

Potential Effectiveness of Health Warning Labels among Employees in Thailand

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Objective: Explore and investigate the perceptions and responses of employees regarding the effects of a Health Warning Label (HWL) on their decision to encourage quitting and stages of change in smoking behavior.

Material and Method: One thousand six hundred thirty seven employees in workplaces from four regions, including Bangkok city, were studied during the year 2005-2006. Six hundred nine employees (both non- or cigarette smokers) were part of a cohort study using qualitative and quantitative approaches. Questionnaires were used to sample the cohort twice and two individuals per factory were interviewed in-depth.

Results: The New-HWL that made the best impression was the "cancer caused by cigarette smoking" and 3.8% stopped smoking after seeing the New-HWL. Moreover, New-HWL increased employees "pro" attitudes about smoking cessation. Decisional balance that reflected different "con" to quit, among non-quitting and quitting smokers.

Conclusion: New-HWL significantly increased attitudes about smoking cessation.

Keywords: Potential Effectiveness, Health Warning Label, Employee

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Since 1974, Health Warning Labels (HWL) on cigarette packs have been produced and distributed in Thailand to communicate health risks associated with cigarette smoking. Health Warnings are now required in most countries around the world and increasingly creative methods are being used to present these messages⁽¹⁾. To be effective, a message on the cigarette pack should cover at least three aspects.

The major reasons to produce and distribute HWL in Thailand⁽²⁾ include: (1) it is a valuable initiative with regards to promoting non-smokers in the population, especially children and youths. (2) HWL educates

about the dangers of tobacco smoking. (3) It is a campaign that is hoped can accurately target risk populations and be economical.

HWL is one of the best ways for cigarette smoking control in sufficient economical countries, such as Thailand. Previously, Thailand has used word style labeling (Ex-HWL). New health warning label consists of six different pictures, each displayed as a graphic design covering 30% of the pack in a visible area, combined with words leading to imply health risk from smoking cigarettes such as "cigarette smoking causes lung cancer".

As an active mass media communication method, HWL on cigarette packages is a crucial source of up-to-the health information. However, since initiating this policy in Thai society, there has been no data

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collected showing that the producing and distributing of the labels are meeting its objectives.

The present study was a systematic evaluation of the health warning labels on cigarette packs. It explored and investigated perceptions and responses about the New HWL compared to the Ex-HWL in a cohort study of employees. It also studied health behavior changes in cigarette smoking. It was done to identify problems in the content and designs of the labels that prevent their effective mass media facilitation of knowledge and attitudes about the adverse effects of cigarette smoking in Thai population.

The Transtheoretical model⁽³⁾ guided a conceptual framework and the development of the instruments to measure the perceptions and responses of employees in factories or industrial workplace, including self employed workers, on the smoking cessation behavior due to HWL.

Material and Method

A mixed method⁽⁴⁾ involving both a quantitative and qualitative approach was designed for triangulation and complementation in the present study. A quantitative scheme has been applied for collecting data from the target population on their perceptions and responses to the HWL, both word style and graphic picture style as well as their knowledge, attitude of cigarette smoking and intention to quit after seeing HWL. The stages of behavioral change in cigarette use and the change process of employees in decisional balance on the decision to quit smoking after accessing the New-HWL on cigarette packs were compared. The health warning label is a group of words or statements on a cigarette package that informs about the effects of tobacco smoking on the health of the smoker⁽⁵⁾, (Fig. 1A:B). The new health warning label are six pictures displayed using a graphic design that covers 30% of the cigarette pack in a visible area combined with words leading to implying the risks to human

physical health from smoking cigarette, for instance “cigarette smoking causes lung cancer”. The exploring of the meaningfulness of HWL and smoking behavior in real context were conducted using a qualitative approach.

Population and sample

The study population was employees in 22 factories and entrepreneurs of various settings in five regions of Thailand; North, Northeast, South, Central and Bangkok. Utilizing information provided by the Department of Labor Protection and Welfare⁽⁶⁾, a systematic sampling frame was developed that ensured a proportional number of employees would be sampled from each region. Two thousand two hundred employees were surveyed in the first round to explore their perceptions and response to the labels on cigarette packaging. From the first round surveyed on March 2005, only 1,637 cases completed the questionnaires before distribution of the New-HWL. The second survey round was from January to February 2006, of which 1,300 cases completed the questionnaires. Of these samples, 609 cases made up the cohort that was measured twice. There was a loss of 691 cases due to two causes; 1) the assistant researchers were not able to find the same cases that had moved out from the work place (80%) 2) incomplete questionnaires (20%).

Inclusion criteria

Workers who were 15 years of age or older and were employees in workplaces or self employed at least three months and over, regardless of being a non-smoker or smoker, were included. The respondents voluntarily consented to participate in the project, which was approved by Mahidol University IRB No. = 151/2005.

Research instruments

The questionnaires comprised of 5 parts; demographic data, a perception of the HWL (11 items for the Ex-HWL, 22 items for the New-HWL, which expressed knowledge, motivation, and cues for intending to quit smoking in the future), stage of change in smoking cessation behaviors (18 items)⁽⁷⁾, the process of change is used in the stage for forcing the employee to change their behavior in each stage from smoking until to quit (33 items)⁽⁸⁾, and decisional balance measurement about self decision to quit smoking, which consisted of two parts. Part 1 referred to the benefits and smoking satisfaction and Part 2 referred to dissatisfaction or obstacles associated with smoking



Fig. 1 The HWL New-one, Ex-one

and self assessment between the benefits and dangers of cigarette smoking leading to the decision to quit (20 items)⁽⁹⁾. Survey items were developed and selected on the basis of an application of the stages of change in the Transtheoretical theory developed by Prochaska and Velicer et al^(7,9), the processes of change of Prochaska, Velicer, Diclement and Fava⁽⁸⁾, decisional balance measurement of Velicer, Prochaska, Diclement and Brandenburg⁽⁹⁾ and extensive review of a tobacco control survey⁽¹⁰⁾. There was five rating scale scoring, and criterion and normative referencing were used to classify and judge the scores, including interpretation. The reliability of the research questionnaires was tested using 30 bus drivers at a Division of Mass Transportation in Bangkok and the alpha Cronbach's coefficients. The scale of the reliability of the perception of the HWL, the process of change on smoking cessation, and the decisional balance concerning smoking cessation was 0.67, 0.87, and 0.93, respectively.

Data collection

Self-administered questionnaires were distributed to individual workers of representative samples of the employees at their workplace, all of them receiving explanation of the questionnaires by interpreters from each region before filling in the answers. Two participants per factory were voluntarily interviewed in-depth for further investigation of various dimensions of the HWL and cigarette smoking behavior, especially in terms of the expression of feeling and opinions of the employees.

Variables and analysis

Data from the respondents were analyzed using descriptive statistics, the χ^2 -test, and F-tested with results statistical significantly different and each pair being tested Post Hoc Comparison further using the Turkey and Sheffe Method.

For qualitative data, inductive content analysis was performed on the in-depth interview data to

categorize the pattern of employee's perception and responds of the labels and included expertise critique of the visual art communication of the New-HWL as well.

Results

Of the 609 employees that consented voluntarily to join the present study and completed questionnaires twice, there were 24.5% ex-smokers and 75.5% current smokers, representing employees who had access to both Ex-HWL and New-HWL on cigarette packaging.

Of the smokers, 70.3% smoked everyday, 25.6% smoked some days, 64.3% had previously quit smoking and 10.6% had never thought about quitting. Surprisingly, 55.4% of them bought rolled cigarettes. They could not buy pre-rolled cigarettes because of low income.

In contrast, with respect to stimulating employees to intend to quit after noticing a HWL, 48.36% of respondents felt like quitting after seeing the Ex-HWL, while only 40.53% of them responded they intended to quit after seeing a New-HWL. These results are summarized in Table 1.

As shown in Table 1, it was found that knowledge regarding cigarette smoking harm to employee's health after seeing HWL was improved both before and after new HWL distribution, while their attitude toward the smoking cessation was at a moderate level.

The differences in knowledge, attitude with cigarette smoking, and cue to intend to quit in the future between the Ex-HWL and the New-HWL were found to have a statistically significant difference at p-value = 0.01, except in the aspect of knowledge of smoking harmfulness.

Concerning the stages of change of cigarette smoking cessation behavior among employees over 8-12 months after New-HWL distribution, it has been found that there were various changes in every stage (Table 2).

Table 1. Comparison of employee's perceptions and responds toward Ex and New Health Warning Labeling, focusing on the results of visual communication on them

Results of visual communication	Full Score	Health warning label (Ex) statement	Health warning label (New) picture
Knowledge	3	80.37%	81.85%
Attitude	8	1.18	1.28
Cue to intend to quit	7	48.36 %	40.53%
Respondent		609	609

From Table 2, it is possible to describe that the group of workers who never thought about quitting on the first survey was 11.1% of the respondents, and for the second survey increased to 14.1%. Meanwhile the other group of workers namely a group of thinking about quitting increased from 44.6% to 58.2% and the relapsing group decreased from 20% to 5.9%.

For analysis, the cohort may be viewed as presenting a comparison of four groups of workers based on their representing different stages in a change of cigarette smoking quitting with respect to behavior before and after seeing new HWL.

The effectiveness of the new HWL on cigarette package would be expressed in terms of increasing knowledge, positive attitudes on cigarette smoking cessation and (“cue to intend to quit”) after seeing HWL from the ex to the new one in some groups of cigarette users, namely “the never think of quitting” (precontemplator) and “the thinking of quitting” (contemplator) group. There were statistically significant differences in attitude on cigarette smoking regarding the negative view and the cues about intending to quit smoking ($p = .01$). Post Hoc Comparison among the four groups represents their stages of change. The perception of “never thinking to quit” or the pre-contemplation group was significantly different from the group of “starting to think” or contemplators ($p = .05$) as well as the group that had quit smoking ($p = .05$). This is shown in Fig. 2.

Of the employees who quit cigarette smoking after seeing the HWL, 2.3% of them quit in response to

the Ex-HWL and 2.8% after seeing the New-HWL. The most noticed New-HWL was the picture presentation of “Lung cancer caused by cigarette smoking”.

With respect to the stages of behavior change, each stage consisted of several activities leading to the person to change their behaviors and to move into the next stage or the previous stage. The process of change forced employees to move to the next stage. The results are shown in Table 2, which is based on the time indicated by individual between the current movement and the intended behavior change.

When comparing before and after New-HWL production and distribution, it was found that there was no statistical difference in the process of behavior change in each stage of change in smoking cessation.

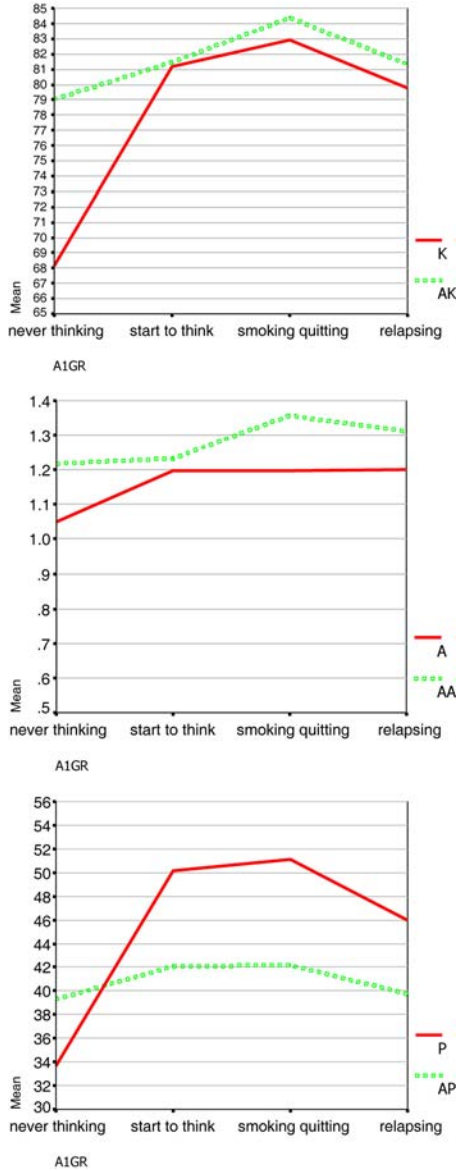
The decisional balance measure is a critical process of judging before making a decision on whether to quit, or to continue smoking, by balancing the positive and negative feelings toward cessation. Comparing positive feelings before and after accessing New-HWL, it was shown that there was a statistically significant difference toward cigarette smoking quitting ($p = .05$). The means of the employees’ positive thinking about quitting smoking decreased at the period when New-HWL was being distributed, as shown in Fig. 3.

From Fig. 3, it was obviously confirmed that the negative feelings (cons) about making the decision to quit smoking are high. Even after distributing New-HWL, however; the mean score of “cons” decreased a little and did not differ to a significant level. “Cons” are

Table 2. Comparing the stages transition of behavior change of cigarette smoking among employees during 8-12 months between before and after new Health Warning Labeling distribution

Stages of change Before new health warning label distribute	Stage movement of cigarette smoking behavior After new health warning label distribution				Total
	(Precontemplators)	(Contemplators)	(Action + Maintain)	(Not Maintenance)	
	Never think of quitting	Thinking of quitting	Quit smoking	Smoking relapsing	
• Never think of quitting (within 6 months)	19 (35.2%)	29 (53.7%)	5 (9.3%)	1 (1.9%)	54 (11.1%)
• Thinking of quitting (within 6 months)	25 (12.3%)	154 (75.9%)	15 (7.4%)	9 (4.4%)	203 (44.6%)
• Quit smoking (within 1 month)	10 (9.3%)	28 (26.2%)	65 (60.7%)	4 (3.7%)	107 (23.5%)
• Smoking relapsing	10 (11.0%)	54 (59.3%)	14 (15.4%)	13 (14.3%)	91 (20.0%)
Total	64 (14.1%)	265 (58.2%)	99 (21.8%)	27 (5.9%)	455 (100%)

Note: 154 missing (25.28%)



1st Survey; k, a, p

2nd Survey; ak, aa, ap

Note: k = knowledge about a danger of cigarette smoking to human's health

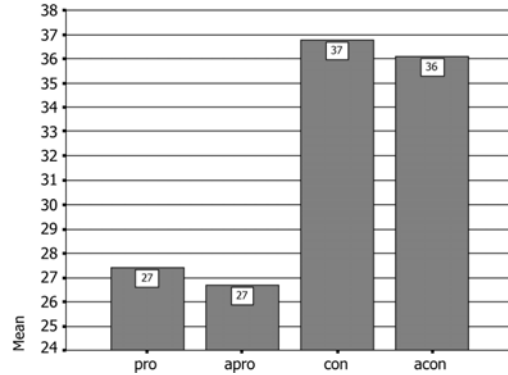
a = attitude toward with cigarette smoking quitting

p = intend to quit cigarette smoking

k, a, and p = to be measured before new HWL distribution

ak, aa, and ap = to be measured after new HWL distribution

Fig. 2 Mean score difference of knowledge, attitude and cue to intend to quit of employees' (4 groups based on stages of change) perceptions of Health warning labels (New & Ex)



Note: "pro" = benefit and satisfaction of cigarette smoking (10 items = 50 score)

"con" = obstacle of smoking and dissatisfaction of smoking cessation (10 items = 50 score)

pro = to be measured before new HWL distribution

con = to be measured before new HWL distribution

apro = to be measured after new HWL distribution

acon = to be measured after new HWL distribution

Fig. 3 The comparison of decisional balance measure (Pros and Cons) of employees before and after New-HWL was distributed

obstacles to changing behavior and harm of dissatisfaction of smoking. The more "cons" and "pros" are decreased the more behavior changes toward making quitting decisions are increased.

Discussion

In the light of tobacco control, HWL is the one of simplest strategies. The first goal of the present study was to explore perception and response of Thai employees in 22 workplaces in 5 regions, during 2005-2006, regarding HWL on cigarette packages were multidimensionally explored and followed up over 8-12 months in a cohort investigation of 609 cases. An elaboration of the results is as follows.

The HWL had an effect of warning or helping people to recall the adverse effects of tobacco consumption and also increasing motivational attitudes associated with "thinking to quit" and "intending to quit". It could be explained that the workers had mental imagery of the severity of the consequences of this behavior. However, cigarette smoking cessation involved not only an intention to quit and a shift in attitude of the users, especially those who have been smoking for a long time, but also needs smokers to empower themselves to quit or to have the self-efficacy to quit by themselves⁽⁸⁾ and make an effort to

eliminate smoking behaviors. With respect to cueing action or “intention to quit smoking” aspect, the negative information in Health Warning Labels isn’t enough, because smoking cessation needs guidance beyond the effect of HWL on individuals^(12,13). It can be concluded that HWL does support or facilitate a person to use more judgment before smoking and this is one of the immediate goals of HWL.

The second goal was to compare stages of change with respect to the cohort study applying transtheoretical theory. The transtheoretical theory conceptualizes on the stages of change as an ongoing process⁽³⁾, rather than a single event, and that people move through a series of five stages when changing a problem behavior more forward to action on adopting a health promoting behavior. In cigarette use, change in cigarette smoking moves forward and back, starting from a pre-contemplator or person who never thinks of quitting. In Prochaska’s Theory, there are five stages with a person classified in each stage, and an individual moving from stage 1 to the next stage of contemplation within one-six month period and with continuous movement to the next stages of change, namely “thinking to quit”, “quitting smoking” and “maintaining” being an ex-smoker or relapsing and returning to the previous stages. According to the stages of change, the employees did not simply change into non-smokers overnight, but go through different stages of intention to quit and develop, gestate, change their “pro” attitude on smoking cessation, especially after seeing new HWL among the smokers who never think of quitting and the think to quit and including ex-smoker groups. This result was congruent with the study of E.I. Hoving, A.N. Mudde and H.de Vries (2006)⁽¹⁴⁾ which specified that smokers appeared to be more likely to transition to an adjacent stage than to skip a stage in the sequence; however; Precontemplators or “never think to quit in 6 months” group had less “pros” about smoking quitting than the ex-smoker.

In the present study, the process of change on each stage of change that should occur varied from each stage to the next and employees moved their behaviors of smoking between those stages. Movement from one stage to the next is just as important as actually changing the behavior but there were not significant differences on the processes of change between the ex and new HWL; it showed that new HWL has not been effective enough to force the workers’ changing their smoking behavior, although their attitude to “pro” on smoking quitting is significantly higher than previously after seeing the new HWL (Fig. 2).

However, their cue to take action to quit is significantly lower. This means that the new HWL does not communicate or motivate the employee’s intention to quit sufficiently, until he or she decides to quit. This result was consistent with the result of Hammon D, Fong GT, Mc Donald MW, et al. (2003)⁽⁵⁾, who found that the HWL of cigarette packages was not related to smoking cessation. Moreover, another factor deriving from the smoker, such as self-efficacy, affected smoking cessation⁽¹⁴⁾ more.

The third goal was to examine possible predictors of stage transition over periods of new HWL distribution. The present study found that the decisional balance was significantly different with regards to the positive feelings between the group thinking of quitting and the group that had stopped smoking. This finding is consistent with the Snow, Prochaska and Rossi results (1992) cited by Ketgudee⁽⁹⁾, and Ketgudee result, which found that decisional balance of antiaircraft artillery officers had had an effect on the stages of change in smoking cessation behavior. Perhaps employees who had started to think about quitting had self-decision to quit smoking by weighing benefits and barriers to quitting regarding smoking cessation that differed significantly from the action of employees who quit already. Thus, the decisional balance scale assessed the salience of patterns of satisfaction on cigarette use compared with the motivation for quitting.

Moreover, in the previous studies, decisional balance caused the effectiveness of activity, evaluation of progress regarding problem solving and seeing problems, which protected again a relapse. In general, “cons” of smoking cessation is more important than “pros” of cigarette smoking on to make a decision to quit and it is because “cons” or negative feeling to quit showed the obstacles or unready to change behaviors. Therefore, the present study had indicated consistently that there were high “cons” both before and after distributed New-HWL. It is possible that the quit smoking group decreased from 23.5% to be 21.8% because “cons” of cigarette quitting is still high although “pros” of cigarette use is also reduced (Ketgudee’s study)⁽⁹⁾.

Strength and limitations

The strength of the present research was that it used a cohort study to investigate non-smoking and smoking behavior and the changing processes in smoking during 8-12 months. Modified transtheoretical theory was used to follow up stages of change in smoking cessation among employees, who were getting

stress from both work and their low socio-economic status, fitted well with the strategy of tobacco control policy outlining the need to examine smoking in a disadvantaged target group. Moreover, an integrated method which combined qualitative and quantitative research techniques specifically on methods of data collecting, analyzing and interpreting in a single study, allowed the integration of data collected at more than one stage in the process of research methodology and not only reduced the limitations of each method but also combined their complementary strengths⁽⁴⁾. The different views of data on the various dimensions of cigarette HWL, which were in words or statements and pictures, including response to HWL related to quitting or continuing to smoke that explored and interpreted the context is very meaningful for Thailand's government. The more understanding there is of the influence of HWL as a tool of mass media communication, the more the government can make accurate and relevant decisions on HWL policy. Determining design and distribution of HWL to various target populations can be both useful and powerful.

A limitation of the present study was that some of the respondents (12.7%) had a low educational level. As a result, assistant researchers and interpreters had to help them answer the questionnaires. The loss of almost half of the samples is the authors' weakness. Longitudinal analyses could not be conducted clearly for all specific stage transitions due to limited sample size, and the authors were not able to analyze the differences found regarding stage sequencing change in 8-12 months.

Suggestion

The present study confirmed the Transtheoretical Model of Prochaska on stages of change and change process of smoking cessation, with its new emerging concept of the back and forth movement of the stage of change. Some of the causes for the relapsing back to smoking after accessing New-NWL are probably related to the "cons" of quitting as well as the HWL not being appropriate for varied targets and having only negative imagery.

Based on these findings, the following recommendations for Health Warning Labels policy makers related HWL production and distribution can be made.

- Health Warning Labels should be designed in various styles, in pictogram forms, that are specifically targeted to convincing the smoker to overcome their obstacles and quit cigarette smoking.

- Pictures should be verified with the various target groups as appropriate to ensure that the labeling reflects a design having an increasing positive effect on intention to quit. Both "the never think to quit" and "the hindering relapsing" groups should be offered images which show how to reduce the obstacles smoking cessation.

- Future research could focus on predicting transitions among each stage as well as sub-classifications using significant cognitive predictors, such as self-efficacy. Another area is the picture style that are more attractive and powerful for each target group.

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References

1. Thai Health Promotion Institute. The chronology of regulation on labeling and packaging 2003. Available from: <http://www.thpinhf.org>. Accessed 15 June 2005.
2. Action on Smoking and Health Foundation. Health warning labels in Thailand. Newsletter, February 2004.
3. Velicer WF, Prochaska JO, Fava JL, Norman GJ, Redding CA. Smoking cessation and stress management: applications of the transtheoretical model of behavior change. *Homeostasis* 1998; 38: 216-33.
4. Creswell JW. Research design: qualitative, quantitative, and mixed methods approaches. 2nd ed. California: Sage Publications; 2003.
5. Hammond D, Fong GT, McDonald PW, Cameron R, Brown KS. Impact of the graphic Canadian warning labels on adult smoking behaviour. *Tob Control* 2003; 12: 391-5.
6. Department of Labor Protection and Welfare. Yearbook of labor protection and welfare statistic 2003. Bangkok: Bangkok Block; 2004.
7. Prochaska OJ, Diclement CC. Transtheoretical theory: toward a more integrative model of change. *Psychoth Theory Res Pract* 1983; 19: 276-88.
8. Prochaska JO, Velicer WF, DiClemente CC, Fava J. Measuring processes of change: applications to the cessation of smoking. *J Consult Clin Psychol*

- 1988; 56: 520-8.
9. Velicer WF, DiClemente CC, Prochaska JO, Brandenburg N. Decisional balance measure for assessing and predicting smoking status. *J Pers Soc Psychol* 1985; 48: 1279-89
 10. C.D.C. Foundation. National youth tobacco survey - Part I. 2005. Available from: <http://www.cdcfoundation.org/annualreport/2000/survey.aspx> Accessed 15 June 2005.
 11. Ketgudee L. Stage of change in smoking cessation behavior among conscript Antiaircraft Artillery Division 1. [M.S. Thesis (Public Health)]. Bangkok: Mahidol Univ; 2004.
 12. Sorensen G, Barbeau E, Hunt MK. Reducing social disparities in tobacco use: a social contextual model for reducing tobacco use among blue-collar workers. *Am J Public Health* 2004; 94: 230-9.
 13. Ministry of Public Health. Health protection for nonsmoker 1992. Nonthaburi: Department of Disease Control, Ministry of Public Health; 2003.
 14. Hoving EF, Mudde AN, de Vries H. Smoking and the □ pattern; predictors of transitions through the stages of change. *Health Educ Res* 2006; 21: 305-14.

ประสิทธิผลของฉลากคำเตือนเรื่องสุขภาพบนซองบุหรี่ของกลุ่มลูกจ้างพนักงานในประเทศไทย

พิมพ์พรรณ ศิลปสุวรรณ, เขียวลักษณ์ เงินวิวัฒน์กุล, ชูเกียรติ วิวัฒนวงศ์เกษม, นิตศัน ศิริโชติรัตน์, ดุสิต สุจิรารัตน์

วัตถุประสงค์: เพื่อประเมินการรับรู้ของลูกจ้างใน 4 ภาคของประเทศไทย และกรุงเทพมหานคร ในปี พ.ศ. 2548 ถึง พ.ศ. 2549 เกี่ยวกับความรู้สึกนึกคิดที่มีต่อฉลากคำเตือนเรื่องสุขภาพบนซองบุหรี่และการตัดสินใจหยุดสูบบุหรี่

วัสดุและวิธีการ: การศึกษาติดตามลูกจ้าง 609 คน ทั้งกลุ่มเป็นเวลา 1 ปี มีการประเมินก่อน-หลังการเปลี่ยนแปลงฉลากฯ เป็นรูปภาพ

ผลการศึกษา: พบว่า ร้อยละ 3.8 ของลูกจ้าง หยุดสูบบุหรี่เมื่อเห็นป้ายฉลากฯ แบบใหม่ เขารู้ว่ารูปภาพประทับใจมากที่สุด ได้แก่ บุหรี่ทำให้เกิดโรคมะเร็งปอด และมีเจตคติเชิงบวกเรื่องสูบบุหรี่ลดลง การตัดสินใจในเรื่องอุปสรรคของการหยุดสูบบุหรี่แตกต่างกันระหว่างกลุ่มสูบบุหรี่และกลุ่มที่เลิกสูบบุหรี่ มีความตั้งใจที่จะสูบบุหรี่ลดลง

สรุป: ฉลากคำเตือนแบบรูปภาพช่วยให้ลูกจ้างมีการเปลี่ยนแปลงพฤติกรรมการสูบบุหรี่
