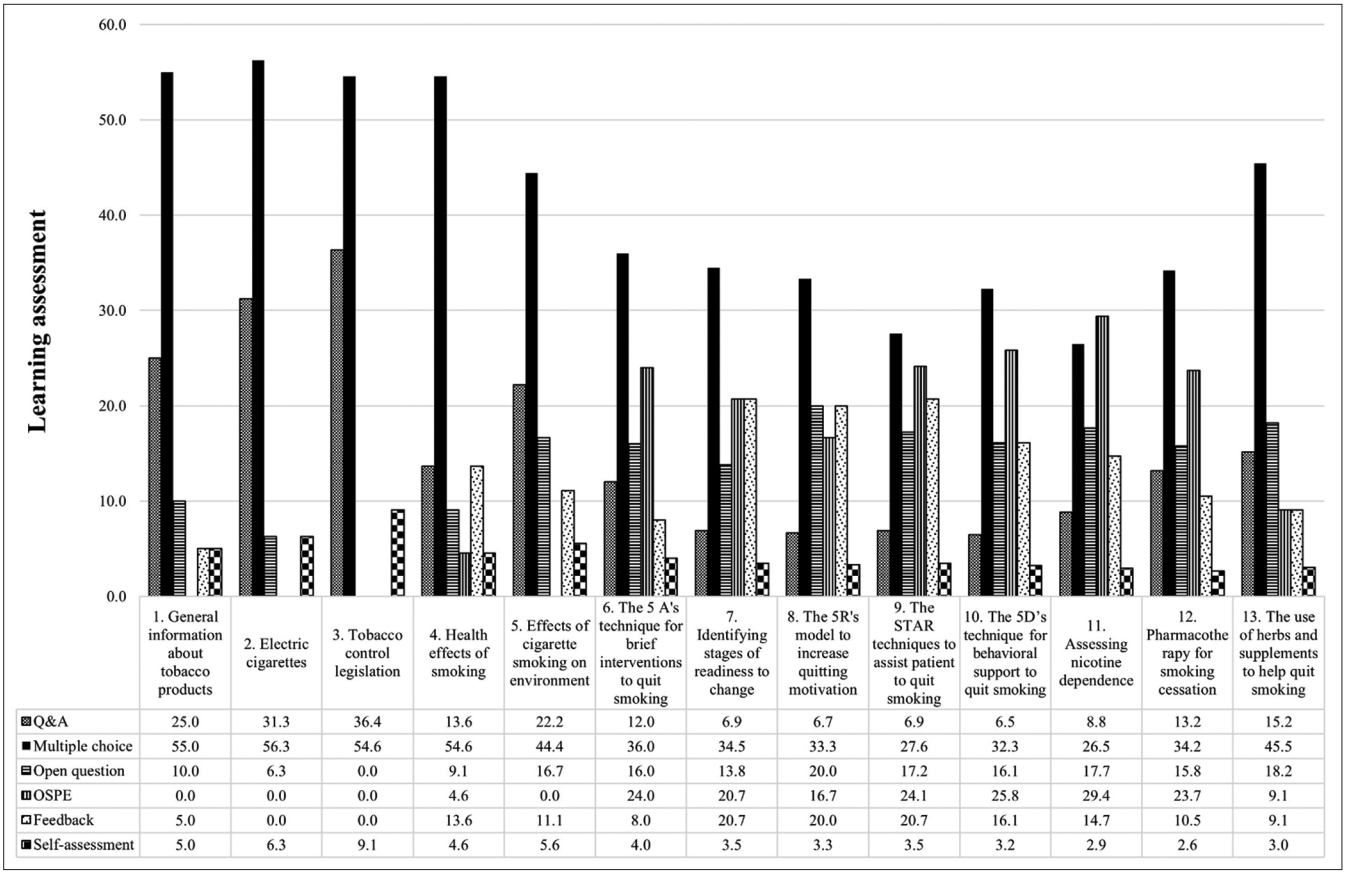


Figure 1: Proportion of educational methods in smoking cessation and tobacco control course



	1. General information about tobacco products	2. Electric cigarettes	3. Tobacco control legislation	4. Health effects of smoking	5. Effects of cigarette smoking on environment	6. The 5 A's technique for brief interventions to quit smoking	7. Identifying stages of readiness to change	8. The 5R's model to increase quitting motivation	9. The STAR techniques to assist patient to quit smoking	10. The 5D's technique for behavioral support to quit smoking	11. Assessing nicotine dependence	12. Pharmacotherapy for smoking cessation	13. The use of herbs and supplements to help quit smoking
Q&A	25.0	31.3	36.4	13.6	22.2	12.0	6.9	6.7	6.9	6.5	8.8	13.2	15.2
Multiple choice	55.0	56.3	54.6	54.6	44.4	36.0	34.5	33.3	27.6	32.3	26.5	34.2	45.5
Open question	10.0	6.3	0.0	9.1	16.7	16.0	13.8	20.0	17.2	16.1	17.7	15.8	18.2
OSPE	0.0	0.0	0.0	4.6	0.0	24.0	20.7	16.7	24.1	25.8	29.4	23.7	9.1
Feedback	5.0	0.0	0.0	13.6	11.1	8.0	20.7	20.0	20.7	16.1	14.7	10.5	9.1
Self-assessment	5.0	6.3	9.1	4.6	5.6	4.0	3.5	3.3	3.5	3.2	2.9	2.6	3.0

Figure 2: Proportion of learning assessment methods on smoking cessation and tobacco control in the pharmacy program

for curricula at rates of 96.6% (28/29), the year of students receiving the instruction 96.6% (28/29), the subject/course into which smoking cessation was integrated 89.7% (26/29), and the total time spent on smoking cessation 79.3% (23/29). However, the curricula varied depending on the available time for instruction. A limitation of time, such as 30 min, necessitated a focus on general information only. Five respondents noted that the learning details needed to be more succinct because of limited instruction time (5/29), and four noted that it was not possible to organize hands-on practice with real patients (4/29).

Suggestions for Future Course

Respondents suggested that future pharmacists should be trained in providing smoking cessation services through tele-pharmacy. The topics of e-cigarette and tobacco legislation should be made compulsory in all pharmacy curricula. Pharmacy students should be given more practice with smoking cessation services, particularly with real patients (4/29). The future of assessment should derive from patient feedback (2/29). Finally, the faculty members suggested that the topics of smoking cessation and tobacco control should be mandatory in the Thai Pharmacist Licensure Examination.

DISCUSSION

Here, we report the curricula, teaching techniques, and evaluation techniques used by pharmacy faculties throughout Thailand to teach smoking cessation and tobacco control. All 19 pharmacy programs featured smoking cessation. Curricula were largely uniform and fairly comprehensive. We found that the pharmacy faculties in Thailand also educate pharmacy students like other health-care professional schools.[11,15] As smoking cessation has been an important public issue of concern, the respondents' answers in this survey might be influenced by social desirability. However, this also reflected the importance of the smoking cessation issue in pharmacy programs in Thailand.

Instruction on smoking cessation topics totaled between 2 and 3 h in lecture plus an additional three practice hours in some pharmacy programs. The majority of faculty members agreed that the amount of study time was appropriate, and 3 h is similar to the amount of time reported for smoking cessation instruction in pharmacy programs in the UK, the USA, and Australia.[9-11] One 3 h smoking cessation workshop taught to pharmacy students yielded an improvement in knowledge and attitude toward smoking cessation.[9] Some faculty members in our sample indicated that 3 h of study time was insufficient, particularly for practical skill training. However, the previous study revealed that medical programs typically devoted 7–8 h to teaching about tobacco control but lack of time in the medical program was still their main barrier.[15] Therefore, it is unclear what the correct number of hours is, and it is likely dependent on learning objectives.

Smoking cessation was typically integrated with other topics. The content taught was generally based on Thai practice guidelines.[6,7,17] Main topics covered in all programs included general information about tobacco, brief intervention methods, evaluation, motivation, prevention, assessment techniques, and medications used for smoking cessation which are the main topics taught. Consistent with the UK pharmacy schools, pharmacotherapy, especially for nicotine replacement therapy, and the role of behavioral support were taught in all pharmacy schools.[11] However, additional topics related to e-cigarette should also be taught in all pharmacy programs. At present, information about e-cigarettes has become more important in recent years as population use has increased.[18] Only 89.47% (17/19) of pharmacy faculties discussed e-cigarettes, and comparable figures were recorded for pharmacy education in the UK.[11] According to the health effects of e-cigarettes are still unclear, health-care professionals should be knowledgeable about e-cigarettes, and information about them should feature in pharmacy curricula.

At present, medicinal plants are widely used as natural supplements for smoking cessation in Thailand. *Vernonia cinerea* tea was included in the Thai National List of Essential Medicine for smoking cessation.[19] We found that herbal remedies were covered in all Thai pharmacy programs. By contrast, pharmacy programs in the UK and medical programs typically do not focus on herbal remedies.[11,15]

The multiple-choice examination was an effective way to help students practice retrieving information.[20] In this study, evaluation was done primarily with multiple-choice examinations. We found that OSPE and Q&A techniques were chosen in conjunction with the multiple-choice examination in most topics. Although the learning assessment in this study was already based on learning objectives and classroom context, future studies should consider adopting appropriate assessment approaches.

Teaching methods were heavily biased toward lectures followed by PBL. In consonance with medical schools, the most popular way of teaching was lectures followed by case study discussion and PBL. However, the lecture is the least effective educational method to promote smoking cessation skills.[15] A study in the UK found that lack of practical skills training may leave pharmacy students unprepared to provide smoking cessation interventions.[11] Consistent with nursing students in Thailand did not exhibit sufficient skills to provide efficient smoking cessation services after a lecture-based training program.[21] Some of the faculty members in this study worried that students may be receiving inadequate practice, especially with real patients. This problem has been a more significant concern due to practice and training was replaced by online learning since the COVID-19 pandemic began. Although well-designed instructional strategies within the curriculum consisted of lectures, PBL, and increasing practice experience can help prepare students' knowledge, skills, and attitude for the wide spectrum of smoking patients,[9] Thai pharmacy faculties will need to work hard on future teaching management approaches to overcome the problem of inadequate practice training for undergraduate pharmacy students in this challenging situations.

Some limitations should be acknowledged. First, this survey took place before the COVID-19 outbreak. At present, the teaching methods have certainly changed from the surveyed and the effectiveness of online teaching on developing skills regarding smoking cessation was still in doubt. Therefore, the COVID-19 pandemic might invalidate the result of the study

on teaching methods. Second, the study did not consider the quality of teaching and learning effectiveness. Therefore, the study result cannot ensure that all pharmacy graduates possess or have adequate requisite knowledge and skills of smoking cessation to provide comprehensive cessation interventions. Future studies should directly assess competency and confidence in smoking cessation among undergraduate pharmacy students to ensure that they have achieved learning objectives.

CONCLUSIONS

This study surveyed all pharmacy faculties in Thailand. It is the first national survey of teaching curricula and techniques for smoking cessation and tobacco control in pharmacy programs. We found that all programs teach their students about smoking cessation and tobacco control. All Thai pharmacy faculties devoted time to herbal remedies for smoking cessation, including *V. cinerea*. Some faculty members expressed concern that the amount of time devoted to smoking cessation and the reliance on lecture-based teaching may not sufficiently prepare students. Future studies should explore the effectiveness of smoking cessation teaching and the impact of different teaching methodologies. As a result, pharmacy organizations and stakeholders should establish policies or standards addressing the professional's education in smoking cessation and tobacco control.

DISCLOSURE STATEMENT

The author reports no conflicts of interest in this work.

AUTHORS' CONTRIBUTIONS

Pantira Parinyarux: Conceptualization, methodology, validation, formal analysis, investigation, writing – original draft preparation, and visualization. Adinat Umnuaypornlert: Conceptualization, methodology, validation, writing – reviewing and editing, and visualization. Kornkaew Chanthapasa: Conceptualization, visualization, supervision, project administration, and funding acquisition.

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