ASSESSMENT OF A NEW SMOKING CESSATION PROGRAM AT THAMMASAT UNIVERSITY HOSPITAL, PATHUM THANI, THAILAND

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Abstract. The Smoking Cessation Clinic (SCC) at Thammasat University Hospital had only 27 patients from October 2013 to September 2014 and a quit rate of only 3.7%. A new smoking cessation program was implemented at the end of 2014 to improve success rates. This new program is an interdisciplinary program that includes several health care specialists. The study aimed to examine the characteristics of the smokers and the outcomes after implementing the new program with an interdisciplinary approach at the SCC in order to gain data to improve the efficacy of the SCC. This prospective descriptive study was conducted by the SCC from December 2014 to December 2015. During the study period 111 patients attended the SCC under the new program and all were included in the survey; 100 (90.1%) were men. The mean (±SD) age of these patients was 56.5±13.5 years. The mean (±SD) age of onset of smoking was 18.5±5.5 years. Smoking cessation in the program was checked by measuring the exhaled carbon monoxide levels at 6 months after reporting smoking cessation. A level less than 10 parts per million was considered not to be a smoker. Of the 111 patients, 14 (12.6%) had reported smoking cessation and had an exhaled carbon monoxide level less than 10 parts per million. The new smoking cessation program was attended by more patients and had a higher success rate than the previous smoking cessation program, although the smoking cessation success rate was still low. Further studies are needed to determine which factors improved cessation rates and to determine other factors associated with successful smoking cessation in the study population.

Keywords: smoking cessation clinic, interdisciplinary approach, quit smoking, health promotion

INTRODUCTION

Smoking is a major public health problem worldwide and a leading cause of preventable death. Smoking can cause lung cancer, chronic obstructive pulmonary disease, cardio-cerebrovascular diseases, social and economic problems and premature death (Samet, 2013). However, smoking cessation is difficult as evidenced by low smoking cessation success rates of 2-3%, without any intervention or aid (Stead *et al*, 2013). A tobacco survey in Thailand during 2008 - 2011 found 23% of

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the Thai population to be current smokers but only one-third of those smokers visited a health care provider regularly (Bureau of Tobacco Centrol, 2011). The same survey found a smoking abstinence rate of 19% at 6 months among those who received smoking cessation counseling. From October 2013 to September 2014, only 27 patients attended the free Thammasat University Hospital Smoking Cessation Clinic (SCC); among these the smoking cessation success rate was only 3.7%. Most hospital staff were not even aware there was a SCC. There was no recorded data regarding the percentage of hospitalized patients who smoked.

Before this study was conducted no systems existed at the SCC for public relations, referrals, data collection or interdisciplinary cooperation of health care providers. The SCC theorized smoking cessation rates could be improved and more smokers could be identified if an appropriate system was implemented and an interdisciplinary team used to assist with smoking cessation. This could result in better health outcomes for our patients. A new interdisciplinary program was developed and this study was conducted to determine the efficacy of this program.

This study was conducted by the staff of the SCC. The new interdisciplinary program was composed of screening for smokers among hospital patients, assessing smoker health conditions, prescribing smoking cessation drugs by physicians where appropriate, health promotion counseling by health educators or nurses, and smoking cessation drug counseling by pharmacists. The goals of the new program were to identify more smokers and improve the smoking cessation rate over the previous SCC success rate of 3.7% at 6 months.

MATERIALS AND METHODS

The primary objectives of this study were to determine smokers' characteristics and smoking cessation success rates after implementing the interdisciplinary approach. Ethical approval for this study was obtained from the Ethics Committee of the Faculty of Medicine, Thammasat University, Thailand (IRB No. MTU-EC-IM-1-166/57). Our study was conducted according to the Declaration of Helsinki. All participants gave written informed consent prior to participation in the study.

Study design

This study was a prospective descriptive observational study. The study was conducted at Thammasat University Hospital, a 600-bed tertiary care teaching hospital in Thailand. The study was conducted between December 2014 and December 2015. The new interdisciplinary program was implemented beginning in November 2014. Inclusion criteria for participants were: 1) current smokers who visited the SCC at Thammasat University Hospital, 2) who desired to stop smoking and 3) and were aged ≥ 18 years.

Data recorded for our study included baseline characteristics of subjects, general and smoking related health problems, a desire to stop smoking and exhaled carbon monoxide levels. Behavioral counseling to stop smoking was provided by health promoters. Smoking cessation drugs were prescribed by physicians if the participant had at least one of the following: a FAGERSTRÖM test score for nicotine dependence of ≥ 6, a previously failed attempt to stop smoking or a desire to use a smoking cessation drug and the ability to afford the medication. All patients were contacted weekly by phone for 1 month then monthly by phone for 1 year by one of the SCC staff.

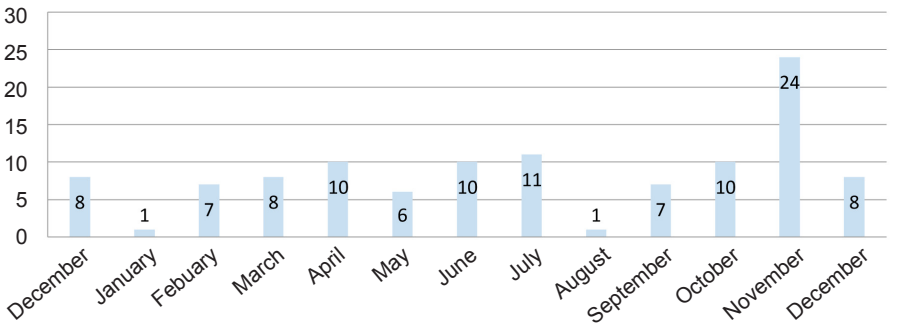

Fig 1–Number of smoking cessation patients by month.

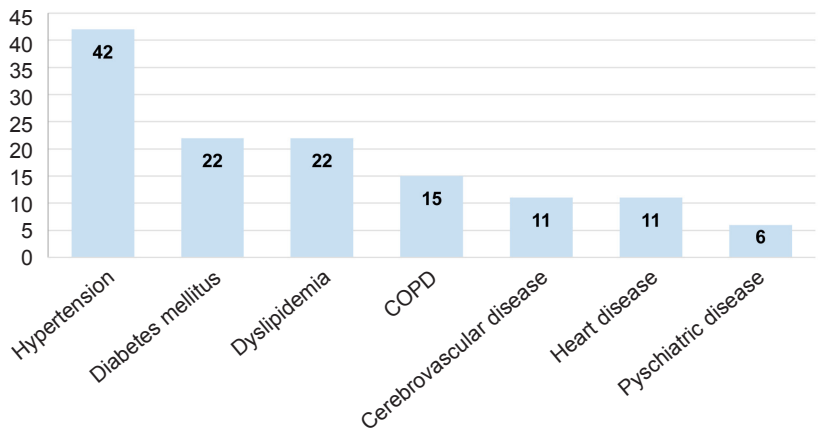

Fig 2–Diseases among patients. COPD, chronic obstructive pulmonary disease.

Statistical analysis

Baseline characteristics and smoking characteristics of patients were collected and analyzed. Data were expressed as means ± standard deviations (SD), medians (interquartile ranges) and percentages. Differences between groups were analyzed using the chi-square test or the Fisher's exact test for categorical data, and the Student's *t*-test or the Mann–Whitney *U* test for continuous data. A two-sided p-value < 0.05 was considered statistically significant.

RESULTS

One hundred eleven patients were included in this study; 100 (90.1%) were males (Table 1). The internal medicine outpatient clinic referred the most patients (n=70; 63.1%). The SCC had an average of 8.5 (±5.6) participants per month. November had the largest number of patients (n=24; 21.6%) (Fig 1). The mean (± SD) age of patients was 56.5 (± 13.5) years. Thirty-nine point six percent of patients had hypertension, 20.8% had diabetes mellitus and 20.8% had dyslipidemia (Fig 2).

The mean (± SD) age of initiating smoking among patients was 18.5 (± 5.5) years (Table 2). Studied patients smoked an average (± SD) of 14.1 (± 8.5) cigarettes per day for a total (± SD) of 25.7 (± 16.3) pack-years. The median (range) FAGERSTRÖM test score was 5 (3-7), indicating moderate nicotine dependence. Seventy-three point nine percent of patients smoked manufactured cigarettes; 17.1% smoked hand-rolled cigarettes. Eighty-one point one percent of patients stated the main reason why they wanted to stop smoking was health problems. Fifty-five point five percent had previously tried to quit smoking in the past. Ninety-two point eight percent of patients stated they had easy access to cigarettes,

Table 1
Baseline characteristics of participants.

Characteristics	Total (*N*=111) No. (%) except where marked
Gender	
Male	100 (90.1)
Female	11 (9.9)
Age in years (±SD)	56.5 (±13.5)
Body weight in kilograms (±SD)	63.5 (±14.0)
Referral from outpatient clinic	106 (95.5)
Internal medicine	70 (63.1)
General practice	15 (13.5)
Psychiatry	13 (11.7)
Ear, Nose, and Throat	3 (2.7)
Surgery	2 (1.8)
Gynecology	1 (0.9)
Walk in	2 (1.8)
Referral from inpatient care	5 (4.5)
Stroke unit	4 (3.6)
Unspecified ward	1 (0.9)
Religion	
Buddhism	108 (97.3)
Islam	2 (1.8)
Christianity	1 (0.9)
Marital status	
Married	77 (69.4)
Single	19 (17.1)
Widowed	10 (9.0)
Divorced	5 (4.5)
Number of children (Interquartile range)	2 (1-3)
Education level	
Elementary education or less	49 (44.1)
High school degree or diploma	48 (43.2)
Bachelor degree or higher	14 (12.6)
Health insurance systems	
Government or state employee	52 (46.8)
Universal health care coverage	34 (30.6)
Self-pay	15 (13.5)
Social Security	7 (6.3)
Others	3 (2.7)
Family income per month (*n*=104)	
< 20,000 Baht	40 (38.4)
20,000-50,000 Baht	50 (48.1)
> 50,000 Baht	14 (13.5)
Alcohol consumption	
Never	66 (59.5)
Sometimes	24 (21.6)
Often	21 (18.9)
Drinking coffee	
Never	29 (26.1)
Sometimes	22 (19.8)
Often	60 (54.1)

Table 2
Characteristics of studied patients.

Characteristics	Total (*N*=111) No. (%)
Age at onset smoking in years (±SD)	18.5 (± 5.5)
Daily cigarette consumption (±SD)	14.1 (± 8.5)
Pack-years smoked (±SD)	25.7 (± 16.3)
FAGERSTRÖM test for nicotine dependence score (Interquartile range)	5 (3-7)
Type of cigarettes	
Manufactured cigarettes	82 (73.9)
Traditional cigarettes	19 (17.1)
Both	7 (6.3)
Reason for wanting to stop smoking	
Health problems	90 (81.1)
Understand the risks of smoking	21 (18.9)
Previously attempted to stop smoking	
Never	49 (44.6)
At least once	61 (55.5)
Median time (Interquartile range) (min, max)	1 (1-2) (1,10)
Method used to stop smoking (*n*=59)	
Abruptly	54 (91.5)
Gradually	4 (6.8)
Medication	1 (1.7)
Accessibility of cigarettes (*n*=107)	
Easy	102 (95.3)
Moderately-Hard	5 (4.7)
Where buys cigarettes	
Near home	103 (92.8)
Near workplace	6 (5.4)

mostly from shops near their homes.

Smoking cessation was confirmed by finding an exhaled carbon monoxide level to be less than 10 parts per million. This was tested in all patients 6 months after they stated they stopped smoking. Twelve point six percent of patients had stopped smoking by 6 months. Two of the 111 patients received the smoking cessation drug bupropion, 1 of these stopped smoking successfully. The patients who did not stop smoking by 6 months had a lower mean income than those who continued to smoke (p=0.05) (Table 3). No other factors were significantly different between those who did and did not quit smoking by 6 months.

DISCUSSION

The number of patients attending the SCC after implementation of the program was still low but more patients attended the new program. The smoking cessation rate of the new program was 8.9% higher than the old program.

The highest participation rate was in November with 24 participants. This may

Table 3
Comparison of study patients who stopped and did not stop smoking.

	Stopped	Did not stop	Total	*p*-value
Gender, *n* (%)				0.628
Male	12 (12.0)	88 (88.0)	100	
Female	2 (18.2)	9 (81.8)	11	
Age in years (±SD)	60.9 (±12.2)	55.9 (±13.6)		0.202
Body weight in kilograms (±SD)	61.5 (±12.9)	63.8 (±14.2)		0.577
Referral from, *n* (%)				0.116
Internal medicine	12 (16.2)	62 (83.8)	74	
General practice	0 (0)	15 (100)	15	
Psychiatry	0 (0)	13 (100)	13	
Others	2 (22.2)	7 (77.8)	9	
Number of children (Interquartile range)	3 (2-3)	2 (0-3)		0.175
Educational attainment, *n* (%)				0.296
Elementary education or less	8 (16.3)	41 (83.7)	49	
High school degree or diploma	6 (12.5)	42 (87.5)	48	
Bachelor degree or more	0 (0)	14 (100)	14	
Marital status, *n* (%)				0.477
Single	1 (5.3)	18 (94.7)	19	
Married	10 (13.0)	67 (87.0)	77	
Divorce	1 (20.0)	4 (80.0)	5	
Widow	2 (20.0)	8 (80.0)	10	
Preferential treatment, *n* (%)				0.776
Government or state employee	5 (9.6)	47 (90.4)	52	
Universal health care coverage	6 (17.6)	28 (82.4)	34	
Self-pay	2 (13.3)	13 (86.7)	15	
Social Security	1 (14.3)	6 (85.7)	7	
Others	0 (0)	3 (100)	3	
Family income per month, *n* (%)				0.050
< 20,000 Baht	8 (20.0)	32 (80.0)	40	
20,000-50,000 Baht	3 (6.0)	47 (94.0)	50	
> 50,000 Baht	0 (0)	14 (100)	14	
Reason for wanting to stop smoking, *n* (%)				0.419
Health problems	13 (14.4)	77 (85.6)	90	
Understand the risks of smoking	1 (4.8)	20 (95.2)	21	
Alcohol consumption, *n* (%)				0.410
Never	10 (15.2)	56 (84.8)	66	
Sometimes	1 (4.2)	23 (95.8)	24	
Often	3 (14.3)	18 (85.7)	21	
Drinking coffee, *n* (%)				0.738
Never	5 (17.2)	24 (82.8)	29	
Sometimes	2 (9.1)	20 (90.9)	22	
Often	7 (11.7)	53 (88.3)	60	
Age at onset smoking in years (±SD)	18.1 (±5.3)	18.5 (±5.5)		0.798
Daily cigarette consumption (±SD)	10.2 (±5.6)	14.7 (±8.7)		0.066
Pack-years (±SD)	22.4 (±15.8)	26.3 (±16.4)		0.413
Previously attempted to stop smoking, *n* (%)				0.776
Never	7 (14.3)	42 (85.7)	49	
At least once	7 (11.5)	54 (88.5)	61	

have occurred because the main author promoted the new program among the other hospital staff using social media. However, this number declined the following month. This shows the importance of program promotion among staff who will send the patients for treatment and shows the benefit of social media for communicating with hospital staff and the need to remind staff routinely about the service.

The Thai Tobacco Products Control Act of 1992 (Tobacco Control Laws, 1992) states no person shall be allowed to dispose of, sell, exchange or give tobacco products to a person who is known to be under the age of 18 years. The average (± SD) age of initiating smoking in our study was 18.5 (± 5.5) years. This means up to half the studied patients started smoking before age 18 years when it was illegal. The Thai Tobacco Products Control Act was updated in 2015; the legal age to purchase or use tobacco was raised to age 20 years. This change may increase the age of initiating smoking and reduce the number of new smokers but requires cooperation from tobacco product sellers.

About 60% of studied subjects reported never having consumed alcohol. This rate is higher than a study of a smoking and drinking behavior survey from Thailand by Hart *et al* in 2010 (15%) and by The Social Statistic Bureau in 2014 (30%). Reasons for the lower rate of never having consumed alcohol in our study could be the subjects were telling the interviewer what they thought the interviewer wanted to hear since this history was not taken anonymously.

The main reason given by patients for wanting to stop smoking was health problems. The Thai National Statistical Office Survey in 2011 (Bureau of Tobacco Control, 2011) reported the main reason given for wanting to stop smoking was they were aware of the risks caused by smoking. Our participants were older and had come to the hospital for care so were more likely to have a medical problem than the general population surveyed in the Global Adult Tobacco Survey.

The patients in our study who quit smoking tended to have a lower income than those who did not, in contrast to other studies (Townsend *et al*, 1994; Etter and Perneger, 2001; Benjakul *et al,* 2014). The reasons for this difference are likely differences in study populations with differences in health care costs.

In our study, only bupropion was used to help patients stop smoking and this was only used in 2 of 111 patients most likely due to cost. No nicotine replacement therapy or other drugs were used. To be more effective the cost of the drugs needs to be lower or free.

To capture more smoking patients they should be recruited from patients who come in for check ups. The hospital needs to update their information technology medical record system to record if a patient smokes or not, but this is not currently financially possible. To capture more patients, the SCC can distribute brochures advertizing its free services. These need to be distributed to doctors, nurses, pharmacists and other hospital staff.

The SCC should expand to serve the local catchment area of Thammasat University Hospital. This should include youth in the area, such as high-school and university students on the Thammasat University campus and in the local community. Studies have shown the younger the age of onset of smoking, the less likely the person is to quit (Breslau and Peterson, 1996; Khuder *et al*, 1999; Hyland *et al*,

2006). Appropriate interventions are needed to target this group.

More studies are needed on whether the interdisciplinary approach can increase the smoking cessation rate further at the SCC and whether the interdisciplinary approach is sustainable and cost effective for Thammasat University Hospital.

The new smoking cessation program was associated with greater participation numbers and cessation rates. Hospital staff need to be made aware of and reminded about the program. All patients should be asked if they smoke and if they do, offered smoking cessation services. Staff working in the cardiovascular and stroke clinics need to especially be aware of this service since they care for many smokers who are motivated to make changes because of medical conditions.

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