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The effectivity of pictorial health warning to motivate smoking cessation in rural area: A study from Losari village, Indonesia

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Abstract:

INTRODUCTION: Smoking is a significant health problem among Indonesian adolescents and adults. The Indonesian government had issued several policies to alleviate this problem, including placement of pictorial health warning (PHW) on cigarette package. There had been several evaluation studies regarding the effectivity of PHW in urban areas but none in rural areas. This study aims to evaluate the effectivity of PHW in motivating smoking cessation in a rural area in Indonesia.

MATERIALS AND METHODS: This was a descriptive cross-sectional study conducted in August 2017 in Losari village, Indonesia. Respondents of this study were villagers aged 18–60 years who were active smokers and purchased cigarette with PHW on the package. The research instruments for this study were questionnaire and printout pictures of each PHW approved by the Indonesian government.

RESULTS: There were 94 respondents recruited in this study. Among them, only 26 (27.7%) stated that PHW motivated them to stop smoking. From the five figures of PHW, a picture of lung cancer was the most effective PHW to motivate smoking cessation. Eighty-one of 94 respondents affirm that there are other factors besides PHW that might motivate them to stop smoking. Most of them agreed that an increase in cigarette price will force them to stop smoking.

CONCLUSIONS: Current PHW used on cigarette package might be ineffective in motivating smoking cessation at Losari village. Further study with larger samples needs to be done to confirm this finding.

Keywords:

Health promotion, Indonesia, pictorial health warning, rural area, smoking cessation

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Introduction

The global death toll by tobacco smoking is estimated to reach five million people each year including both active and passive smokers.[1] The Indonesian Basic Health Research (RISKESDAS) survey in 2013 found that the prevalence of cigarette smoking is 36.3% with the average consumption of 12.3 cigarettes/day. The prevalence is increased by 2.1% from the previous survey in 2007.[2] One of the challenges to reduce cigarette smoking in Indonesia is its general acceptance as a norm among Indonesian people. Cigarette is often consumed in social gathering both in urban and rural areas.[3] The prevalence of smoking remains high as a result of the relative ease to get nicotine and the delayed appearance of the hazardous health issues. Thus, multisectoral approaches such as heavy taxation, pharmacological intervention,

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and behavioral supports are necessary in lowering the prevalence of smoking.[4]

Several approaches have been implemented to reduce smoking prevalence including heavier taxation, advertisement and educational campaigns, smoking restrictions in public places, smoking cessation therapies, and display of pictorial health warning (PHW) on cigarette package.[5] Article 11 of the WHO Framework Convention on Tobacco Control (FCTC) highlights the importance of packaging to communicate the dangers of smoking. The article mandates the members to issue sizeable PHW on cigarette packaging in their country.[6] Indonesia is not yet a member of FCTC, but the Indonesian 2013 minister's policy shares the same spirit of the aforementioned article 11 regarding the use of PHW.[7]

The depiction of PHW on cigarette packaging is proven effective to communicate the health risks posed by smoking, and the area size of the warning is correlated with its effectiveness. Various countries issue different PHW area size. For example, the PHW could cover as much as 80% of the packaging in Thailand, Australia, and Uruguay.[8] On the other hand, the Indonesian policy only demands an area covering coverage of 40%. The Indonesian government issued five different pictures: three depicting cancers, one depicting someone smoking with a child, and one depicting someone smoking while the smoke from skulls [Figure 1].[7]

Until now, published studies regarding the effect of PHW on smoking behavior in Indonesia were limited to two studies only. One study describes the effect of PHW on smoking behavior among undergraduate students in West Java. The study found that the picture depicting disease and cancer associated with cigarette smoking supplemented by "smoking kills you" text is more effective compared to other pictures or longer complicated text.[9] The other study that was done in Jember district found that among high secondary school students who actively smokes, majority of them were not scared by the PHW on cigarette package.[10] However, the study did not evaluate the effect of the PHW on the students' motivation to stop smoking.

This study aims to analyze the impact of PHW implementation issued by the Indonesian government to motivate smoking cessation in a rural area. This study is important because there is no study analyzing the impact of PHW issued by the Indonesian government toward smoking behavior among rural area inhabitants until now.

Materials and Methods

This study was a descriptive cross-sectional study conducted in August 2017 in Losari village, Singosari city, East Java, Indonesia. Respondents of this study were villagers aged 18–60 years. Inclusion criteria were active smokers and agreed to be interviewed for this study. Exclusion criteria were active smokers who consume illegal cigarette that does not display PHW in the package. The sample size for this study was calculated using population survey formula in Epi Info™.[11]

Research instruments for this study were questionnaire and printout pictures of each PHW approved by the Indonesian government [Figure 1].[7] The questionnaire in this study consisted of four sections as follows: (1) basic information of the respondents, (2) smoking habit, (3) opinion about PHW in motivating them to stop smoking, and 4) other factors that might motivate them to stop smoking. Collected data were analyzed with descriptive analysis using SPSS 17.0.0 for Windows, 2007, SPSS Inc. Chicago, IL, USA.

This study follows the ethical standards of the Declaration of Helsinki. This study was ethically approved by the Ethics Committee of Faculty of Medicine Universitas Airlangga before conducting the study. All respondents gave their informed consent prior to their inclusion in the study. Before signed the informed consent, information for informed consent were given. Details that might disclose the identity of the respondents under the study were omitted. This study follows the STROBE guideline.

Results

The total population in Losari village was 5173 people, and 3263 of those were aged 18–60 years. The calculation using Epi Info™ yielded the minimum number of 93 samples. There were 94 respondents recruited for this study. All respondents were male with a mean age of 39.39 ± 12.22 years. Based on the education level, around half of the respondents

Figure 1: Pictorial health warning approved by the Indonesia Ministry of Health.[7] Picture with: (a) "smoking kills you" warning text, (b) "smoking causes oral cancer" warning text, (c) "smoking causes throat cancer" warning text, (d) "smoking causes lung cancer and chronic bronchitis" warning text, (e) "smoking close to infant will harm them" warning text

were higher secondary graduate and only 4.2% were diploma graduate. There were 36.1% of the respondents with a monthly income higher than regional minimum wage. The majority of the respondents were married. Based on daily cigarette consumption, 64.9% of the respondents smoke between one and two packs per day. Most of the respondents had already been smoking cigarette for >5 years [Table 1].

Twenty-six (27.7%) respondents admit that PHW on cigarette package motivates them to stop smoking. Based on the respondents' education level, 15.4% of the respondents with primary graduate were motivated by the PHW to stop smoking, and the percentage increases to 34.5% among higher secondary graduate. The percentage of respondents who were motivated to stop smoking by PHW was higher in married respondents than in single respondents. Those with higher monthly income were more motivated by PHW to stop smoking compared to those with lower income [Table 2].

Respondents who smoke <5 years were more likely to be encouraged by PHW to stop smoking compared to respondents who smoke >5 years [Table 2]. Between available figures of PHW in Indonesia, the most effective PHW to motivate smoking cessation was the picture of lung cancer [Figure 1d], followed by the picture of tracheal cancer [Figure 1c and Table 3].

There were 81 of 94 (86%) respondents who thought that there were other factors that might motivate smokers to stop smoking. Among them, most of the respondents agreed that an increase in cigarette price will force them to stop smoking. Some respondents said that personal medical experience has made them realize about the negative effect of smoking and eventually made them stop smoking [Table 4].

Table 1: Respondents' sociodemographic characteristic of the study (*n*=94)

Sociodemographic characteristics	*n* (%)
Respondents' age (mean±SD)	39.39±12.22
Education level	
Primary graduate	13 (13.8)
Secondary graduate	22 (23.4)
Higher secondary graduate	55 (58.5)
Diploma graduate	4 (4.2)
Marital status	
Single	15 (16)
Married	79 (84)
Monthly income	
Lower than minimum wage	60 (63.9)
Higher than minimum wage	34 (36.1)
Daily cigarette consumption	
<1 pack/day	24 (25.5)
Between 1 and 2 packs/day	61 (64.9)
More than 2 packs/day	9 (9.6)
Smoking duration (year)	
<1 year	1 (1.1)
Between 1 and 5 years	9 (9.6)
Between 5 and 10 years	19 (20.2)
More than 10 years	65 (69.1)

SD=Standard deviation

Table 2: Effect of pictorial health warning toward motivation to stop smoking

Sociographic parameter	*n* (*n*=94)	Motivation to stop smoking	
		Yes, *n* (%)	No, *n* (%)
Education level			
Primary graduate	13	2 (15.4)	11 (84.6)
Secondary graduate	22	5 (22.7)	17 (77.3)
Higher secondary graduate	55	19 (34.5)	36 (65.5)
Diploma graduate	4	0 (0)	4 (100)
Marital status			
Single	15	3 (20)	12 (80)
Married	79	23 (29.1)	56 (70.9)
Monthly income			
Below minimum wage	60	15 (25)	45 (75)
Higher than minimum wage	34	9 (26.47)	25 (73.53)
Smoking duration			
Less than a year	1	0 (0)	1 (100)
1-5 years	9	4 (44.4)	5 (55.6)
5-10 years	19	5 (26.3)	14 (73.7)
>10 years	65	17 (26.2)	48 (73.8)

Discussion

In this study, we found that 27.7% of the respondents admit that PHW motivates them to stop smoking. A previous study in India showed that PHW is ineffective, where 61.47% of the smokers stated that it will not motivate tobacco users to quit, and 71.5% stated that it is inadequate to convey health impact.[12] Another study from Malaysia found that 63.8% of the respondents believe that PHW will not be enough to motivate people to stop smoking. It concluded that PHW may only deter nonsmokers and early smokers from smoking but not adequate to motivate smokers to quit.[13] A study conducted in Austria found that PHW was not the main reason for all ex-smokers to quit smoking. Only 10% of them stated that PHW was one of the reasons for quitting, whereas the rest clearly stated that PHW had no effect on their decision.[14]

In our finding, we found a trend that the higher the education level, the higher the percentage of respondents that were motivated by PHW to stop smoking. This finding was in line with previous studies which found that better education level has a significant association with awareness about PHW on cigarette pack.[15,16] However, among our respondents with education level of diploma, none of them was motivated to stop smoking. We argue that it is because these respondents have been smoking cigarette for more than 10 years. Chronic smoking is suggested to

Table 3: Effect of each pictorial health warning toward motivation to stop smoking (*n*=94)

Pictorial health warning	*n* (%)
Figure 1a	
Motivated	4 (4.3)
Not motivated	90 (95.7)
Figure 1b	
Motivated	8 (8.5)
Not motivated	86 (91.5)
Figure 1c	
Motivated	12 (12.8)
Not motivated	82 (82.7)
Figure 1d	
Motivated	15 (16)
Not motivated	79 (84)
Figure 1e	
Motivated	7 (7.4)
Not motivated	87 (92.6)

Table 4: Other factors that might motivate smoking cessation (*n*=94)

Factors	*n* (%)
Personal medical experience	12 (12.77)
Intense counseling	1 (1.06)
No cigarette sold in the market	1 (1.06)
Increase in price	63 (67.02)
Smoke-free zone	4 (4.26)
No other factors	13 (13.83)

be correlated with neurocognitive impairment due to decreased cerebral blood flow globally. It will lead to the prominent dysfunction in neurocircuitry which plays a role in decision-making, impulse control, judgment, planning and reasoning skills, and in the initiation and maintenance of substance use disorders.[17] In line with the suggested theory, in this study we found that the longer the smoking duration, the lower their motivation to stop smoking.

In our study, we found that PHW motivated married respondents to stop smoking more than unmarried respondents. A previous study found that married smokers have a higher intention to quit because of the impact of tobacco-related health warning label compared to unmarried smokers.[18] A study in Brazil also found a similar result where married women are more motivated to quit smoking after viewing PHW on cigarette package compared to unmarried women.[19]

In this study, we found that the effect of PHW toward motivation to stop smoking was lower in respondents with lower income compared to respondents with higher income. This finding was similar with previous studies which found that people with lower socioeconomic status were less aware about the PHW.[15,16] A systematic review study also concludes that there is an inverse correlation between income level and tobacco use prevalence worldwide.[20] The widely acceptable explanation of this finding was through the four-stage model of smoking epidemic which was proposed two decades ago. In the first stage, cigarette smoking was dispersed among higher income group as they are open to an innovation. In the second stage, smoking prevalence is similar in all classes. In the third stage, there will be a significant decline in the prevalence of smokers among higher income group as they respond more favorably to health promotion campaigns about the hazard of smoking. In the end, social differences in smoking prevalence persist or may even widen.[21]

In our finding, the most effective PHW was a picture of lung cancer [Figure 1d]. However, it only managed to motivate 16% of the respondents. Previous study in Indonesia found that among high secondary school students who actively smokes, only 20.59% of them are scared by the current available PHW.[10] A review study of the PHW implementation in European countries supports the effectiveness of disquieting PHW, where warning with shocking images was rated as the most effective and most likely to be remembered by the smokers.[22] Previous studies in India found that to make PHW more effective, much stronger messages should be introduced, such as dreadful pictures of cancer, because weak and ineffective warnings on tobacco packs will not perform the crucial role of informing users and saving lives.[23,24] A study from Malaysia found that the Gruesomeness of PHW significantly contributed to perceived knowledge of health effect of smoking and influenced the smoker for quitting attempts.[25]

There has been finding that the size and location of PHW also might affect the salience of the health warnings. Adolescents and adults are more likely to memorize larger warnings, consider larger warnings as more effective, and often correlate the size of the warning with the severity of the risk.[22] It is also suggested that new PHW is needed to be introduced regularly to maintain behavior salience.[26]

As indicated in our finding that PHW implementation is not very effective in motivating smokers to quit smoking, there is an urge to find another solution to increase the motivation. A previous study stated that continued use of ineffective warnings represents a missed opportunity as the government has failed to effectively utilize this evidence-based strategy to enhance knowledge about the effects of tobacco among the people, in addition to other educational interventions.[12] Other than PHW, most of our respondents suggested that the best way to stop people from smoking is by increasing the price of the cigarette. This finding was in accordance with previous study which found that higher cigarette prices can increase smoking cessation as well as motivate smokers

to quit despite the existence of cheaper cigarette sources.[27] An evaluation study among Korean population found that 2.3 times of current cigarette retail price is required to force people to stop smoking.[28] The simulation model predicts that an increase in tax has the potential to reduce the number of smokers, with greater effect experienced by the youth. An increase of tax over 50% from the price would lead to 11% reduction in the total smoker population and 30% in the youth smokers at the end of 1st year. It is suggested that tax increases have larger effects in developing countries.[29] Working group of International Agency for Research on Cancer came to a conclusion that there was a sufficient evidence of effectiveness of increased taxes and prices of tobacco in reducing overall tobacco consumption and prevalence of tobacco use and improvement of public health, including by preventing initiation and uptake among young people, promoting cessation among current users, and lowering consumption among those who continue to use.[30]

Conclusion

Current PHW used on cigarette package might be ineffective in motivating smoking cessation at Losari village. Further study with larger samples needs to be done to confirm this finding. Moreover, a nationwide study which includes rural, suburban, and urban areas also needs to be done to evaluate the effectiveness of PHW and to find an alternative method to motivate smoking cessation. The result could be used to shape new policy and improve the efforts on tobacco control.

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Conflicts of interest

There are no conflicts of interest.

References

1. Jha P, MacLennan M, Chaloupka FJ, Yurekli A, Ramasundarahettige C, Palipudi K, *et al*. Global hazards of tobacco and the benefits of smoking cessation and tobacco taxes. In: Gelband H, Jha P, Sankaranarayanan R, Horton S, editors. Cancer: Disease Control Priorities. 3rd ed., Vol. 3. Washington, DC: World Bank; 2015.
2. Kementerian Kesehatan Republik Indonesia. Basic Health Research (RISKESDAS). Jakarta: Badan Penelitian dan Pengembangan Kesehatan Kementerian Kesehatan Republik Indonesia; 2013.
3. Aditama TJ. Smoking problem in Indonesia. Med J Indones 2002;11:56-65.
4. West R. Tobacco smoking: Health impact, prevalence, correlates and interventions. Psychol Health 2017;32:1018-36.
5. Gilbert A, Cornuz J. Which are the Most Effective and Cost-effective Interventions for Tobacco Control? Copenhagen: World Health Organization Regional Office for Europe's Health Evidence Network; 2003.
6. Bekki K, Inaba Y, Kunugita N. WHO framework convention on tobacco control (FCTC) article 11: Packaging and labelling of tobacco products. Nihon Eiseigaku Zasshi 2015;70:24-32.
7. Indonesian Minister of Health Regulation Number 28, 2013 on Health Warning Message and Health Information on Tobacco Packaging; 2013.
8. Jung M. Implications of graphic cigarette warning labels on smoking behavior: An international perspective. J Cancer Prev 2016;21:21-5.
9. Hamdan SR. Effect of pictorial health warning against intention to stop smoking (article in Indonesia). MIMBAR 2015;31:241-50.
10. Sandra C. Effectiveness analysis of the pictorial health warning policy on cigarette packs in lowering the smoking behavior students of SMK in Jember district (Article in Indonesia). J Kebijakan Kesehatan Indone 2016;5:163-7.
11. Dean AG, Arner TG, Sunki GG, Friedman R, Lantinga M, Sangam S, *et al*. Epi Info™, a Database and Statistics Program for Public Health Professionals. Atlanta, GA: Centers for Disease Control and Prevention; 2011.
12. Arora M, Tewari A, Nazar GP, Gupta VK, Shrivastav R. Ineffective pictorial health warnings on tobacco products: Lessons learnt from India. Indian J Public Health 2012;56:61-4.
13. Rahman MM, Arif MT, Abd RM, Suhaili MR, Tambi Z, Akoi C, *et al*. Effectiveness of pictorial health warning on cigarette packages: A cross-sectional study in Sarawak, Malaysia. Malays Fam Physician 2015;10:19-26.
14. Mayerl H, Stolz E, Freidl W. Responses to textual and pictorial cigarette pack health warnings: Findings from an exploratory cross-sectional survey study in Austria. BMC Public Health 2018;18:442.
15. Bhardwaj V, Fotedar S, Abbot S, Jhingta P, Sharma D, Negi N. Awareness of pictorial warning on cigarette packets and its impact on smoking cessation among smokers in Shimla, Himachal Pradesh: A cross-sectional study. Int J Health Allied Sci 2016;5:148-53.
16. Majumdar A, Kumar SG, Selvaraj R. Awareness of health warnings and factors predicting awareness and perceived effectiveness of pictorial health warnings on tobacco products among adults in Rural Puducherry, India. J Educ Health Promot 2017;6:23.
17. Durazzo TC, Meyerhoff DJ, Nixon SJ. Chronic cigarette smoking: Implications for neurocognition and brain neurobiology. Int J Environ Res Public Health 2010;7:3760-91.
18. Cantrell J, Vallone DM, Thrasher JF, Nagler RH, Feirman SP, Muenz LR, *et al*. Impact of tobacco-related health warning labels across socioeconomic, race and ethnic groups: Results from a randomized web-based experiment. PLoS One 2013;8:e52206.
19. Bittencourt L, Person SD, Cruz RC, Scarinci IC. Pictorial health warnings on cigarette packs and the impact on women. Rev Saude Publica 2013;47:1123-9.
20. World Health Organization. Systematic Review of the Link Between Tobacco and the Poverty. Geneva: WHO; 2011.
21. Lopez AD, Collinshaw NE, Piha T. A descriptive model of the cigarette epidemic in developed countries. Tobacco Control 1994;3:242-7.
22. Hammond D. Health warning messages on tobacco products: A review. Tob Control 2011;20:327-37.
23. Rekha B, Anjum S. Effectiveness of pictorial warnings on tobacco

packs: Hospital-based study findings from Vikarabad. J Int Soc Prev Community Dent 2012;2:13-9.
24. Raute LJ, Pednekar MS, Gupta PC. Pictorial health warnings on cigarette packs: A population based study findings from India. Tobacco Use Insights 2009;2:TUI.S2751.
25. Rahman MM, Arif MT, Suhaili MR, Razak MF, Akoi C, Azihan N, *et al*. Knowledge, attitude, pictorial health warnings and quitting attempt to smoking in Sarawak, Malaysia. Bangladesh J Med Sci 2017;16:266-73.
26. Ratih SP, Susanna D. Perceived effectiveness of pictorial health warnings on changes in smoking behaviour in Asia: A literature review. BMC Public Health 2018;18:1165.
27. Ross H, Blecher E, Yan L, Hyland A. Do cigarette prices motivate smokers to quit? New evidence from the ITC survey. Addiction 2011;106:609-19.
28. Park EJ, Park S, Cho SI, Kim Y, Seo HG, Driezen P, *et al.* What cigarette price is required for smokers to attempt to quit smoking? Findings from the ITC Korea waves 2 and 3 survey. Tob Control 2015;24 Suppl 3:iii48-55.
29. Levy DT, Cummings KM, Hyland A. Increasing taxes as a strategy to reduce cigarette use and deaths: Results of a simulation model. Prev Med 2000;31:279-86.
30. Chaloupka FJ, Straif K, Leon ME; Working Group, International Agency for Research on Cancer. Effectiveness of tax and price policies in tobacco control. Tob Control 2011;20:235-8.