The Impact of Cigarette Plain Packaging on Health Warning Salience and Perceptions: Implications for Public Health Policy

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Abstract
The study employed a mixed methods design using focus group interviews with 6 student groups and self-administered questionnaires with 1239 students. The participants were nonsmoking, current smokers, and quit-smoking teenagers from secondary schools and colleges. Focus group revealed that although nonsmoking teenagers perceived fear appeals to warning messages, current smokers did not perceive fear appeals to health. Black and white backgrounds of the cigarette package were chosen as the best color for plain packaging. However, most participants suggested various pictorials and a bigger size of pictorial warnings for greater and more effective fear appeal. Odds ratio showed that males had 2.43 times the odds to perceive intention not to smoke. Teenagers who had never smoked and those who had quit smoking had 13.27 and 3.61 times the odds, respectively, to perceive intention not to smoke.

Keywords
plain packaging, health warning, tobacco, teen smoker, Thailand

Introduction
The use of tobacco is the foremost preventable cause of premature death, causing approximately 5 million deaths worldwide.1 Cigarette warning labels are a key element in most countries’ integrated public health campaigns designed to inform and persuade consumers about the negative consequences associated with smoking. For these health and consumer rights reasons, strong arguments have been made for governments to mandate effective health warnings on tobacco

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products. Such health warnings cost taxpayers nothing and potentially reach smokers every time they take a cigarette from a pack, buy a pack, or otherwise notice one.²

Experience in many countries, including Thailand, shows that strong health warnings on tobacco packages, particularly pictorial warnings, are an important health information source for younger smokers.³,⁴ In Thailand, the government holds the authority to regulate the manufacturing, advertising, and promotion of tobacco products to protect public health. Article 11 of the WHO Framework Convention on Tobacco Control (FCTC) recommends the minimum percent for the pictorial or graphic warning labels should cover the top 50%.⁵ Thailand has received appreciation from various countries as a pioneer of tobacco control policy and for actively seeking measurement to fully support continuing quit smoking campaigns as well as graphic warning labels that tend to show the highest levels of warning label effectiveness across measures.⁶ Tobacco use in Thailand has been monitored through a regular National Survey by the National Statistical Office since 1976. The survey resulting from WHO SEARO⁷ shows that the number of current smokers has been decreasing continuously during the past 16 years while the prevalence of current smoking decreased from 32.00% to 21.22%. However, a survey of adolescent smoking behaviors (13-15-year-olds) conducted by the Global Youth Tobacco Survey (GYTS) in 2009 determined that the current smoking rate was 11.7% (20.1% in boy and 3.8% in girl). In all, 10.8% reported using other types of tobacco products.⁷ However, research result reported that Thai adolescent smokers started first smoking at 14.6 years of age.⁸

As initiatives such as the FCTC and the Family Smoking Prevention and Tobacco Control Act move forward, the impacts of prominent and explicit health warnings have been communicated to the target population, especially among youth comprising the majority of new target customers.⁹ Therefore, understanding what types of warnings are most effective and the underlying mechanisms as to why such warnings might work (for teenagers) are important.

Experts consider cigarette packaging 1 of 5 key components of successful marketing strategies, together with product, price, place, and promotion.¹⁰ One way to prevent pack color being used to mislead teenagers about product strengths and harms is with plain (unbranded) packaging.¹⁰ Plain packaging policies are likely to be most successful in removing cigarette brand image association.¹¹ In 2012, plain packaging was a major battleground between the tobacco industry and governments. Of the few existing tobacco control laws, the tobacco industry fears mainly plain or standardized packaging.¹²

The WHO has indicated 3 benefits of plain cigarette packaging; first, it will reduce the appeal to the product; second, it will make the health warnings on the packet more prominent; and last, it will remove the ability of the package to create false perceptions using a desirable and fashionable package to lessen and distort the severity of harms caused by cigarette smoking.¹³ It is supported by the systemic review by Moodie et al¹⁴ who revealed that plain packaging tends to increase the recall of health warnings, the attention paid to them and their perceived seriousness and believability.

Thailand began the pictorial health warning in 2005 and a set of 6 warnings were rotated on cigarette packages. Thailand has since updated health warning regularly. The last rotation was in 2009 with a new set rotation of 10 health warning pictures.¹⁵ Now, Thailand’s Ministry of Public Health (MOPH) considers introducing plain packaging. A current draft Tobacco Consumption Control Act (TTCA) is set to introduce more restrictions, including the government dictating the design of tobacco product packaging and facilitating the introduction of plain packaging in Thailand.¹⁶

Scientific evidence from various health disciplines and professions in Thailand have been collected; however, indications are still insufficient to justify an appropriate implementation of plain packaging reform. As a result, the ongoing legal and policy debates are related to the proposed use of plain packaging and size of graphic warning labels in Thailand. Qualitative research on plain packaging mock up is needed to guide the development of the next generation of labels. Therefore, this study aimed to explore the impact of plain packaging on health warning salience and color on harm perception among teenagers attending school after observing cigarette plain packaging to investigate their reflection to the potential effects of health warn label on plain
packaging. The result of the study will be used to inform policy makers how to reform the national implementation of plain packaging in the future.

**Methods**

This study employed a mixed methods design with qualitative and quantitative research to evaluate the content of premarket plain packaging health warning messages. Focus group interviews and questionnaires were employed for qualitative and quantitative study. The study took place in secondary schools and colleges in Bangkok, Thailand, from July to August 2012.

**Participants**

Participants in both studies were recruited and voluntarily participated in the program by criteria measurement of secondary school and college populations. Nonsmoking teenagers, current smokers, and quit smoking teens were identified from teachers in the school setting. All participants included were 15 to 24 years of age. For the qualitative study, 6 different focus group discussions were conducted with nonsmoking teenagers (2 groups with 6 students each), current smokers (2 groups with 6 students each), and quit-smoking teens (2 groups with 6 students each). Focus groups for males and females were conducted separately. For quantitative study, the school sampling unit was recruited by multistage stratified random sampling from 4 provinces; representing 4 regions of Thailand (North, Northeast, Central, and South). Simple random sampling was applied to select 2 schools in each region. In each school, one class with the sample age 15 to 24 years was selected by teachers in the setting to collect data. A total of 1239 students were recruited. The sample size included those who never smoke (65.6%), current smokers (16.0%), and quit-smoking teens (18.4%).

**Research Instruments**

For the qualitative study, 2 types of research instrument were employed as described below.

1. **Mock-ups**: One set of an innovative cigarette plain pack production included 4-color covers; a plain green, dark brown, black, and off-white box with 50% of health warning pictures covering both sides of the pack showing 4 identical but differently colored packs with 6 of the selected health warning pictures on the front (see Figure 1). The brand name of each cigarette pack was typed in a small font; standard font with no logo or branding permitted. All cigarette pack designs and their contents were identical in these effects, as a stimulus agent. Regular cigarette packs with the same 6 selected health warning pictures were placed together for comparison.

2. **Focus group guidelines**: The instrument used for data collection was focus group interviews using guidelines developed by the principal researcher. Tools included tape cassettes and tape recorders. Two research assistants were trained regarding the data collection procedures and provided assistance as note takers, facilitators, and coordinators for the research activities, as well as interview transcribers. The focus group question route asked about the perspectives regarding package color, fear appeal, overall look, and other suggestions to make the package unappealing.

For the quantitative study, a self-administered questionnaire was used to collect data. The questionnaire included demographic characteristics, smoking status, perception on health warning, perceived disease susceptibility, perceived disease severity, fear arousal, and intention not to smoke. Each question was assigned multiple-choice responses, and the participants were asked to select a single response.
Data Collection

The research was reviewed and approved by the Human Subject Review Board from the Faculty of Public Health, Mahidol University, No. MUPH 2012-180. All participants and their parents were fully informed and signed consent was obtained before participation. For the qualitative study, data was collected through focus group discussions. All focus groups were moderated by the researcher team and the discussion lasted 1.5 to 2.0 hours each. During each interview, note taking, clarifying questions and eliciting the elaboration of responses was accomplished. On completing data collection, the researcher reflected on the observations, interactions, discussions, and impressions from field notes, as well as the transcribed interviews taken verbatim from audio tape recordings. To ensure reliability of the study, criteria for developing an effective evaluation of qualitative research was employed. Credibility of the study was established by members checking from participants and peer debriefing processes. Transferability of the study to other contexts was established by providing a database with sufficient information and detailed descriptions of the means used. Dependability and conformability were established by providing
sufficient information and an audit trail. For the quantitative study, data were collected in class-
rooms by 2 researchers and 1 research assistant. Participants were encouraged to complete the 
questionnaire in a private area to ensure privacy from teachers and other students.

Data Analysis

Qualitative data analysis was based on content analysis. Two researchers on the project contrib-
uted to this analysis by independently referring to the data sources (transcripts and notes). The 2 
researchers conducted inductive content analysis by applying an open coding strategy to analyze 
and transcribe verbatim from 6 focus group discussions. Each identified emerging themes and 
patterns. With all data sources, researchers reflected on the observations made, along with the 
interactions, discussions, and transcriptions from audio tape recordings as well as the records of 
researcher impressions in field notes. The interpretive technique was used to examine the discus-
sion for the package color, the fear appeal pictures, and overall look. The examination began with 
reading the transcript of each discussion and looking for potential meanings in the discussions. 
The researcher also sorted the information according to shared experiences. This was accom-
plished by examining and coding the discussions line-by-line, underlining key words or phrases, 
and then writing those words in the right hand margin. Texts with similar words or phrases were 
arranged together and then cover terms were created for these groupings. The textual categories 
were then examined for relationships among categories so as to answer the research questions. 
Several debriefing sessions were conducted among these researchers to discuss the analysis and 
results, to reach consensus on potential themes. Ongoing analysis and revision of data sources 
was conducted to ensure coding consistency, to refine the specifics of each theme, to strengthen 
within-theme coherence, to ensure evidence of saturation and to ensure the credibility of the data. 
This was an interactive process that continued throughout the writing of the results. For the quan-
titative study, analysis was performed using SPSS statistics version 18. Descriptive statistics and 
ods ratios were used to analyze data.

Results

Qualitative Study Results

The results from focus groups identified 51 findings that were further divided in 13 subcatego-
ries. Those subcategories were analyzed to produce 5 themes, namely, pictorial fear appeals to 
health, color perception, health warning size, response to addicted smokers, and reason to quit. 
Nonsmoking teenagers perceived fear appeals to be greater regarding warning and pictorial mes-
sages, while current smokers’ perceptions were unaffected by fear appeals to health. These are 
declared below.

Pictorial Fear Appeals to Health. The focus group discussions revealed that pictorials on the pack-
age should induce greater fear arousal to health, beauty and shame, such as the picture of ugly 
teeth and lesions at the cheek. The picture should induce or communicate signs of death, weak-
ness, and feelings of sorrow by the significant other regarding lung cancer. Nevertheless, lung 
cancer was also perceived as the disease without exposure to the public. Moreover, health warn-
ing pictures should induce the feeling of disgust and public exposure such as chronic obstructive 
pulmonary disease (COPD). These are the most likely impacts to the smoker, showing severe, 
incurable, disgusting, frightening, and suffering aspects. At the same time, it showed the slow 
progress of the disease that would affect them in the long run, and express the effects to individu-
als and society. Some secondary school students suggested using cartoon pictures on the package 
since they represented childhood and immaturity to shame the smoker; whereas the college
school students emphasized more on pictures depicting disgusting appearances from smoking as they projected an unimpressive image to the opposite sex. These details are described below.

The picture of cancer at the cheek looks scary because you cannot hide it. However, the tracheotomy and COPD you can hide and no one can see it.

The cancer at the cheek is scary for me because it could be seen easily but for the tracheotomy, you could hide using a scarf to cover. Lung cancer is too long term to be frightening, besides, the picture is a dead body not a living human like us. There is nothing related to smoking risk while the cancer at the cheek is very obviously seen.

The yellow teeth picture is very obviously seen, disgusting, exposure to the public, if it was I, I couldn’t accept it.

The picture of chronic obstructive pulmonary disease (COPD looks disgusting, shameful, ugly, scary, and it could be easily noticed when you are talking.

The COPD picture projects suffering, suffocation and bad smell.

The COPD appearance is easily noticed, creating a shameful appearance in public.

The COPD looks the scariest because you cannot talk and need speech therapy.

The COPD causes the feeling of long term severe effect to health in the long run with slow progress.

It should be the cartoon package such as Doraemon or Ultra Man to shame the smoker then they would have fear to pick the mentally deficient look of the package.

I suggest the pack with the picture of a woman showing disgust to a man smoking.

**Color Perception.** The majority of the participants suggested making the package unappealing; the color on the package should be a light or a strong color. A light color such as pink or leaf green would make the appeal look soft and weak opposite to the masculine look for male smoker. While the strong color especially black made the warning picture more prominent and could affect fear appeal toward health risks among consumers. Light colors such as green would bring about positive feelings of freshness and nature. Moreover, the participants indicated that it should be a color representing sexual preference such as violet or purple. The white packaging was mostly perceived as a sign for cremation in the Thai context and it would make the picture more outstanding. Some participants indicated that white packaging could be more risky to catch the eye of their teacher since smoking is prohibited in school. Additionally, white would bring about feelings of cleanliness, light taste, and harmlessness. In contrast, a strong color, especially black, would communicate a strong taste and looking fashionable among heavy consumers. Black also could signify death and sorrow to consumers’ perceptions. Interestingly, the consensus showed female teenagers preferred white and male teenagers preferred black packaging.

The response details are described below.

Black packaging brings out the feeling of sorrow, like at the funeral. It makes the feeling of do not want to pick. (HU5)

I chose the black packaging because it looked dull, dark, peaceful.
Black packaging looked smart and looked stronger in the taste.

Purple does not look good, I don’t like it. It doesn’t make me feel like I want to buy it or use it. People might misinterpret you as a homosexual.

Pink package looks weird to be a tobacco package. It doesn’t look cool for a guy. Rather, it looks soft and weak like a girl.

**Health Warning Size.** The focus group results revealed that participants suggested increasing the pictorial warning size and message to maximize fear arousal feeling and eliminate appealing logos. They suggested using 100% of the pictorial health warning area on the package.

The following statements serve as examples.

For greater effectiveness, it should be the package with the whole health warning picture covering it, while the brand should be only a small size at either side of cigarette case.

The package should be covered completely with the pictorial warning since the logo would no longer appeal to the consumer. In doing so, the consumer would be reluctant to buy.

The whole package should be covered by the health warning picture, to make it look too ugly to buy and look too disgusting to smoke.

It should be all (cover package completely) to make it big enough to smokers to see their future health problem consequence.

**Response to Addicted Smokers.** Most participants explained that normally the picture and the color on the package would not affect the addicted smoker because most smokers would not care about packaging. Moreover, the seller would normally pick the package for them, especially, for retail sellers because the cigarettes would not come with the package. Also, when the consumer lets others buy for them; they would not have a chance to check on the package, for example, a woman could let a man buy for her to avoid stigma. Examples of related responses are reported below.

In reality, the health warning message does not affect the smoker because we just tell the seller the brand we need.

In reality, the health warning picture has no effect on female smokers because they normally ask the man to buy for them or even ask for free to avoid the stigma of being considered an decadent girl. They hardly ever choose the package by themselves.

The health warning pictures have no impact on the addicted smoker; they could avoid the picture by buying the retail cigarette with no package.

**Reason to Quit.** The quit-smoking group indicated that normally the reason to stop smoking for the current smokers is because a significant other requested them to quit especially their parents. Some of them quit because of the consequence to their health problems, nothing related to pictorial or warning message.

Examples of related responses are reported below.

I stopped smoking because I felt I was weak.

I quit because I felt pity on my parents. My parents requested me to quit.

I quit because of my health consequence. I felt my brain didn’t function well.
Quantitative Study Results

The quantitative result showed that the majority of current smoker and quit-smoking teens were males (14.3% and 15.7%, respectively; Table 1). Males had 2.43 times the odds to perceive intention not to smoke when compared with females after seeing the plain packaging mockup. Never smoked teens and quit-smoking teens had 13.27 and 3.61 times the odds to perceive intention not to smoke when compared with current smokers after seeing the plain packaging mock-up (Table 2).

Discussion

The focus group result in this study indicated that participants were most concerned about fear arousal from the images of ugly and disgusting teeth and cheek lesion pictures because they induced more fear arousal than beauty and shame. This was supported by Strahan et al.18 who

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**Table 1. Smoking Behavior by Sex (n = 1239).**

<table>
<thead>
<tr>
<th>Sex</th>
<th>Never Smoker</th>
<th>Current Smoker</th>
<th>Quit Smoking</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Males</td>
<td>427 (34.5)</td>
<td>177 (14.3)</td>
<td>195 (15.7)</td>
<td>799 (64.5)</td>
</tr>
<tr>
<td>Females</td>
<td>386 (31.1)</td>
<td>21 (1.7)</td>
<td>33 (2.7)</td>
<td>440 (35.5)</td>
</tr>
<tr>
<td>Total</td>
<td>813 (65.6)</td>
<td>198 (16.0)</td>
<td>228 (18.4)</td>
<td>1239 (100)</td>
</tr>
</tbody>
</table>

**Table 2. Intention Not to Smoke by Characteristics (n = 1239).**

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Intention Not to Smoke</th>
<th>%</th>
<th>Adjusted Odds Ratio</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Sex</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Males</td>
<td></td>
<td>90.8</td>
<td>2.43*</td>
<td>1.52-3.89</td>
</tr>
<tr>
<td>Females</td>
<td></td>
<td>62.2</td>
<td>1.00</td>
<td></td>
</tr>
<tr>
<td><strong>School setting</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Schools</td>
<td></td>
<td>77.6</td>
<td>0.92</td>
<td>0.61-1.39</td>
</tr>
<tr>
<td>Colleges</td>
<td></td>
<td>64.7</td>
<td>1.00</td>
<td></td>
</tr>
<tr>
<td><strong>Smoking status</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Never smoker</td>
<td></td>
<td>87.5</td>
<td>13.27*</td>
<td>8.97-19.14</td>
</tr>
<tr>
<td>Quit smoking</td>
<td></td>
<td>61.3</td>
<td>3.61*</td>
<td>2.27-5.74</td>
</tr>
<tr>
<td>Current smoker</td>
<td></td>
<td>28.2</td>
<td>1.00</td>
<td></td>
</tr>
<tr>
<td><strong>Perceived disease susceptibility</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>High</td>
<td></td>
<td>74.8</td>
<td>1.06</td>
<td>0.50-2.26</td>
</tr>
<tr>
<td>Fair</td>
<td></td>
<td>62.2</td>
<td>1.04</td>
<td>0.51-3.50</td>
</tr>
<tr>
<td>Low</td>
<td></td>
<td>59.5</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Perceived disease severity</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>High</td>
<td></td>
<td>73.7</td>
<td>0.61</td>
<td>0.22-1.66</td>
</tr>
<tr>
<td>Fair</td>
<td></td>
<td>51.3</td>
<td>1.41</td>
<td>0.57-3.50</td>
</tr>
<tr>
<td>Low</td>
<td></td>
<td>61.7</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Fear arousal</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Low</td>
<td></td>
<td>73.4</td>
<td>1.18</td>
<td>0.83-1.69</td>
</tr>
<tr>
<td>High</td>
<td></td>
<td>64.6</td>
<td></td>
<td></td>
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</table>

*p < .05.
found that labels might be more effective if they highlighted the negative social consequences of smoking, for example, “Smoking causes bad breath and yellow teeth.” This was also supported by Presti et al. who pointed out that for teenagers, the focus on health risks associated with smoking may not be optimally effective. Teenagers are less likely than adults to value their health and as a result, the messages may highlight social and self-presentational reasons that play a major role in adolescent smoking. Therefore, policy makers should be concerned about how the different messages are relevant to different segments of the population, especially teenagers, the new target group for tobacco marketing. However, the focus group from this study revealed that health warning pictures should induce more feelings of disgust and public exposure such as the picture of a COPD patient because it showed the most likely impact for the smoker, displaying severe, incurable, disgusting, frightening results, and suffering, and at the same time it showed the slow progress of the disease to make the current smoker concerned about what would affect them in the long run, and express the effect to individuals and society. This was incongruent with the qualitative research by O’Hegarty et al. who concluded that for both smokers and nonsmokers, warnings that combine strong, graphic pictures with compelling verbal information, for example, “Cigarettes cause lung cancer,” are perceived as the most helpful. This is supported by a meta-analysis result from Witte and Allen who concluded that “the stronger the fear aroused by fear appeal, the more persuasive it is.” The picture was generally the first thing people looked at and related to. It determined the strength of the warning’s emotional impact and notice ability. It especially appears to be effective among youth as it provides them with important information about health effects of smoking cigarettes and makes smoking seem less attractive. Similarly, Rogers proposed that it was important for the fear appeal to affect perceptions of severity and susceptibility and not to evoke a defensive response to fear. For example, a pictorial warning on a package of cigarettes should make the threat of disease “real” to smokers and make them believe that they are at risk of contracting the disease if they do not cease the (harmful) behavior of smoking.

The results from questionnaire revealed that the majority of current smoker teens were males (14.3%). Similarly, the prevalence rate of adolescent tobacco use in developing countries report higher rate among male smokers (8.4%). However, the focus group results revealed that most female participants chose the white package while male participants chose the black package together with 3 health warning pictures such as cigarette smoking leads to lung, mouth, and pharyngeal cancers. This is congruent with Scheffels and Lund who revealed that for males, the package rated as most appealing was black, while females generally perceived white packs as more appealing as light colored packaging represented lower harm or was addiction-free. Moreover, literature reviewed by Hammond found that the survey in Ontario, Canada by Rootman and Flay also revealed that more than half of school children rated health warnings on plain white pack as easier to see and more serious with improved recall among smokers.

Furthermore, focus group results revealed that participants recommended larger pictorials or graphic warnings as well as warning messages as they would arouse more fear. The rationale for the potentially greater effectiveness of graphic warnings is that they provide more information (a picture is worth a thousand words) including evoking emotional responses to the images and that combined, was more likely to stimulate concern. A number of studies reported the beneficial impact of warning labels particularly large and prominent “graphic warning labels,” as an important source of health information for smokers and nonsmokers because exposure to graphic warning labels reduce cigarette packaging appeal, increase health knowledge, awareness, and perception of risks associated with smoking, and discourage smoking initiation. Evidence shows that if a country changes from smaller to larger pictorial warnings and creates more contrasting warnings, the impact of the warnings is increased.

However, current teenage smokers can buy cigarettes without packaging from retail shops, pointing out that the packaging means nothing to them as they never see the packaging. Some teens let others buy for them while female smokers tend to ask a male friend to buy for them to
avoid stigma as a smoking woman is considered a decadent woman in Thai society. This is supported by the systematic review result of Moodies et al.\textsuperscript{14} who found out that in most studies, the daily smoker pays less attention to warnings on plain packs. This is also congruent with Moodies et al.\textsuperscript{27} who revealed that no bearing exists on perceived appeal among young women smokers as they would remain loyal to their brand. The result is also consistent with the study of Scheffels and Lund\textsuperscript{25} who reported that males demonstrate stable views on packaging regardless of conditions, which could indicate that package design is less important for males. Current smokers’ reaction to the package was also supported by the quantitative results from this study where the odds ratio revealed that never-smoked teens and quit-smoking teens had 13.27 and 3.61 times, respectively, the odds to perceive intention not to smoke when compared with current smokers. However, the quantitative result from this study revealed that that male in all smoking types (never smoke, current smoker, or quit smoking) were higher in perceived intention not to smoke after seeing plain packaging mock-up than females. It is more likely that males as the majority of current smokers were more concerned about their health risks associated with smoking, which resulted in greater intention not to smoke than females.

Current smokers from focus group discussions pointed out that the pictorial fear arousal appearing on the package did not affect their intention to quit; the only factor affecting their intention to quit was the request from their significant other. This was supported by Maheswaran and Meyers-Levy\textsuperscript{28} who suggested that health warning messages are more effective depending on various factors such as whether respondents are motivated to engage in a determined process. The study of Fishbein and Azjen\textsuperscript{29} revealed that subjective norms and social approval have a strong influence on health behavior. People are more likely to perform a behavior if they believe that the behavior is valued or expected within their reference group. They tend to accommodate the expectations of important people in their lives. Strahan et al.\textsuperscript{18} suggested that warning labels might be more effective if they conveyed credible messages indicating significant reference groups, for example, children, friends, and parents, who were strongly in support of cessation. Therefore, to target teenager groups, the message should be incorporated with fear appeal, for example, 85% of family members surveyed wanted their loved one to quit smoking. This was consistent with the study result of Huang et al.\textsuperscript{30} who revealed that adopting significant reference groups on cigarette packages could reduce smoking prevalence.

However, this research offers evidence on how teenagers evaluate and interpret graphic warning labels and explores how dominant factors may affect the role that graphic warning labels play a significant in their perceptions of health risk, preventing smoking, and intention not to smoke in the future, as well. Not only would plain cigarette packaging enhance the salience and impact of graphic warning labels, but would also potentially increase the power of the message that cigarette smoking is harmful, especially using a black and white package cover.

**Conclusion**

Pictorials on the packages should induce greater fear arousal to health and beauty for teenagers. Although the result revealed pictures and the colors on the package did not affect the addicted smoker, increasing the pictorial warning size would maximize fear arousal feelings and eliminate appealing logos. Warning labels on white or black plain package covers could be seen as being more serious than the same warnings on the regular package covers. Warning labels might be more effective if they conveyed messages indicating significant others who are strongly in support of cessation.

**Limitations of the Study**

One limitation of the study was that the cigarette package design was not the only important factor that could determine cigarette consumption among youths; the decision-making process
regarding smoking is known to be strongly connected with other factors, including the family and school environments and many individual factors.

The evidence based on plain packaging as a potential policy initiative for reducing tobacco consumption should be introduced for a transitional period of cigarette restriction among Thai teenagers. The study recommends policy driven approaches for larger pictorial health warning advertisements to be considered and advocates implementing plain packaging as most appropriate for fear arousal among teenagers.

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