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Risk perception of smokers on graphic warning labels: a qualitative study in East Nusa Tenggara, Indonesia

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ABSTRACT

The Indonesian government has mandated Graphic warning labels (GWLs) on cigarette packages to achieve more comprehensive tobacco control interventions. However, smoking prevalence remains a public health issue in Indonesia. This current qualitative research aimed to explore the effect of cigarette GWLs on smokers' perceptions about smoking and cigarette packaging in East Nusa Tenggara (NTT) and its influence on smoking behavior. The study participants consisted of 15 current smokers who were individually interviewed by using a semi-structured interview guide. Data were analyzed using a thematic analysis technique. Most participants perceived smoking as health-risk behavior yet lowered their risk perceptions of smoking-related diseases due to positive feelings of perceived current benefits of smoking and personal justification for smoking. None expressed any intention to quit or showed smoking behavior changes due to GWLs exposure on cigarette packages. Participants also implicitly expressed themselves as victims willing to quit but unable and unconfident to act due to smoking addiction and other stressors. In contrast, others perceived themselves as risk-taker who enjoyed smoking. Further research is still needed to provide robust evidence on GWLs effectiveness on smoking perception and smokers' cognitive and behavioral responses. Behavior change interventions should address positive feelings experienced and rationalization made by smokers to provide effective risk communication.

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1. INTRODUCTION

Smoking remains a severe public health problem in Indonesia and requires more efforts to control it, or even better, to stop people from smoking. Indonesia has the highest smoking prevalence among countries, with the total number of current smokers 62.8 million, of whom 40% come from lower-income households [1]. Despite several tobacco control interventions undertaken, the trend of smoking in Indonesia continues to rise and affect young people to initiate smoking. Indonesia Basic Health Research (*Riset Kesehatan Dasar*/Riskesdas) in 2013 reported that the prevalence of smoking behavior among those aged 15 years or over is rising from 34.2% in 2007 to 36.3% in 2013, by which 63.7% are male [2]. This source also informed that the starting age of daily smoking is predominantly at 15-19 years (50%), followed by 27% of those aged 20-24 years. According to the Global Youth Tobacco Survey conducted in 2014 [3], of the Indonesian tobacco users, 20% are adolescents (age 13-15), giving a serious concern on the worst hit by tobacco companies among youth.

To achieve more comprehensive tobacco control interventions, in 2012, the Indonesian Government issued a regulation (*Peraturan Pemerintah* No. 109) that mandates more pictorial or Graphic warning labels (GWLs) for cigarette packages. The regulation requires that health-warning labels, including a graphic image and a text message, cover 40% of cigarette packages [4]. International studies on the impact of GWLs on smoking have shown that warning images are effective in reducing the appeal of cigarette packs [5], [6], discouraging smoking initiation [7], [8], increasing awareness, health knowledge and risk perception related to smoking [8]–[10], and strengthening quit intentions and cessation attempts [7], [8], [11], [12].

Data from the National Health Ministry reported that East Nusa Tenggara (NTT), as one province in Indonesia, has the highest prevalence of smoking (55.6%), even after the enforcement of GWLs regulation [2]. While research and surveys on the impact of warning images on people's perceptions about smoking and cigarette packaging are widely conducted both internationally and nationally [13]–[17], similar research in NTT is still scant. For example, studies in upper-middle-income countries, such as Malaysia and Iran, have found that GWLs had impacted smoking perception and increased smokers' awareness of smoking-related diseases [18], [19]. Moreover, most tobacco research and surveys in Indonesia have been carried out more dominantly in Java Island [13], [20], signifying the inadequate representation of the national condition. Research is still needed on GWL's effectiveness on smoking perception and smokers' cognitive and behavioral reaction in Indonesia, especially in NTT as an underdeveloped province in Indonesia.

Given this fact, this current qualitative research aims to investigate the effect of cigarette GWLs on smokers' risk perceptions about smoking and cigarette packaging in NTT. This study will inform us how smokers' risk perception about cigarette packs with pictorial warnings influences their smoking behavior. The research will further propose more effective communication to the public about the real dangers of smoking. It may also have implications for tobacco product regulation, particularly for cigarette GWLs regulation, in Indonesia.

2. RESEARCH METHOD

2.1. Participants and recruitment procedures

This study was based on 15 semi-structured individual interviews. Participants were intentionally recruited from ethnically diverse strata of society, including sex, age, race, level of education, and income and recruited through notices in a variety of locations, including schools, university campuses, offices, and through word of mouth from the research team's friendship network (with direct acquaintances being excluded). Research participants were selected by using purposive sampling to obtain information-rich cases. Participants were 15 to 54 years old (13 males, two females), current smokers, and had any experience of using cigarettes with warning images on packs at any time in the past two years. Participants were secondary and tertiary students (n=7), employed professionals (n=5), and entrepreneurs (n=3). Potential participants were excluded if they showed unwillingness to participate or decided to cancel their participation prior to or during the interviews. Participants' consent was confirmed orally once the audiotape was turned on at the commencement of interviews. The research obtained ethical approval from Nusa Cendana University Ethics Committee.

2.2. Data collection

The whole interviews were recorded, and each interview took 45-60 minutes. The interviews were conversational to allow the participants to give their thoughts and comfortably provide their accounts. The interviews started with open-ended questions. Participants were asked about their demographic characteristics, the type and brands of cigarettes they used or are using, their general thoughts about the risk of smoking and cigarette packaging, their risk perceptions and feelings when they see cigarette packs with GWLs, and the effect of the perceptions and GWLs exposure on their smoking behavior. The interview guide was used as an initial stimulus question, a guide to probing, and a reminder to researchers for research topics that must be investigated in the interview process. However, participants were not constrained by these guidelines but instead were given the freedom to express their thoughts and feelings relevant to this research.

2.3. Data analysis

The individual interviews were transcribed verbatim, and then thematically analyzed. Researchers without using open code software conducted the data analysis manually. The analysis was organized using a coding process. Initial codes were produced from the data by first involving the repeated reading of the transcripts and then coding interesting ideas across the entire dataset. Two coders individually generated codes and themes from interview data. Then, the generated codes and themes were compared in the search for commonalities and differences. Ongoing analysis to review and refine the potential themes was undertaken to generate exact names and definitions for each theme. Quotations from participants' accounts were used to deliver verbatim examples of the leading emerging themes.

3. RESULTS AND DISCUSSION

The participants in this research were active smokers, categorized as teenage smokers and adult smokers, the details can be seen in Table 1. This study found four main themes regarding the effect of GWLs on cigarette packages on the risk perception of smoking and smoking behavior of the research participants. Following explains these four themes:

Table 1. Participants' profile

No	Participant	Age (years old)	Gender	Occupation	Smoking habit (average/day)
1.	Participant 1 (P1)	26	Male	Entrepreuner	>10 sticks
2.	Participant 2 (P2)	15	Male	High school student	6 sticks
3.	Participant 3 (P3)	19	Male	High school student	4-5 sticks
4.	Participant 4 (P4)	29	Male	Entrepreuner	5 sticks
5.	Participant 5 (P5)	18	Male	College student	7 sticks
6.	Participant 6 (P6)	23	Male	College student	5-6 sticks
7.	Participant 7 (P7)	21	Male	College student	7 sticks
8.	Participant 8 (P8)	32	Male	Employed professional	12 sticks
9.	Participant 9 (P9)	18	Male	High school student	3-4 sticks
10.	Participant 10 (P10)	19	Male	College student	5-6 sticks
11.	Participant 11 (P11)	32	Female	Employed professional	10-11 sticks
12.	Participant 12 (P12)	37	Male	Entrepreuner	12-24 sticks
13.	Participant 13 (P13)	54	Male	Employed professional	>10 sticks
14.	Participant 14 (P14)	30	Male	Employed professional	5-6 sticks
15	Participant 15 (P15)	48	Female	Employed professional	5-6 sticks

3.1. Personal risk perception of smoking

Almost all participants perceived smoking as a health risk behavior and could mention health consequences of smoking, such as lung cancer, pregnancy disorders, impotence, and even death. Both young and adult participants used information received from health workers, friends, families, and health warnings on cigarette packages to assess the risk of smoking, as one participant reported:

> *"Cigarettes can make shortness of breath, cancer, impotence, pregnancy disorders, death ... I know the danger from the explanation on cigarette packs, then from friends, parents. I believe cigarettes are dangerous."* (P7)

Participants also expressed beliefs about the risk of smoking in the presence of fear at the beginning of exposure to warning images as one participant said:

> "*The images on the cigarette packs might only give fear at the first time you see it. So, I slightly believe smoking is dangerous."* (P10)

However, the research also found that positive perception of participants on health risks was not entirely the result of exposure to GWLs, as it seemed more influenced by personal experiences, as one participant said:

> "*My father died of cigarettes. That makes me more believe cigarettes are dangerous."* (P4)

Some participants, interestingly, expressed their uncertainty to their personal risk of smoking-related diseases, as a participant responded:

> *"I believe it (smoking) is dangerous, but, personally, I don't think I'll get any of them (smoking-related diseases), perhaps later, but at least not now."* (P11)

3.2. Positive feelings and rationalization for smoking

Affective association with smoking was a reference point participant often used to justify the risk of smoking. This research found that the positive feelings experienced affected participants' judgment on the significance of the risk. Participants with positive feelings about smoking tended to lower their risk perception. As one participant said:

> *"I feel great benefits from cigarettes throughout my life, it may cost my health a lot. But, there's a lot of feedback of the cigarette too ... .*" (P5)

Although participants knew the risk, most tried to justify their behavior by giving a better assessment of the smoking benefits, such as improving their mood and self-images (feeling 'part of a gang', 'braver', and 'confident' when handling cigarettes). This is illustrated in a participant's opinion: "*but compared to its dangers, smoking is good. It can be uplifting and making me calm*" (P14). Another participant also commented:

> *"... somewhat believe (that smoking is dangerous), but smoking can make me feel more confident, happy, looking cool."* (P2)

This study also found that most participants tried to make personal justifications for smoking by reassessing their risk perception based on personal experiences in smoking, personal rights, and other lay health beliefs. Participants explained that the physical condition of their fellow smokers contradicted the health consequences displayed on GLWs. They also perceived that smoking cigarette help them deal with daily life issues and difficult situations and act as a support aid to socialize with a certain group. While participants perceived smoking as a risky behavior, they also believed everyone had the right to choose what they want to do, including whether to smoke. Following are the participants' comments:

> *"As far as I know, there are no people I know as smokers who have cancer due to smoking like those in cigarette pictures. My father is an active smoker, until now in his 80s he still works and remains healthy."* (P12)
> *"When I am emotional or fighting, smoking can make my anger subside somewhat and I feel calmer*." (P15)
> *"Take it off if people want to smoke. That is personal freedom. They don't disturb other people."* (P13)

In addition, participants perceived that smoking was not a single harmful factor to their health. Other various factors, such as vehicle smoke, lack of sleep and exercise, unhealthy food, liquor consumption, and drug taking could be more detrimental on health than smoking, as one participant responded:

> *"Other things can also be dangerous, not only cigarettes. Eating instant noodles is also dangerous. Exceeding speed limits on the road is also dangerous. Lack of exercise can also be dangerous."* (P6, P11)

3.3. Victim vs. risk taker

The results also indicated a similar perception among half of the participants who implicitly perceived themselves as a group of 'victims' trapped into smoking behavior. The expression of regret and desire to quit smoking reinforced this 'victim' label:

> *"I myself would prefer to stop smoking. It's better not to even start."* (P3)

The cost to buy cigarettes was the main consideration for almost all participants to quit smoking while some other participants mentioned health reasons as another factor in encouraging their intention to quit. Although participants who perceived themselves as 'victims' reported their willingness to quit, this did not always lead to smoking cessation. Most of these participants showed low confidence to quit. When confronted with the current habit of smoking, participants pointed addiction and peer influence as significant factors that constrained them to quit.

Conversely, this study found a different picture as other half participants, especially adult smokers, showed themselves as 'risk takers. This group showed more willingness to engage in the smoking behavior:

> *"The decision to smoke... was a conscious decision, because I knew about the risks of smoking that my parents told me. But because I already felt like an adult, it's time to test my limit to benefit from my freedom as an adult."* (P12)

This picture marked participants' statements that enjoyed being a smoker while being aware of smoking-related risks.

3.4. Intention and behavior changes

There were no participants expressing a desire to quit smoking or change smoking behavior due to GWLs exposure on cigarette packaging. The fear arisen from the initial exposure to the warning pictures had no impact on changing participants' smoking intention or smoking behavior. One participant commented:

"I saw the picture [GWLs], realized the dangers of smoking, but the picture had no effect on my smoking." (P9, P15)

Another participant even replied: *"no effect on me, the picture can be made up."* (P13). Another participant added: "*it (picture) has no process, only show the outcome. So, I do not believe it."* (P1) Participants further revealed that after repeatedly being exposed to the image, they became more accustomed to seeing GWLSs on cigarette packs.

This study identified that intention to stop smoking or engagement in behavioral changes were more due to other considerations, such as financial costs and future health risks associated with smoking. Most participants, especially those who perceived themselves as 'victims', also reported the desire and past attempts to quit even though they mentioned addiction and other stressors (e.g., peer pressure) as obstacles to these desires and efforts. Some participants tried to control the adverse effects of smoking by reducing daily cigarette consumption. Meanwhile, other participants decided to drink more water, eat healthy food, and exercise to neutralize the risk of cigarettes. Some participants also considered stopping smoking in the future, especially for female smokers who thought about pregnancy and becoming a mother.

3.5. Disscussion

This present research found that all participants had a positive risk perception of cigarette smoking. Participants based their perception on information provided by personal acquaintances, health workers, and health warnings on cigarette packages, and more likely on personal experiences of having family or friends with a history of smoking-related diseases. Varied behavior changes theories emphasize the importance of adequate knowledge of risky behavior leading to behavioral intentions and changes [1], [21]. The theories explained that to enact a behavior change, people should have a positive perception of risks and adequate, supportive resources.

However, the positive risk perception might not necessarily lead smokers to stop smoking if they rationalize strategies to maintain the behavior. Participants expressed their optimism for being less likely to experience health risks, suggesting that they might intentionally use the avoidance strategy to resolve cognitive dissonance in their smoking behavior [22]–[25]. Moreover, participants seemed to reconstruct their risk perception and rationalize their smoking behavior regarding feelings, personal experiences, rights, and other lay health beliefs.

Affective responses to cigarette smoking seemed to play a significant role in participants' reassessment of risks. Despite being aware of smoking-related diseases (at a cognitive level), participants' positive feelings towards the benefits of smoking caused them to ignore the risks. Participants attributed smoking to their positive images and pleasures (both biological and psychological) experienced when smoking. Therefore, participants disregarded their cognitive thinking and relied more on their affective relations to smoking in perceiving risk. This finding was in line with Slovic's argument explaining how the affective association might influence people's judgments about risks [26]. Positive feelings towards cigarette smoking seemed to lower risk perceptions and increase the overestimation of the short-term benefits of smoking [27]–[29].

Participants also conveyed arguments about meanings they attributed to their daily smoking experiences, such as help in stressful and difficult situations; and a significant support element in daily life and socializing. Skepticism of GWLs could serve as another excuse to rationalize smoking behavior. Participants argued that the images contradicted their fellow smokers' actual condition, leading them to think the pictorial warnings were only fabricated pictures. The arguments showed that while people perhaps knew what experts or other sources of society think were correct; they might not wholly believe it. Instead, they compared the knowledge with various aspects to create their risk. Other studies maintained that various factors constructed risks, such as affection, individual experiences and worldviews, and sociocultural contexts [11], [30]–[33].

Participants' arguments also revolved around their rights to smoking and opportunities of being exposed to other dangers other than smoking. These arguments ultimately provide excuses for participants to feel relief from their cognitive dissonances in smoking. These findings were similar to other risk perception studies demonstrating smokers' irrational beliefs about other dangers outside the realms of smoking to maintain their smoking behavior [14], [24], [25], [34].

Another finding of this research was participants' perceptions about themselves and their smoking behavior. The view of participants ranged from the feelings as a 'victim' who was in an uncontrollable situation and therefore had low confidence to quit, trapped by addiction and peer pressure [35], to the feelings as a 'risk taker' who engaged in smoking behavior by choice, aware of the risks, and enjoy the benefits. Here, even though smoking was a risky behavior, participants took risks for personal reasons. Although the decision could be seen as imprudent, the consequences of the decision will be the responsibility

of that individual. This personal decision depicted individual agency, referring to individuals' ability to act based on what they think is correct [36].

In exploring the effect of GWLs on participants risk perception and smoking behavior, none expressed their intention to quit nor changed their smoking behavior because of being exposed to GWLs. Some participants regarded GWLs as one medium used to deliver health risks concerning smoking but admitted that the repeated exposure ultimately did not affect their behavioral intention and changes. While this finding was consistent with other studies [11], [14], [19], [37], [38], it was also discordant with the positive effect of GWLs on strengthening quit intentions and cessation attempts [7], [12], [39].

Although participants reported that GWLs did not affect intention and quitting attempts, many participants, especially those who viewed themselves as a 'victim', reported engaging in harm-reduction behaviors, such as reducing the daily number of cigarettes. The findings were consistent with other harm reduction studies concluding that smokers' engagement in harm reduction behavior was a way they considered safer to continue smoking [32], [40], [41].

Some participants also mentioned their engagement in healthy behaviors such as consuming nutritious food, drinking water, and exercising. Participants believed they could prevent the health risks of smoking by behaving in a healthy life. For example, some mentioned drinking water after smoking because they believed it could cleanse the lungs from cigarette smoke. The actions show a form of compensatory behavior and unrealistic optimism to reduce cognitive dissonance in smokers. The compensatory behavior reduced the perception of risk, which became a justification for smokers to maintain their smoking behavior [42], [43].

The results were in line with other research showing that smokers believed they could compensate for the negative effects of their smoking behavior by involvement in healthy behavior, such as "exercising can reduce the effects of smoking". Other studies also confirmed that smokers often use incorrect beliefs to reduce cognitive dissonance in smokers who realized that smoking was harmful to health [22]–[24], [32], [34], [44].

Therefore, this research used a qualitative method to understand risk perception and provided a deeper comprehension of the different meanings and rationalization that individuals assign to their smoking experiences. The results could be used as a reference for developing health practices and risk communication that were relevant to smokers. However, as the number of respondents was small and only selected in Kupang city, the risk perception and smoking behavior of smokers exposed to GWLs on cigarette packs might not represent the whole population. Further quantitative research with a larger sample size will make more robust conclusions about the generalizability of the findings of this qualitative study.

4. CONCLUSION

This research explored the effect of GWLs on cigarette packs on current smokers' risk perception and smoking behavior. The findings showed no effect of the exposure to GWLs on smokers' quitting intention or smoking behavior change. Smokers did not apply their positive risk perception of smoking-to-smoking behavior change. Current active smokers used affective responses and personal justifications to maintain their smoking behavior.

Behavior change interventions should identify and apply rationalizing strategies to reduce cognitive dissonances, such as avoidance, unrealistic optimism and compensatory behaviors. While cognitive biases could deter smokers from quit attempts, smoking interventions should strengthen the health benefits to smoking cessation at any smoker status. In addition, healthcare practitioners should explore various meanings of risks that people assign to smoking in their daily lives when communicating the risks of smoking. More comprehensively, the exploration may facilitate smokers' reflection and awareness of consequences related to their behavior.

This study findings provide preliminary information contributing to cigarette GWLs efficacy on smokers and more relevant smoking prevention and cessation programs in Indonesia. Nonetheless, since this study was conducted qualitatively, it may limit the generalization for all smokers. Therefore, further research would be necessary as a concern to the effect of GWLs deteriorates over time.

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