

The Evaluation of Initiating Tobacco Cessation Services in the Military-Based Hospital, Northeastern Thailand

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ABSTRACT

Objective: It aimed to evaluate the effectiveness of the initial smoking cessation services at a military-based hospital in northeastern Thailand.

Methods: It was a prospective, descriptive design. Totally, there were 1,094 conscripts who participated in the 6-month cessation program. Patient history data was collected via a patient history record divided into three different periods of time at, 1st visit, 2nd visit (3-months), and 3rd visit (6-months). Each participant underwent ‘going cold turkey’ with tobacco cessation approach. Sociodemographic characteristics and continuous variables (e.g., age, duration of smoking) were analyzed via descriptive statistics. Spearman correlation coefficient was used for the relation between predictor and dependent variables (quit success). The relations between sociodemographic data and the prospects of quitting smoking were analyzed via multiple logistic regression.

Results: Most participants were males (99.84%), and regular drinkers (55.50%). They usually smoked 12.37 cigarettes per day. For first visit, every participant underwent ‘going cold turkey’ with tobacco cessation approach to quit smoking (from 1st to 3rd visit). An average CO level was 3.23 ppm. Around twelve percent of participants used 0.5% sodium nitrate mouthwash. At the second visit (3-months), numbers of cigarettes decreased to 5.48 cigarettes per day and numbers of participants were decreased to 792 personnel. Only 150 persons continue to quit smoking (18.95%). At the last visit (6-months), a total number of participants were 688 personnel. Numbers of cigarettes were decreased to 5.48 cigarettes per day. Only 78 persons completely quit smoking (11.34%), and approximately 18.02% of participants still used 0.5% sodium nitrate mouthwash. Additionally, only three sociodemographic data including, CO level, duration of counseling, and use of first line treatment were statistically related to the prospects of quitting smoking ($p < .05$, $.001$ respectively). The equation of the prospect of quit smoking was statistically related to those sociodemographic characteristics.

Conclusion: Tobacco cessation services in a military-based hospital were well received and short term outcomes of conscripts seeking help was encouraging. The integration of tobacco cessation with existing healthcare services in the military-based hospitals is necessary. Finally, further evaluations of the effectiveness of cessation services among conscripts in the military-based hospitals need to be conducted.

Keywords: Cessation services, military-based hospital, tobacco

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INTRODUCTION

Active cigarette smoking is one of the most important modifiable risk factors for coronary heart disease. Smoking is also a major factor for stroke, related to malignancies in other parts of the body and linked to a variety of other conditions and disorders, including slow healing of wound, infertility and peptic ulcer disease.¹⁻³ Also cigarettes can cause lung diseases including tuberculosis (TB). According to a previous study, it was revealed there were significant associations between early age at initiation of smoking, duration of smoking, and smoking exposure and the occurrence of tuberculosis.⁴ Moreover, smoking had a strong relation with other risk behaviors such as drug use, and alcoholic consumption. Research conducted in Romania found that alcohol and cigarette use were linked reciprocally and this interrelationship differed across genders.^{5,6} In the South-East Asia Region (SEAR), smoking prevalence ranged from 29.8% to 63.1% among men and 0.4% to 15% among women. The practice of tobacco chewing also needs attention. Smokeless tobacco use ranged from 1.3% to 38% among men and 4.6% to 27.9% among women.⁷ The WHO Framework Convention on Tobacco Control (FCTC) recommended comprehensive policies for tobacco control, including cessation or treatment of tobacco dependence. Offer to help quit tobacco use is one of the six strategies for tobacco control advocated by WHO under MPOWER: Monitor tobacco use; Protect people from tobacco smoke; Offer help to quit tobacco use; Warn about the dangers of tobacco; Enforce bans on tobacco advertising promotion; Raise taxes on tobacco products, and technical guidelines for tobacco cessation have also been developed for different levels of health care providers. However, despite the enormous health burden resulting from tobacco use, smoking cessation services might not be available for everyone, especially in the far-remote areas.

In Thailand, The Global Adult Tobacco Survey (GATS) in 2009 conducted by Ministry of Public Health, Mahidol University, and National Statistical Offices revealed that 45.6% of men and 3.1% of women currently smoke cigarettes.⁸ Thai

army officers were among those high risk men as reported in Thai literature.⁹⁻¹¹ The Royal Thai Army is a government agency taking charge of national security and peace; therefore, smoking behavior among personnel of the Royal Thai Army should be evaluated due to a high prevalence of smoking and smoking related illness and death. From a previous survey of health among infantrymen between 1994 and 1995, the result found there were high rates of morbidity and mortality of cigarette smoking among Thai army officers including, commission officers (22.6%), non-commission officers (45.3%), and privates (68.1%).¹² Additionally, there was a study of the quality of life development for the Thai Royal Army from 1999 up to 2007. It was revealed 41.2% of Thai Army personnel currently smoked. The reasons of smoking might be the army officers aged between 18 and 25, healthy, spend time together with other officers at the same military-base, and follow the similar restrictive rules and regulations. As a result, if any officer smokes and drinks, the others tend to behave the same habits regardless of the dangers and long term effects of smoking.^{11,13}

Since 2003, Health Promotion Thai Army Project has been launched to provide good quality of life for army officers in Thailand. It involves dietary, physical exercise, smoking, alcohol drinking, and traffic accident prevention behaviors. Regarding cigarette smoking, there have been smoking cessation interventions and strategies available in different sites including, communities, and military-based hospitals.¹⁴ Normally, the regular doctor would go through the routine check-up with the army officers visiting to the hospital. If the officers want to quit smoking, they will be provided an extra-counseling session related to smoking cessation at the outpatient clinic. The cessation monitoring is normally set up on the next follow-up date which might be up to 3 to 4 months. As a result, if somehow during the cessation period, some withdrawal symptoms such as insomnia, loss of concentration, cigarette craving are seriously developed, they might not be practically solved as the health professionals would not be able to do the face-to-face communication with the patients.

Recently, the initiation of smoking cessation services via “*Pharsai Clinic*” has been established since 2005. At the military-based hospital in northeastern Thailand, they have provided smoking cessation services for local communities and army officers since 2010. Never the less, the cessation services have been integrated into the routine counseling and the experts in smoking cessation counseling were inadequate. In July 2013 the northeastern university, Ubon Ratchathani University and Sanpasithprasong Military-Based Hospital have signed the Memorandum of Understanding (MOU) to establish a smoking cessation clinic called “Pharsai clinic”. Thus, the authors aimed to evaluate the effectiveness of the initial smoking cessation services at the military-based hospital in northeastern Thailand via 1) army officer demographic information, 2) smoking behaviors, 3) smoking cessation strategies, 4) quit rates, 5) the relations between internal and external factors and chance of cigarette quitting, and 6) a predicting equation for the chance of quitting cigarettes among Thai army officers.

MATERIALS AND METHODS

Study design

It was a prospective, descriptive design. The project started from July 2013 to June 2014 at Sanpasithprasong Military-Based Hospital, Ubon Ratchathani province, Thailand.

Population and samples

All participants were the conscripts recruited for military training at the Department of Infantry, Ubon Ratchathani province between April 2013 and June 2014. Totally there have been 1,094 personnel from Infantry troop I (540), Infantry troop II (785), and Infantry troop III (849) purposively recruited into the program. They voluntarily enrolled to a quit smoking program at the military-based hospital.

Research tools

Personal information was collected via a patient history record. It contained four types of information and the patient data was collected at three different periods of time at, 1st visit, 2nd

visit (3-months), and 3rd visit (6-months). At the first visit, a participant was asked about 1) demographical information (5 items) including, age, gender, marital status, drinking habit, and medical history; 2) history of cigarette smoking (4 items) including, type of cigarette, duration of smoking, numbers of cigarettes, and time to start smoking after waking up; 3) cessation strategies (6 items) including, carbon monoxide (CO) level, cessation strategy, levels of withdrawal symptoms, duration of counseling, focus group therapy, and cessation treatment. For the second and third visits, after the participant was advised to quit smoking previously, he was appointed for the follow up at 3-and 6-month periods. The questionnaire paper was filled out again, particularly the cessation strategy (5 items) topics including, carbon monoxide (CO) level, levels of withdrawal symptoms, quit success, focus group therapy, and cessation treatment.

Note: A questionnaire form was developed via the Medical Professional Network for Tobacco Control, Health Promotion, Thailand. It was validated for both content validity and reliability prior to the public use. Therefore, all Pharsai clinics in Thailand are required to use the same form.

Process and data collection

On the regular training days, the conscripts seeking to quit cigarettes were advised to voluntarily enroll to a cessation program. They were also informed the objectives and processes throughout the program. Basic physical examinations and history taking were conducted as a routine check-up. Then, the first session began with a twenty minute presentation regarding dangers of cigarettes, later the counsel or underwent one-on-one interview with the conscript and filled out the data form. At the military-base, those conscripts seeking to quit smoking were provided a tobacco cessation approach including, “going cold turkey”, a method to stop smoking suddenly and completely, combined with tobacco cessation approaches including, enhancing knowledge, counseling behavior changes and self-prevention and cessation treatment, in case the conscripts either moderately addicted to smoking or requested for medical treatment (Table 1).

A follow-up book was additionally given to the conscripts to remind them the next appointments. After the first visit, the participants were repeatedly followed up at the smoking cessation clinic in 3- and 6-month periods. On each visit, the conscripts went through the similar processes and answered all questionnaire items in section “research tool”. If the conscripts unexpectedly experienced withdrawal symptoms during “going cold turkey” period, they were advised to inform the counselors immediately to figure out the problems and continue their cessations. A final assessment of quit success as well as other variables were truly determined by the end of 6-month periods. All complete data from different periods were later statistically analyzed.

Data analysis

Sociodemographic characteristics were analyzed via descriptive statistics including, percentages, frequencies, means, and standard deviations. For continuous variables including age, duration of smoking, numbers of cigarettes, levels of withdrawal symptoms, weight, CO levels, maximum and minimum values were added. Spearman correlation coefficient was calculated to analyze the relations between predictors (e.g., age, medical treatment, alcohol drinking, numbers of cigarettes, types of counselors, CO levels, focus group therapy, and duration of counseling) and dependent variables (quit success). Furthermore, the relations between sociodemographic data and the prospects of quitting smoking were analyzed via multiple logistic regression and classification table. Finally, an equation of prospect of quit smoking was initially developed via logistic regression analysis.

RESULTS

On the first visit, there were 1,094 conscripts enrolled to a cessation clinic. They were males (99.84%) with an average age of 24, single (79.60%), regular drinkers (55.50%), and had no medical history (91.80%). Regarding the smoking history, it was revealed most participants liked smoking factory cigarettes (57.50%), and duration of smoking was approximately 8 years. Additionally they usually smoked 12.37 cigarettes per day.

Time to first cigarette after awakening was 1.69 hour. An average carbon monoxide (CO) level was 4.62 ppm, while the maximum CO level was 17. Every participant chose ‘going cold turkey’ for quitting smoking. At the beginning, there were no reports of withdrawal symptoms among those conscripts. Most participants received approximately five minutes of cessation counseling (91.60%) without focus group therapy (99.26%). Some participants also requested 0.5% sodium nitrate mouthwash (12.78%) combined with ‘going cold turkey’ method

At the second visit (3-months), the number of participants was decreased to 792 personnel (72.38%). They continued with the “going cold turkey” method. The number of cigarettes was decreased to 5.48 cigarettes per day. The CO level measurement was conducted and the average level was 3.39 ppm. Among the 792 military smokers, only 150 personnel continued to quit smoking at the time (18.95%). During the cessation period, it was reported participants had a minimal level of withdrawal symptoms (mean 1.22) such as craving, and moodiness. The duration of counseling was similar to the first visit (~5 minutes, (81.06%)) without focus group therapy (99.61%). About 20.45% of participants requested 0.5% sodium nitrate mouthwash while undergoing ‘going cold turkey’ method.

By the end of the completed cessation period (6-months), the total number of participants dropped to 688 persons (62.88%). They finally cut down numbers of cigarettes to 4.02 cigarettes per day and the average CO level was 3.00 ppm. Only 78 personnel completely 6-month quit smoking protocol (11.34%) and the level of withdrawal symptoms was minimal (mean 1.72). Similarly, they spent five minutes for cessation counseling (85.61%) without focus group therapy (99.85%). Only 18.02% of participants still requested 0.5% sodium nitrate mouthwash.

Noticeably, during the 6-month cessation periods, numbers of participants, numbers of cigarettes as well as CO levels were decreased. Quit success was also decreased as the time went by. However, there were two factors including, level of withdrawal symptoms, and duration of counseling which were not much different over 6-month periods.

Additionally, when focusing on the relations between demographic variables and the quitting smoking, the result revealed only three variables including, CO level, duration of counseling, and use of cessation treatment statistically related to the prospects of quitting smoking ($p < .05$, and $.001$ respectively) (Table 2). Regarding the logistic regression model, it showed Cox&Snell (R^2) value was 40.4% and Nagellkerkel (R^2) was 55.70% which meant this model could explain the variation of the prospect of quitting smoking was equal to 55.70%. Furthermore, the accuracy of the logistic regression model regarding the prospect of quitting smoking was equal to 79.70%.

When integrating those three sociodemographic variables into the equation which could predict the prospects of quitting smoking, it told us that if CO level was increased, a chance of quitting smoking would be decreased by .822 times. Nevertheless, if smokers received a cessation treatment with longer duration of counseling, the chance of quitting smoking would be increased by 1.876 and 1.868 times consecutively (as below).

$$\text{The equation of prospect of quit smoking} = \frac{1}{1+e^{-z}}$$

$$z = -6.735 + 1.876 (\text{cessation medication} + 1.868 (\text{duration of counseling}) - .822 (\text{CO level}))$$

DISCUSSION

The participants were non-heavy smokers according to CO levels, numbers of cigarettes per day, and time to start after waking up (Table 1). The participants admitted during the questionnaire interview they experienced some stressful issues related to their families, loves, financial status, and duties. The restrictive rules of the military force prohibit all conscripts from smoking cigarettes during the first 10 weeks of intensive military training. Therefore, all 1,094 conscripts underwent a “going cold turkey” cessation method for the first 10 weeks and voluntarily continued to give up smoking over 6-month periods as a standard protocol for quitting smoking.¹⁵ Noticeably, by the end of 3- and 6-month periods, numbers of

TABLE 1. Tobacco cessation approaches.

Component	Description
Motivation	Enhancing knowledge of dangers of tobacco use and benefits of quitting Encouragement to quit with simple tips to deal with withdrawal Handouts with information on tobacco dependence and cessation
Behavior counseling	Focusing on relapse prevention and internal & external triggers for tobacco use
Treatment	Included 0.5% sodium nitrate mouthwash

TABLE 2. The relations between sociodemographic characteristics and the prospects of quitting smoking (at 6-month periods).

Predictor variable	B	S.E.	Wald	df	Sig.b	Exp(B)
Number of cigarette (per day)	-.025	.029	.747	1	.387	.975
CO level (at 6-month periods)	-.822	.215	14.628	1	.000**	.440
Age	.069	.057	1.466	1	.226	1.071
Weight	.035	.030	1.336	1	.248	1.036
Type of counselor	.138	.146	.896	1	.344	1.148
Duration of counseling	1.868	.723	6.671	1	.010*	6.475
Use of cessation treatment	1.876	.570	10.826	1	.001**	6.526
Level of withdrawal symptoms	-.090	.169	.282	1	.595	.914
Constant	-6.735	2.660	6.409	1	.011*	.001

Note: ^banalyzed Multiple Logistic Regression, *significant at $p < .05$, **significant at $p < .001$

quitters were relatively declined. It might be explained that those who tried to quit smoking, often found it difficult for some reasons. Importantly, the addictive properties of nicotine can cause giving up quitting smoking.^{16,17} In order to quit smoking successfully, adequate information related to withdrawal symptom management and intervention programs for preventing tobacco use should begin early. Also, praise and support for the military officers who can give up smoking should be emphasized.²⁰ In addition, families and loved ones play a key role of quitting smoking. Of those who had attempted to quit smoking, they had done so because they had been asked by family to quit.^{18,21}

When a Thai smoker is ready to quit, a standard cessation method called “going cold turkey” or “going it alone” is provided. If multiple attempts of going cold turkey were done, but smokers could not quit smoking, they would move on to nicotine replacement therapy (NRT). However, if it doesn’t work, many smokers will decide to try something else such as alternative and pharmaceutical methods (e.g., bupropion, nortriptyline, sodium nitrate, acupuncture, herbs, hypnotherapy).²² In this case, a combination of going cold turkey and 0.5% sodium nitrate mouthwash was given to army smokers. The overall outcomes were generally favorable as we know going cold turkey is the most common method to quit smoking. However, it can also be the most difficult solitary way at the same time. The quitter might struggle alone without any props to help deal with the inevitable craving and inevitably going through a tough and painful experience.²³ It has been mentioned in western studies that quit success rates could improve with the addition of cessation medication to behavior counseling.²⁴⁻²⁶ As a result, additional tobacco cessation approaches containing motivation behavioral changes, and cessation treatment (Table 1) were added to the cessation program to enhance the effectiveness.

Noticeably, the sociodemographic characteristics included, carbon monoxide (CO) level, duration of counseling, and cessation treatment which were involved in enhancing quitting smoking at the completed cessation periods (6-months). Some previous reports revealed cessation medica-

tions including, NRTs, bupropion are the determinants of enhancing the continuous 6-month abstinence, compared to no pharmacotherapy use.²⁷ The outcomes of smoking abstinence were varied depending on pharmacological effects and severity of nicotine addiction.²⁸ In this case, 0.5% sodium nitrate mouthwash was the only treatment provided to the smokers. When focusing on carbon monoxide (CO) level, similar findings indicated carbon monoxide levels can efficiently dichotomize smokers and non-smokers. Smokers who failed to quit had high CO levels as some cigarette residues left inside the lungs after smoking. The CO particles will stay inside the lungs for approximately 3 days prior to the body excretion. As a result, if we can detect CO level within 3 days after smoking, the values are still accurate and reliable.²⁹ Most participants were light smokers and prohibited to smoke cigarettes during their military enrollment. Therefore, their CO levels were not measurably high during the 6-month periods. Interestingly, duration of counseling statistically related to the prospects of quitting smoking in the study. Previous findings found increasing contact time between the client and the counselor could significantly enhance effectiveness of smoking cessation by extending the establishment of emotional rapport between the counselor and the client and increase the amount of information that was exchanged.^{30,31}

In Thailand, a survey of tobacco cessation services available was conducted in 2005. The results found over 1,120 health care centers established tobacco cessation services, but only 400 centers (35.71%) still provide cessation counseling to the clients.^{32,33} Among those, only 15 centers (3.75%) were located at the military-based hospitals.³⁴ Thus, there is still a need of smoking cessation services to be available at military-based hospitals.³³ Also, we found there were numbers of participants unqualified from the study due to loss of follow-up. The main reason is since 2012 there have been some military battles at the borders between Thailand and Cambodia regarding the overlapping territories. Thus, most of conscripts from Department of Infantry, Region 6, need to relocate from Ubon Ratchathani to Sri-Sa-Ket to establish military troops for the national defense.

This limitation has been solved via a new cessation strategy which is the development of smoking cessation product called “quit candy” used for smoking cessation. Also, the regular follow-up at the military base should be encouraged to minimize the target loss.

CONCLUSION

In summary, tobacco cessation services in a military based hospital were well received and short term outcome of conscripts seeking help was encouraging. However, the services need to be up-scaled, and the public better informed of the availability and relevance of such interventions. The distribution of tobacco cessation services into various military departments is targeted. Also the integration of tobacco cessation with existing health care services in the military based hospitals is a cost-effective strategy to widen the cessation services.

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