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Effect of Pictorial Health Warnings on Fear and Intensity Smoking Cessation

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ABSTRACT

***Background**: World Health Organization (2020) states that the number of smokers aged 15 years and over in the world is 991 million people. The highest number of smokers in ASEAN is in Indonesia (46.16%). Riskesdas South Kalimantan (2018) states that the prevalence of smokers in South Kalimantan is 24.42%. The highest prevalence of smoking in South Kalimantan Province in 2018 with a frequency of every day was in Kotabaru Regency at 27.37%, Hulu Sungai Tengah at 22.03%, and Banjar Regency at 20.88%. **Aims**: Explain and analyze the effect of pictorial health warnings on cigarette packaging on fear and intensity of smoking cessation in Kotabaru, Hulu Sungai Tengah, and Banjar districts. **Method**: The study used a cross sectional design. Accidental sampling was used with a sample of 164 Kotabaru districts, 112 Hulu Sungai Tengah samples, and 224 Banjar samples. The research instrument was a modified questionnaire from WHO STEPwise and previous research which were* then tested for validity and reliability. *Data analysis was univariate and bivariate analysis using linear regression analysis. **Results**: There was a relationship between pictorial health warnings on cigarette packaging with fear (p-value = 0.0001, r = 0.731) and smoking cessation intensity (p-value = 0.0001, r = 0.771). There is a positive influence between pictorial health warnings on cigarette packaging on fear by 53.4% and smoking cessation intensity by 59.4%. **Conclusion**: There is an influence between pictorial health warnings on cigarette packaging on fear and smoking cessation intensity in Kotabaru, Hulu Sungai Tengah, and Banjar districts.*

***Keywords**: Pictorial health warnings, Fear, Smoking cessation intensity*

INTRODUCTION

Based on the *World Health Organization report* (2020), the number of smokers aged 15 years and over in the world is 991 million people. The highest number of smokers in ASEAN is in Indonesia (46.16%) (Mutia, 2021). Prevalence of smoking at the age of more than 15 years in 2020 reached 28.69% then rose to 28.96% in 2021 and fell again in 28.26% (Badan Pusat Statistik Indonesia, 2020).

Survey results from General Adult Tobacco showed that Indonesians burn around 270 billion cigarettes a year, the average male smoker consumes 13 cigarettes per day, while female smokers consume 8 cigarettes per day, the rest are smoked by novice smokers. The WHO report states that Indonesia is the third largest country in the world with the highest number of smokers after China and India. (Nasir & Yulianto, 2023).

Based on the results of South Kalimantan Basic Health Research (2018), the prevalence of smoking in South Kalimantan is 20.55% (Riskesdas, 2019). Based on data from the Central Bureau of Statistics South Kalimantan, smoking

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problems have fluctuated from 2020-2022. The increase occurred from 23.83% in 2020 and then increased to 24.51% in 2021 and decreased again to 21.89% in 2022 (Hidayat & Agnesia, 2021).

The highest smoking prevalence in South Kalimantan Province in 2018 with a daily frequency is in Kotabaru Regency at 27.37%, other districts that also have a high prevalence are Hulu Sungai Tengah Regency at 22.03%, Banjar Regency is the district with the most population after Banjarmasin has a smoking prevalence of 20.88%. The prevalence in the 3 districts exceeds the prevalence of South Kalimantan Province by 20.55% (Riskesdas, 2019).

Pictorial health warnings are graphic displays typically placed on the packaging packets of tobacco products, such as cigarettes, cigars, and other tobacco products. The aim is to convey a clear and powerful health message about the negative health effects of smoking on health to consumers (Rico Satria, 2020) These displays include images depicting horrific health impacts, such as images of organs damaged by smoking or smoking-related health warnings. An overview of how pictorial health warnings can affect people is that the design and content they contain are always accompanied by concise and powerful messages, their size and placement which are usually in common spaces (Maulina, 2018).

The effectiveness of pictorial health warnings themselves has had an impact on reducing tobacco use through regulations from the Regulation of the Minister of Health Number 28 of 2013 which has regulated the use of images used with a ratio of 7: 5 and other formats that have been regulated as many as 19 articles (Kementerian Kesehatan, 2013). Based on previous research, pictorial health warnings have been shown to be effective for smoking cessation, with 25% in Singapore, 92% in Thailand and 44% in Canada (Kemenkes RI, 2013). The implementation of health warnings is well perceived by most active smokers and has a positive impact on people's smoking behaviour. Pictorial health warnings provide information about the specific health consequences of smoking, warnings motivate smokers to quit and warnings discourage potential smokers from starting. In addition, the importance of warning health messages through text and images on cigarette product packaging can increase public awareness of the negative health effects, increase knowledge related to the dangers of smoking, prevent a person from starting smoking and can increase a person's intention to quit smoking *(Ngo et al.*, 2018).

Graphic warnings evoke emotions of fear, dislike or anxiety, which have a positive impact on quitting, attempting to quit or reducing smoking. Warnings in the form of bold or scary images can evoke fear in smokers, with the emergence of fear can mediate Pictorial Health Warning on smokers' intention to quit smoking (Gallopel-Morvan et al., 2013). Previous research shown that there is a correlation between health warning images and fear (p-value = 0.0001, r = 0.698) and smoking cessation intensity (*p-value = 0.0001, r = 0.569)* (Putri Andriani et al., 2023). Based on the above problems, researchers are interested in researching the "Effect of Pictorial Health Warnings on Fear and Intensity of Smoking Cessation".

METHODS

This research is observational analytics using *Cross Sectional* studies, namely analytical research to determine the relationship between variables identified at one time. The location of this research was carried out in the residential areas of Kotabaru, Hulu Sungai Tengah, and Banjar regencies. The subjects of this study were 500 people who were active smokers divided into 3 districts using the *Accidental Sampling* technique. The results of proportional sample calculations based on smoking prevalence in each district obtained a minimum sample of 164 samples for Kotabaru Regency in the Districts of Pulau Laut Mediterranean, Pulau Laut Utara, and Pulau Laut Sigam, 112 samples for Hulu Sungai Tengah Districts in Barabai, Batu Benawa and Pandawan Districts, and as many as 224 samples for Banjar Regency in Aluh-Aluh District, Gambut, and Martapura.

The research instrument used was a modified questionnaire from the WHO STEPwise instrument related to tobacco use and from previous studies and theories related to fear and intensity of smoking which were then tested for

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validity and reliability of the questionnaire. Data collection is carried out by filling out questionnaires. Data analysis in this study in the form of univariate and bivariate analysis used linear regression to see the effect of pictorial health warnings on fear and intensity of quitting smoking. Based on the certificate of feasibility of research ethics No.343/KEPK-FK ULM/EC/X/2023, this research proposal has been reviewed by the Health Research Ethics Commission, Faculty of Medicine, Lambung Mangkurat University on October 12, 2023.

RESULTS AND DISCUSSION

Table 1. Characteristics of Respondents in Kotabaru, Hulu Sungai Tengah, and Banjar Regency

Characteristics	(n)	(%)
Gender		
Man	488	97,6
Woman	12	2,4
Age Category		
Early Adolescence (12-16 years old)	2	0,4
Late Adolescence (17-25 years old)	136	27,2
Early Adult (26-35 years)	83	16,6
Late Adult (36-45 years old)	85	17
Early Elderly (46-55 years)	111	22,2
Late Elderly (56-65 years old)	60	12
Elderly (> 65 years old)	23	4,6
Education		
No School	2	0,4
Not complete Elementary School or equivalent	12	2,4
Elementary School	100	20
Junior High School or equivalent	107	21,4
Senior High School or equivalent	236	47,2
College	43	8,6
Employment Status		
Unemployed	28	5,6
Employed	472	94,4
Average Number of Cigarettes		
Heavy smokers (>20 cigarettes/day)	230	46
Moderate smokers (10-20 cigarettes/day)	147	29,4
Light smokers (<10 cigarettes/day)	123	24,6

Based on table 1, it is known that out of 500 respondents, it was found that most of the respondents were male totaling 488 people (97.6%) and 12 people (2.4%) were female. Based on the age category, the most respondents were found in the late adolescent category of 136 people (27.2%) followed by the early elderly age category of 111 people (22.2%), late adults of 85 people (17%), early adults of 83 people (16.6%), late elderly of 60 people (12%) and early adolescents of 2 people (0.4%). Based on the level of education, it can be seen that the most respondents were found at the senior high school or equivalent of 236 people (47.2%), followed by the junior high school or equivalent of 107 people (21.4%), then the elementary level of 100 people (20%), the college level of 43 people (8.65), then not complete elementary school by 12 people (2.4%) and no school by 2 people (0.4%). Based on employment status, the most respondents were found in those who worked as many as 472 respondents (94.4%) and unemployed as many as 28 respondents (5.6%). Based on the results of the average number of cigarettes smoked every day, it can be seen that heavy smokers dominate from all respondents in this study by 230 people (46%).

Table 2. Research Variables

Variable	(n)	(%)
Pictorial Health Warning		
Very attentive	117	23,4
Attentive	320	64
Less Attentive	63	12,6
Fear		
High	129	25,8
Medium	182	36,4
Low	189	37,8
Smoking Cessation Intensity		
Quit attempt	141	28,2
Hesitant quit attempt	273	54,6
Unprepared quit attempt	86	17,2

Based on table 2, it can be seen that the majority of respondents to pictorial health warnings attentive to 320 people (64%), then very attentive to 117 people (23.4%) and less attentive to 63 people (12.6%). The majority of smokers regarding fear are low at 189 people (37.8%) then followed by medium at 182 people (36.4%) and high at 129 people (25.8%). The most common smoking cessation intensity was found in respondents who were hesitant quit attempt as 273 respondents (69%), then quit attempt as 141 respondents (28.2%), and unprepared quit attempt as 86 respondents (17.2%).

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Table 3. Effect of Pictorial Health Warnings on Cigarette Packaging on Fear

Variable	Coefficient Regression	Standard Error	t	*P-value*
Constant	-46.848	4.139	-11.318	0.0001
Pictorial Health Warnings	0.782	0.033	23.886	0.0001
Dependent Variable: Fear				
R Square: 0.534				
Adjusted R Square: 0.533				
rxy: 0.731				

Based on the calculation results, the results of the linear regression equation are obtained as follows: Y1 = -46.848 + 0.782X. This means that if the exposure to pictorial health warnings on cigarette packaging (X) equals zero or no change, then the consistent value of fear (Y1) is -46,848 while for every addition or increase of 1 exposure to pictorial health warnings (X), then fear will increase by 0.782 so it can be said that pictorial health warnings have a positive effect on fear. The degree of association between pictorial health warnings and fear was strong and unidirectional (r-count = 0.731). The R square value is 0.534 on the fear variable, meaning that the dependent variable Y in the model, namely fear, is explained by the independent variable, namely pictorial health warnings, by 53.4%, while the remaining 56.6% is explained by other variables outside the model.

Table 4. Effect of Pictorial Health Warnings on Cigarette Packaging on Intensity of Smoking

Variable	Coefficient Regression	Standard Error	t	*P-value*
Constant	-5.867	1.988	-2.952	0.003
Pictorial Health Warnings	0.425	0.016	27.017	0.0001
Dependent Variable: Smoking Cessation Intensity				
R Square: 0.594				
Adjusted R Square: 0.594				
rxy: 0.771				

Based on the calculation results, the results of the linear regression equation are obtained as follows: Y2 = -5.867 + 0.425X. This means that if the exposure to pictorial health warnings on cigarette packaging (X) is equal to zero or no change, then the consistent value of smoking cessation intensity (Y2) is -5.867 while every addition or increase of 1 exposure to pictorial health warnings (X), then the intensity of smoking cessation will increase by 0.425 so that it can be said that pictorial health warnings have a positive effect on the intensity of smoking cessation. The degree of association of pictorial health warnings with smoking cessation intensity was very strong and unidirectional (r-count = 0.771). The R square value is 0.594 on the smoking cessation intensity variable, meaning that the dependent variable Y in the model, namely smoking cessation intensity, is explained by the independent variable, namely pictorial health warnings, by 59.4% while the remaining 50.6% is explained by other variables outside the model.

The effect of pictorial health warnings on fear

Pictorial Health Warning (PHW) or pictorial health warning is an image contained on cigarette packaging with a picture of a terrible disease or dangerous disease and a very low recovery rate also accompanied by a loud and firm connotation aimed at preventing people from consuming or quitting smoking. Pictorial health warnings on cigarette packaging have been implemented by foreign countries in the world. Warnings about the dangers of cigarettes are always repeated every time someone smokes or at least 20 times a day. The size of the Pictorial Health Warning (PHW) or health warning images in Indonesia has been set at 40% of the total area of cigarette packs and if it does not include then the company will be subject to sanctions in the form of criminal penalties for five years and a fine of Rp. 500,000,000.00.

The results of this study showed that there was a significant relationship between the effect of health warning images on cigarette packaging on fear by 53.4%. From the results of this study, the higher the attention to health warning images on cigarette packaging, the higher the fear. The theory of fear persuasion is generally described using the fear appeal approach has two aspects. The first aspect is threatening, which is how much the information or message threatens or scares someone. The threat has two

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dimensions. The first dimension is the magnitude of the threat, whether the persuasion message contains a high or low threat (Putri Andriani *et al*., 2023).

Based on previous research, it is known that the relationship between attitudes towards health warning images on cigarette packaging by conducting in-depth interviews shows that most informants feel fear and disgust towards health warning images on cigarette packaging and want to reduce cigarette consumption after seeing health warning images on cigarette packaging (Mariyamah et al., 2020) According to Andriani P et al (2023), it is known that the results of this study most respondents pay attention to health warning images on cigarette packaging (51.38%) and state that the images on cigarette packaging are disgusting. The more active smokers see advertising images warning of the dangers of smoking on cigarette packs every day will become ordinary and do not cause fear effects, maybe at first they will feel afraid of the display of cigarette danger advertising images on the cigarette pack. Images that are viewed repeatedly and in fact do not cause what is depicted in active smokers make them immune to the information and no longer care about the warning images of cigarettes on cigarette packs (Putri Andriani *et al*., 2023).

The pictorial health warning images of throat cancer can trigger fear because they depict the very dire and vivid consequences of smoking. Based on previous research, warnings that can pose a threat are pictorial warnings of oral cancer, throat cancer and blackened lungs due to cancer. With highly graphic and gruesome images showing severe damage to the throat and oral cavity, individuals who see them quickly realize the serious repercussions they may experience if they continue smoking. Throat cancer is an often deadly condition, and the image creates strong feelings of discomfort, worry, and panic. This powerful emotional effect makes individuals feel scared and potentially encourages them to quit smoking or prevents them from starting smoking, making throat cancer images a very effective tool in anti-smoking campaigns (Baiquni & Widyatama, 2016).

The oral cancer is considered the most frightening and disgusting pictorial warning. The pictorial warning is most frightening because if exposed to the disease indicated by the warning (oral cancer) will be immediately visible to others. The warning is considered the most disgusting warning because it shows severity. Meanwhile, oral cancer images are often highly graphic and gruesome (N. C. Dewi & Damayanti, 2008) They describe the direct impact of smoking on the oral cavity and throat, including open wounds, broken teeth, and severe swelling. This image has a strong visual impact and is easily understood by many people without depending on a particular language. With these vivid and horrific images, individuals feel threatened and fear the serious consequences they may experience if they continue smoking. This strong visual and emotional influence makes images of lung and mouth cancer the most effective images in inducing fear and raising awareness about the risks of smoking. By looking at the real and dire consequences of smoking, individuals are more likely to be motivated to quit smoking or not start smoking, making such images a highly effective tool in anti-smoking campaigns (Baiquni & Widyatama, 2016).

Meanwhile, lung cancer is one of the deadliest smoking-related diseases. The lung cancer warning poses the highest threat because it is also considered the most frightening image. The warning is considered the most frightening because it shows the severity of smoking. Images of lung cancer depict life-threatening tumors in a vital organ of vital importance. This condition is often difficult to treat and has a low survival rate. When individuals see pictures of lung cancer, they quickly realize the potential fatal consequences of smoking. This creates a strong fear of continued smoking (Baiquni & Widyatama, 2016).

The effect of pictorial health warnings on smoking cessation intensity

Pictorial Health Warning (PHW) is a very effective vehicle used to communicate health risks. In the results of this study, pictorial health warnings had a very positive relationship to smoking cessation intensity. From the results of statistical analysis, it was found that pictorial health warnings had a significant value of 0.0001< 0.005, which means pictorial health warnings had a significant relationship with the intensity

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of smoking cessation in respondents. Respondents in this study had a positive perception of pictorial health warnings on cigarette packaging by 59.4%. When respondents rated the pictorial health warnings in cigarette packaging as realistic, objective and attractive, respondents would be influenced and choose to quit smoking. This is in line with research conducted by Trisnowati Heni *et al* (2018) which states that there is a meaningful relationship between pictorial health warnings such as smoking causing oral cancer, throat cancer, lung cancer to the intensity of smoking cessation (Trisnowati *et al*., 2018).

The dangers of cigarettes for health prompted WHO to form a policy, namely the *Framework Convention on Tobacco Control* (FCTC), an international level agreement that aims to protect young people and future generations from the impact of tobacco consumption and exposure to cigarette smoke that can damage various aspects such as health, social, economic and environmental through graphic design. Since the treaty was signed, various countries have provided health information about the dangers of smoking. Canada and Brazil are the pioneers in providing health labels in the form of pictures and writing on cigarette packaging, the results of the warning proved effective in reducing the number of active smokers in the country (Samosir *et al*., 2019).

Indonesia in protecting its people from the dangers of cigarettes, issued Government Regulation Number 109 of 2012 concerning the safeguarding of substances containing addictive substances in the form of tobacco products for health, namely by being obliged to include Nicotine and Tar levels on cigarette packs, prohibiting selling or giving to children under the age of 18 years or pregnant women and must provide health warnings in the form of pictures and writing printed in one package (Cibro & Siregar, 2022). Through this regulation, the Minister of Health of the Republic of Indonesia issued a policy through Regulation of the Minister of Health of the Republic of Indonesia Number 28 of 2013 concerning the inclusion of health warnings and health information in tobacco product packaging. Highlights in the regulation on the front and back cigarette packaging will always be displayed messages in the form of scary pictures and provocative writing about the dangers of smoking for health (Kementerian Kesehatan, 2013).

In accordance with Regulation of the Minister of Health of the Republic of Indonesia Number 28 of 2013 that every cigarette manufacturer is required to include *a pictorial health warning on every cigarette packaging produced and sold* (Kementerian Kesehatan, 2013). Cigarette consumption in the community is one of the health problems that develops very quickly then the impact caused is very complex and detrimental both in the health sector, the economy and the environment. The majority of causes of death in the world are caused by smoking, through this WHO intensifies *pictorial health warnings* to reduce death rates due to smoking, reduce the number of smokers to quit smoking and educate nonsmokers not to smoke (I. M. Dewi & Rumita, 2015) The prevalence of smokers in Indonesia ranks third in the world, and ranks first in Southeast Asia. Through this, the Indonesian government is working hard to reduce the number of people who smoke to quit smoking (Rudi *et al*., 2017).

Pictorial health warning will provide graphic information on the negative impact of smoking to quit smoking through cognitive responses (Baiquni et al., 2016). The results of this study are in line with the results of research conducted by Andriani et al (2023), that the intensity of quitting smoking is influenced by the image of the disease on the cigarette pack, thus giving the impression of fear and disgust, thus encouraging respondents to increase their intention to stop smoking (Putri Andriani et al., 2023). But in contrast to the results of research conducted by Stephani (2015) states the picture of oral cancer as a pictorial warning of health that has a positive effect on quitting smoking (Hamdan, 2019).

Quitting smoking is a behavior that arises on the basis of an individual's intention or intensity to no longer use tobacco products. According to Stephen P. Robbins, intensity is a determination to do a certain activity or produce a certain state in the future. The intensity of quitting smoking is a strong desire of the individual to stop smoking behavior. The intensity of quitting smoking occurs

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because of the relationship with the communication media obtained. This is in line with the results of research that the intensity of smoking cessation has a significant relationship with *pictorial health warning*. Images and messages conveyed through pictorial health warnings are factors triggering the intensity of smoking cessation (Akmal *et al*., 2017).

CONCLUSION

There was an association between pictorial health warnings on cigarette packaging and fear (p-value = 0.0001, r = 0.731*) and smoking cessation intensity (p-value = 0.0001, r = 0.771*). There was a positive influence between pictorial health warnings on cigarette packaging on fear by 53.4% and smoking cessation intensity by 59.4%. The size of pictorial health warnings on cigarette packs needs to be revised to 75-85% and efforts to warn children and adolescents about the effects of smoking need to be intensified.

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