Effectiveness of smoking cessation program applying the transtheoretical model among students of Siam University

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Abstract

Purpose – The purpose of this study is to examine effectiveness of smoking cessation program applying the transtheoretical model among students of Siam University. Design/methodology/approach- The one group pretest-posttest quasi experimental study was conducted among students of Siam University in January- February 2018. A total of 80 male undergraduate students participated in the study. 40 smokers male students were an experimental group and 40 of non smokers male were controls. The experimental group was participated in a smoking cessation program according to their stage readiness toward changing behaviors. They met for the transtheoretical model for group discussion and cessation counseling for 2 days. A self-administered questionnaire was used to collect data. Compare differences between mean scores before and after the experimentation by paired t-test. Findings – All of 80 student participants were male. At 4th week after receiving the transtheoretical model for group counseling, the experimental group had a significantly higher mean score for decision balance, self-efficacy, and smoking cessation behaviors than before the experimental ($p<0.05$). Originality/value – These study results especially smoking behavior before experimentation and the abnormal electrocardiogram of smokers re-emphasized the rising public health concern of tobacco use among younger boys. Therefore, if one can prevent or restrain adolescent from undesirable behaviors, this would contribute a great deal to the public health and society.

Keywords: Smoking, Cessation program, Siam University

I. INTRODUCTION

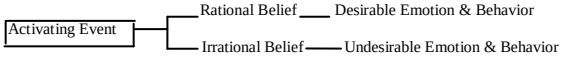
Smoking is one of the leading causes of morbidity and mortality in the United States [1]. It is estimated that the total number of deaths from these two causes will be 1.6 billion in 2025. The number of smokers will increase in Third World countries from 4.5 billion to 7.1 billion by 2025 [2]. The World Health Organization reports that tobacco products kill their users. Tobacco kills nearly 6 million people each year. More than 5 million of these deaths are the result of direct tobacco use while more than 600,000 are the result of non-smokers being exposed to second-hand smoke. Unless urgent action is taken, the annual death toll could rise to more than 8 million by 2030.

Also, secondhand smoke is detrimental to children's lungs and causes a greater probability of heart disease in adult nonsmokers [3]. Both active and passive smoking are associated with an increased risk of coronary heart disease [4-5] and cancer. Tobacco use starts at a young age, and the majority of adult smokers started using tobacco in their adolescence. When adolescent experimentation with tobacco becomes regular, it usually turns into a strong addiction, making it harder to quit later in life [6]. The Global School-based Student Health Survey (2016) reported that 29.4 percent of students aged 13–17 years old were current users of tobacco [7]. The Global Youth Tobacco Survey (2009) of Thailand showed that 20.7 percent of adolescents smoked tobacco. A recent survey in Thailand showed that the trend of tobacco use among Thai youth has decreased substantially from 19.9% (2015) to 7.8 % (2017) [8].

Tobacco use among adolescents had been associated with socio-demographic factors, including age, gender, residence, tobacco use by parents, siblings and peers [9–10]. Studies have found associations between smoking and an adolescent's personality and self-esteem. Studies of motivational smoking cessation programs [11] found that program should be investigated and for the further research needs the evidence of intervention to stop smoking, for the effect of cognitive intervention on tobacco smoking among adolescent [12] found that cognitive intervention program incorporated anti-smoking beliefs, and find it easier to stop smoking. In Thailand, there also were some studies on tobacco use among adolescents.

This study explored adolescents' cognitive and behavioral responses to the transtheoretical model of Corey (2012) (Diagram 1) that impact adolescents' smoking and how these responses depend on transtheoretical model implementation (change from irrational belief to rational belief).

Diagram 1: Transtheoretical model



II. METHODS

Study design and participants

The one group pretest-posttest quasi experimental study was conducted among students of Siam University. The data on tobacco use among students and their characteristics were obtained in January- February 2018. The sample was selected with inclusion criteria of the following: being willing to participate this study, 17-25 years old, and being healthy. The exclusion criteria were active illness during study, and, drug abuse and cannot complete in whole study. A total of 80 undergraduate students participated in the study. 40 smokers

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male students (follow inclusion criteria) were using a purposive simple random sampling and were an experimental group and 40 of non smokers male were controls. The experimental group participated in a smoking cessation program according to their stage of readiness towards changing behaviors. They met the transtheoretical model (rational emotive behavior therapy) (Diagram 1), for group discussion and cessation counseling for 2 days. A self-administered questionnaire was used to collect data. SPSS version 17 was used for data analysis. Descriptive statistics were used to describe the participant's demographic characteristics and their tobacco use behavior. Differences between mean scores before and after the experimented were investigated using paired t-test, where a p-value of 0.05 was considered statistically significant.

III. RESULTS

Demographic information

The characteristics of the participants both smokers and nonsmokers were shown in Table 1. There were 80 students who took part in the study. All of them, 80 were male undergraduate students. Their ages ranged from 17 to 22 years with the majority of them ≥ 21 years (45% of smoking and 40% of nonsmoking). Almost smokers used tobacco among their friends (75%). Most of the students described themselves as extroverts. Smoking behaviors

The distribution of smokers according to the quantity of cigarettes they smoke is shown in figure1.47.5% of the participant (n=40) smoked 1-5 cigarettes per day. 12.5% smoked 6-10 cigarettes per day. 15% smoked 11-15 cigarettes per day. 20% smoked 16-20 cigarettes per day and 5% smoked more than 20 cigarettes per day (Figure 1).

Factors in Smoking Cessation

The participants were asked "what would help you to quit smoking". All 40 smokers choose one or more of the answers. 32.5% said that a change in habits helped participants to quit smoking. 25% said Self-motivation and 20.0% said exercise (Table 2). Individual counseling, hypnosis and gum did not work for the participants (2.5%) (Table 2). For the comparison of the smoking behavior and dysrationalia of smoking participants who smoked at 4^{th} week before and after receiving the transtheoretical found that after receiving the transtheoretical model had a significantly lower mean score for the smoking behaviors (3.2±0.59, 2.89±0.50) at $p<0.05$ and significantly lower mean score for the dysrationalia of smoking (2.90±0.60, 2.46±0.36) at $p<0.01$ respectively than before the experimental (Table 3).

This study also has checked for the electrocardiogram (EKG) of smokers and nonsmokers. An abnormal EKG of smokers result shown in Figure 2 which may risk of cardiovascular disease than nonsmokers (Figure 2).

IV. DISCUSSION

The majority age of study participants were 20-22 years, male, and had never been married; most (47.5%) smoked 1-5cigarettes per day. These results support the articles by Solberg et al. [13] and Green et al. [14] in which the majority of college-aged students do not smoke. The majority of the participants who did smoke had succeeded in smoking cessation but then started smoking again and most of the participants had tried to quit smoking multiple times. Also, the top two reasons for wanting to quit were health and money. Most of the participants in this study indicated that they believe they will quit smoking. This finding was different from Steinberg et al. [15] who indicated that half of their high school population believed they would still be smoking in the future. The sample revealed that change in habits; self-motivation, and exercise were the methods selected most frequently to be effective in smoking cessation. The participants also indicated that they would change their personal habits and exercise routine in order to become tobacco free. These findings are useful in developing a smoking cessation program and need to be further explored to identify specific interventions that are effective in smoking cessation. Furthermore, the participants indicated that most of the answer choices concerning what to include in a smoking cessation program were important or very important. This indicates that a comprehensive approach that includes physical, psychosocial and medicinal elements is needed in a smoking cessation program for the college age population. Staten & Ridner [16] also found that college age students (18-24 years old) need a comprehensive smoking cessation program. Sussman et al. [17] found that including social influence, cognitive behavioral approach, motivation and medical in their smoking cessation programs proved to be effective in teenagers. This comprehensive approach in this study is similar to the results found in other than the age difference [17]. Bauld et al. [18] found that group therapy and medication were effective in smoking cessation programs. Schreuders et al. [19]

Cigarette smoking is established as a major risk factor for coronary heart disease. The effect is caused by various factors such as sympathetic activation and inflammation [20,21]. Similarly of this study showed 38/40 (95%) of smokers had an abnormal EKG that may be a higher risk of cardiovascular disease than nonsmokers.

V. CONCLUSION

Change in habits, self-motivation and exercise were the top three answers for the most effective way to quit smoking. The most effective smoking cessation program in this study were the transtheoretical model (rational emotive behavior therapy, the support results from table II intervention of change habit and self motivation aid in smoking cessation with 32.5% and 25%, respectively.) for the college-age smokers for this population wanting to quit. It is important to: educate adolescent smokers about the harmful effects of smoking; educate younger populations that are at risk for smoking; and educate students from healthcare professions on how to best help their patients make the choice to quit smoking.

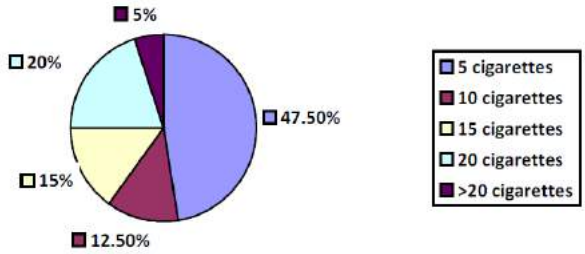

Fig. 1: Distribution of smokers according to the quantity of cigarettes smoked for the whole period of smoking (units in % number of cigarette smoked per day and n=40)

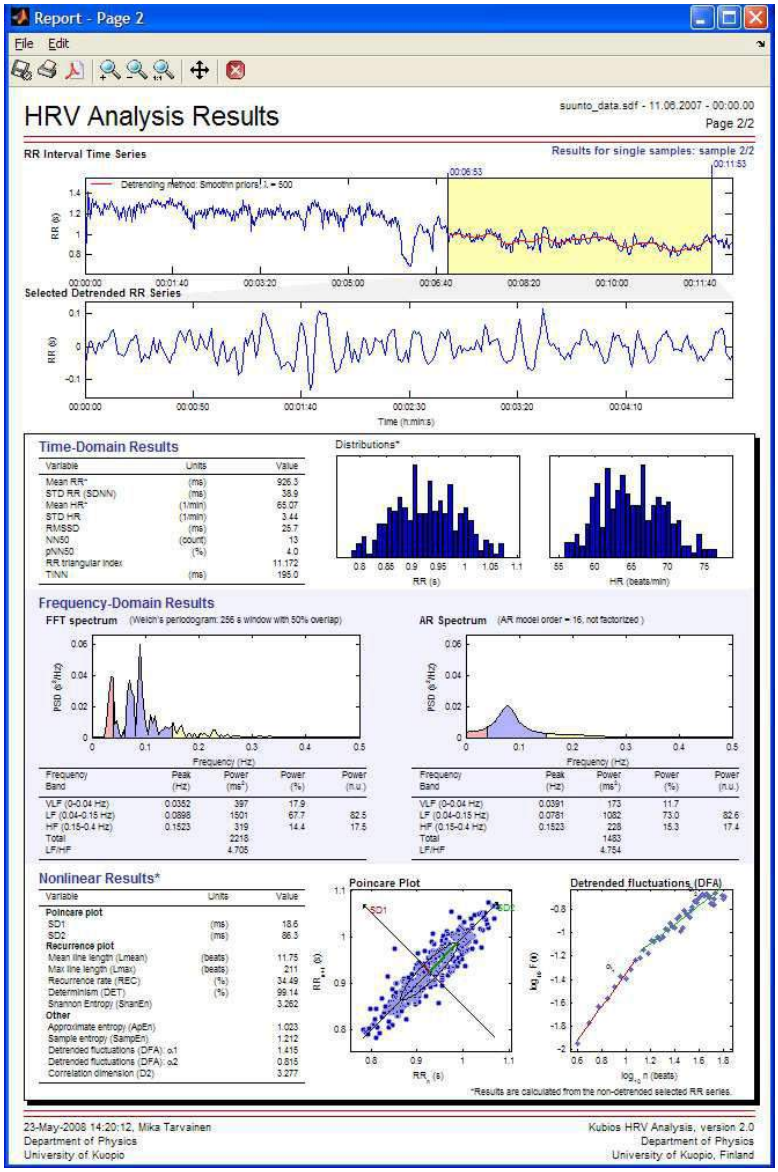

Fig. 2: The abnormal electrocardiogram of smokers

TABLE I. DESCRIPTIVE DATA AND CHARACTERISTICS OF THE STUDY SAMPLE IN RELATION TO SMOKING

PARAMETER	**SMOKERS** n (%)	**NONSMOKERS** n (%)	**P-VALUE**
Age (year)	$\bar{X}$ = 19.85 years	X = 19.70 years	
17	2/40 (5)	2/40 (5)	NS
18	4/40 (10)	6/40 (15)	NS
19	10/40 (25)	10/40 (25)	NS
20	6/40 (15)	6/40 (15)	NS
≥ 21	18/40 (45)	16/40 (40)	NS
Gender			
Male	40/40 (100)	40/40 (100)	NS
female	-	-	
Academic year classification			
1	2/40 (5)	2/40 (5)	NS
2	4/40 (10)	6/40 (15)	NS
3	16/40 (40)	16/40 (40)	NS
4	18/40 (45)	16/40 (40)	NS
Start smoking (year)			
10	2/40 (5)	-	-
13	10/40 (25)	-	-
14	10/40 (25)	-	-
15	18/40 (45)	-	-
Marital status			
Single	40/40 (100)	40/40 (100)	NS
Married	-	-	
Need to give up smoking	40/40 (100)	-	-

TABLE II. INTERVENTIONS THAT AID IN SMOKING CESSATION (N=40)

INTERVENTIONS	**N(%)**
Hyonosis	1/40 (2.5)
Individual Counseling	1/40 (2.5)
Gum	1/40 (2.5)
Don't Know	2/40 (5)
Medicine	4/40 (10)
Exercise	8/40 (20)
Self-Motivation	10/40 (25)
Change Habits	13/40 (32.5)

TABLE III. THE COMPARISON OF SMOKING BEHAVIORS THE DYSRATIONALIA OF SMOKING BEFORE AND AFTER RECEIVING THE TRANSTHEORETICAL MODEL

PROGRAM		MEAN SCORE OF SMOKING BEHAVIORS					MEAN SCORE OF DYSRATIONALIA OF SMOKING				
	n	M	SD	df	t	p	M	SD	df	t	p
Before	40	3.20	0.59	39	-2.30*	0.03	2.90	0.60	39	2.96**	<0.01
After	40	2.89	0.50				2.46	0.36			

*p<0.05 **p<0.01

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