

DO ANTI-SMOKING ADVERTISEMENTS INFLUENCE STUDENTS TO QUIT SMOKING?

Apakah Iklan Anti-Rokok Mempengaruhi Siswa Untuk Berhenti Merokok?

*Debri Rizki Faisal¹, Tati Suryati¹

¹Research Center for Public Health and Nutrition, National Research and Innovation Agency, Cibinong, Indonesia

Correspondence*:

Address: Cibinong Science Center, Cibinong, Indonesia | e-mail: debr001@brin.go.id

Abstract

Background: The prevalence of adolescent smoking in Indonesia increased from 2013 to 2018.

Aims: This study examines the influence of pro and anti-cigarette advertising on students' smoking cessation.

Methods: The study uses the Global Youth Tobacco Survey Indonesia 2019 data. The sample was students aged 13-15 years who had smoked. The dependent variable is quitting smoking, and the independent variables are pro-cigarette and anti-smoking ads. Chi-square and logistic regression tests with a 95% confidence interval and a p-value of 0.05.

Results: The total sample was 1023 students, and 79.32% wanted to quit smoking. In the anti-smoking ads variables: anti-smoking messages in various media (OR=1.63, 95% CI=1.14-2.34); pictorial health warnings (PHW) on cigarette packs (OR=3.46, 95% CI=2.40-4.97); feeling afraid when seeing health warnings on packaged cigarettes (OR=3.03, 95% CI=2.16-4.26); education about harmful of cigarette consumption (OR=1.40, 95% CI=1.00 – 1.96) had a significant association to quit smoking. The most dominant factor in multivariate analysis was pictorial health warnings on cigarette packs (OR=2.53, 95% CI=1.67-3.81).

Conclusion: Most student smokers express a desire to quit smoking. Pictorial health warnings are significantly associated with the intention to quit smoking among students.

Keywords: cigarette ads, GYTS, pictorial health warning, students

Abstrak

Latar Belakang: Prevalensi merokok pada remaja Indonesia terus meningkat dari tahun 2013 ke 2018.

Tujuan: Penelitian ini bertujuan untuk mengetahui pengaruh iklan pro-rokok dan anti-rokok terhadap keinginan berhenti merokok. Pada siswa.

Metode: Penelitian ini menggunakan data dari Global Youth Tobacco Survey Indonesia tahun 2019 Sampelnya adalah siswa usia 13-15 tahun yang pernah merokok. Variabel dependen adalah keinginan berhenti merokok dan variabel independen adalah iklan pro-rokok dan iklan anti-rokok. Data dianalisis dengan uji chi-square dan regresi logistik dengan interval kepercayaan 95% dan p-value 0,05.

Hasil: Jumlah sampel sebanyak 1023 siswa, 79,32% siswa ingin berhenti merokok. Pada variabel iklan anti rokok: pesan anti rokok di berbagai media (OR=1,63, 95% CI=1,14-2,34); peringatan kesehatan bergambar pada bungkus rokok (OR=3,46, 95% CI=2,40-4,97); merasa takut ketika melihat peringatan kesehatan pada rokok kemasan (OR=3,03, 95% CI=2,16-4,26); pendidikan tentang bahaya konsumsi rokok (OR=1,40, 95% CI=1,00-1,96) memiliki hubungan yang signifikan terhadap keinginan berhenti merokok pada siswa. Faktor yang paling dominan dalam analisis multivariat adalah peringatan kesehatan bergambar pada bungkus rokok (OR=2,53, 95% CI=1,67-3,81).

Kesimpulan: Sebagian besar siswa yang merokok ingin berhenti merokok. Peringatan kesehatan bergambar berhubungan signifikan dengan keinginan untuk berhenti merokok pada siswa.

Kata kunci: GYTS, iklan rokok, peringatan kesehatan bergambar, siswa.



Indonesian Journal of Health Administration (Jurnal Administrasi Kesehatan Indonesia)

p-ISSN 2303-3592, e-ISSN 2540-9301, Volume 11 No.2 2023, DOI: 10.20473/ijahi.v11i2.2023.264-275

Received: 2022-10-21, Revised: 2023-11-23, Accepted: 2023-11-24, Published: 2023-11-30.

Published by Universitas Airlangga in collaboration with *Pertimpunan Sarjana dan Profesional Kesehatan Masyarakat Indonesia (Persakmi)*.

Copyright (c) 2023 Debri Rizki Faisal, Tati Suryati

This is an Open Access (OA) article under the CC BY-SA 4.0 International License (<https://creativecommons.org/licenses/by-sa/4.0/>).

How to cite:

Faisal, D.R. and Suryati, T. (2023) "Do Anti-Smoking Advertisements Influence Students to Quit Smoking?", *Indonesian Journal of Health Administration*, 11(2), pp. 264-275. doi: 10.20473/ijahi.v11i2.2023.264-275.

Introduction

Globally, there are 1.3 billion smokers and 80% live in low and middle-income countries. Smoking causes about 8 million deaths yearly (WHO, 2021). Targeted by 2025, the prevalence of tobacco uses for youth aged 15 years over decreased to 19.1%. Meanwhile, 24 million (6.5%) adolescents aged 13-15 years have started smoking, and 6.4 million are in Southeast Asia (WHO, 2019).

The prevalence of adult smoking in Indonesia was the highest, especially for men reaching 62.9% and killing around 225,700 people yearly (WHO, 2020). 1.9% increase in adolescent smoking prevalence compared to 2013 (7.2%) to 2018 (9.1%). (Ministry of Health, 2018). The National Medium-Term Development Plan (RPJMN) 2020-2024 of the Government of Indonesia targets to reduce the percentage of smokers aged 0-18 from 9.1 to 8.7 in 2024 (Mutiara, 2021).

Adolescence is a productive age that will reflect the quality of human resources and the progress of a country (Patton *et al.*, 2016). Adolescents who smoke will increase the risk of non-communicable diseases such as hypertension, diabetes, stroke, heart attacks, kidney failure, and lung cancer in adulthood (Budreviciute *et al.*, 2020). The multitude of non-communicable diseases suffered will undoubtedly diminish productivity and become a burden to the nation (Benziger, Roth and Moran, 2016). Efforts to prevent smoking during adolescence are crucial in breaking the chain of tobacco addiction (Owens *et al.*, 2020). Comprehensive efforts in tobacco control, such as implementing the MPOWER strategies, are needed (Flor *et al.*, 2021).

Until 2023, Indonesia has not ratified the World Health Organization Framework Convention on Tobacco Control (FCTC) as a commitment against tobacco. One of the pillars regulated in the FCTC is the ban on tobacco advertising, promotion and sponsorship (TAPS) (WHO, 2003). The laws prohibiting TAPS are not comprehensive (Fauzi and Ma'ruf *et al.*, 2018). The law on TAPS regulates various laws and regulations, such as Law 32 of

2002 concerning Broadcasting, Law 40 of 1999 concerning the Press, and PP No. 109 of 2012 concerning the Protection of Materials Containing Addictive Substances in the form of Tobacco Products for health. In electronic, print, and outdoor media, several provisions allow cigarette advertising and promotion based on PP No. 109 of 2012. For example, advertisements on TV are allowed during certain broadcast hours (21.30 – 05.00). Then Law 32/2002 concerning Broadcasting does not mention the prohibition on broadcast hours for cigarette advertisements and only prohibits the promotion of cigarettes that show the form of cigarettes. Likewise, the Press Law only prohibits cigarette advertisements showing images of cigarettes or cigarette packs. Exception from the abovementioned prohibition, the press freely broadcasts cigarette advertisements with various strategies.

A study conducted by Brown (2022) in 42 low and middle-income countries found many advertising and promotional cigarette tactics to get the attention of children and youth. Many points of sale near school's placement of cigarettes at position eye-catching and accessible for to reach by children. Children also allow buying single sticks of cigarettes (Brown *et al.*, 2022). Research conducted by Rosemary (2021) comparing pro and anti-tobacco ads on YouTube shows that cigarette advertisements have more viewers than anti-smoking advertisements (Rosemary *et al.*, 2021). All of the TAPS forms is tobacco industry intervention that creates conditions in which the smoking habit is considered normal, reasonable and acceptable, especially for youth.

TAPS encourage adolescents to start smoking, for adolescents active smoking to continue, and adolescents who quit smoking think to smoke again (Fauzi and Ma'ruf *et al.*, 2018). Health warning messages about anti-tobacco in Indonesia can still not compete with the broad and creative pro-cigarette advertisements on many media platforms (Rosemary *et al.*, 2021). This study aimed to examine the effect of pro-tobacco ads and anti-tobacco ads on students' intention to quit smoking in Indonesia.

Method

The study using Global Youth Tobacco Survey (GYTS) Indonesia 2019 data. GYTS is open source data can access in website CDC (<https://nccd.cdc.gov/GTSSDataSurveyResources/Ancillary/DataReports.aspx?CAID=2>). The study conducted sample size calculations following standard methods by the CDC in Atlanta. The sample distribution included three regions: Java, Sumatra, and other regions. In each region, 25 junior high schools and 25 high schools were selected, and within each school, a class was randomly chosen using assigned random numbers. The total sample consisted of 150 schools located across 30 provinces (Megatsari *et al.*, 2023). GYTS is a school-based survey, a two-stage cluster sampling technique at the school and classroom levels, with a response rate of 91.00%. GYTS data is used to monitor and control tobacco use at national, regional and global levels (CDC, 2019).

The population of this study comprises students from junior high school (SMP) and senior high school (SMA) levels. The sample was students aged 13-15 years who had ever smoked. The outcome variable is the intention to quit smoking based on the questions "Do you want to stop smoking now?" and "During the past 12 months, did you ever try to stop smoking?". Respondents who answered "Yes" to either of the questions were categorized as students who intentionally quit smoking. The independent variables consist of anti-tobacco advertisements and pro-tobacco advertisements questions. The anti-tobacco advertising questions section is related to "Are seeing or hearing anti-tobacco messages on various media, seeing or hearing anti-tobacco messages at various events, seeing pictorial health warnings on cigarette packs, thought quitting smoking when seeing a cigarette pack warning and education about harm tobacco at school?". Meanwhile, pro-cigarette advertisements questions asked about "Are the students exposure to cigarette advertisements and promotions in the last 30 days on TV, newspaper/magazine, outdoor media, internet/ social

media, sales centres, sporting events, music concerts and community events/social gatherings?". The answers to each question are then categorized as "yes" or "no".

Data missing was excluded from the analysis. Then the data was recoded based on the categories of variables. Data analysis using Stata 13 by considering the weighting variables using the ".svy" command. Risk measurement was interpreted using Odds Ratio (OR) with a 95% Confident Interval (95% CI) and a p-value of 0.05. Then proceed with multivariate analysis with a logistic regression test by selecting a significant variable with p-value less than equal 0.05 as a candidate using the backward method. One by one, insignificant variables were removed from the model with backward steps to get the final fit model (Sabri and Hastono, 2018).

Result and Discussion

The results showed that 1023 students aged 13-15 had smoked, and 810 (79.32%) students wanted to quit smoking. Respondents were 91.64% male and 8.36% female. Indeed, in a prior investigation conducted by Sari, 92.1% of adolescents in Indonesia indicated a willingness to stop smoking (Sari, Ayunin and Setyowati, 2022). Findings in the same range of figures from Oudah's study in Iraq showed that 87.6% of smokers wanted to quit smoking (Oudah, 2020). The proportion of current tobacco smokers who desired to quit smoking exceeded 50% in most countries assessed (Arrazola *et al.*, 2017).

Students experienced high exposure to Tobacco Advertising and Promotion Strategies (TAPS) on both online and offline platforms (Septiono *et al.*, 2022). Cigarette advertisements portraying smokers as attractive can enhance the appeal of smoking, leading teenagers exposed to such ads to be more open and curious about cigarette use (Nurcahyani *et al.*, 2019).

We can see a very high proportion of students exposed to cigarette advertisements in Table 1. The students

are exposed to cigarette advertisements, such as in outdoor media 64.43%, at shopping centers 62.54%, and students saw cigarette advertisements on TV of 67.68%. Furthermore, the studies from Yogyakarta, Bali and Banyuwangi revealed cigarette promotion banners and outlets selling cigarettes within 250 meters of the school (Astuti *et al.*, 2019; Dewi *et al.*, 2020; Morrison *et al.*, 2021). About two-thirds of outlets near schools sell cigarettes in single sticks and are also sold to children (Astuti *et al.*, 2019). Cigarettes sold as single sticks from walk sellers or outlets make cigarettes accessible. Cigarettes at low prices can be affordable to all economic segments of society, especially students, encouraging students to smoke and being an obstacle to quitting smoking (WHO, 2020).

The prohibition policy around the school of smoking advertisements such as billboards and cigarette banners must be banned. The number of smoking billboards and banners that are installed close to the school will increase students' chances of smoking. A study by Putra showed that installing cigarette advertising billboards near schools increased students' chances of smoking by 12.4% and installing cigarette banners near schools increased students' chances of smoking by 18.4% (Putra *et al.*, 2020). The density of cigarette retailers was 81% higher in areas within 100 meters from facilities for children and adolescents compared to areas situated between 100 to 250 meters from such facilities (Dewi *et al.*, 2022). The regulation of cigarette advertisements is a governmental commitment aimed at safeguarding children, shielding the younger generation from pervasive and highly influential cigarette advertisements that can impact smoking behavior (Napirah *et al.*, 2020).

The results of bivariate analysis (Table 2) showed that in the anti-smoking advertising variable; seen anti-smoking messages in various media (OR=1.63, 95% CI=1.14-2.34), seen pictorial health warnings on cigarette packs (OR=3.46, 95% CI=2.40-4.97), thought when seeing

health warnings on cigarette packs (OR=3.03, 95% CI=2.16-4.26), get a lesson about the dangers of tobacco use (OR=1.40, 95% CI=1.00-1.96) significantly related to the desire to quit smoking in students (p-value <0.05). The pro-cigarette advertising variable showed no significant relationship to students' desire to quit smoking (p-value > 0.05).

Based on multivariate analysis where OR Adjusted health warnings on cigarette packs are significantly related to students' desire to quit smoking. Students who saw illustrated health warnings were 2.53 times more likely to encourage smoking cessation (95% CI=1.67-3.81). These findings are consistent with previous research was conducted in 7 countries on 8000 adults and youth in Mexico, the United States, China, Germany, India, Bangladesh, and Korea, that is pictorial warnings more effective than text-only warnings (p < 0.001) (Hammond *et al.*, 2019). Message delivered with PHW more attention smoker better than text only (Lochbuehler *et al.*, 2017). A study conducted in the United Kingdom and Norway showed that a large novel pictorial increases smokers' warning salience (Moodie *et al.*, 2021). The PHW effective change perceived among smoker intention to quit smoking (Ratih and Susanna, 2018). PHW on cigarette packs is also influential in forming perceptions of adolescents not smoking (Mays *et al.*, 2015; Noar *et al.*, 2016; Hwang and Cho, 2020).

Pictorial Health Warnings (PHWs) on tobacco packages are more comprehensible and have a substantial effect on raising awareness about the health consequences of tobacco consumption in communicating health risks of tobacco use (Kaai *et al.*, 2021; Mia *et al.*, 2021). PHWs are a cost-effective tool for educating the public about the dangers of smoking (Talukder *et al.*, 2022). Pictorial Health Warnings (PHWs) also effectively motivated smokers to quit, decrease cigarette consumption, and prevent relapse in former smokers (Bam, Chand and Shah, 2021).

Table 1. Percentage of Exposure to Anti-Tobacco Ads and Pro-Tobacco Ads to Indonesian Students

Variables	f	%
Gender: Male	931	91.64
Female	92	8.36
Age groups: 13 years	329	32.32
14 years	386	39.23
15 years	304	28.45
Intention Quit Smoking		
No	213	20.82
Yes	810	79.18
Anti-tobacco Ads		
Seen or heard anti-tobacco messages on various media		
No	256	24.60
Yes	767	75.40
Seen or heard anti-tobacco messages at various events		
No	624	60.56
Yes	399	39.44
Seen pictorial health warnings on the cigarette packs		
No	492	47.22
Yes	531	52.78
Thinking of quitting smoking when you see a cigarette packet warning.		
No	322	30.51
Yes	701	69.49
Education about the harm tobacco at school past 12 months		
No	399	39.88
Yes	624	60.12
Pro-Tobacco Ads		
Seen any people using tobacco on TV, in videos, or movies		
Yes	517	49.68
No	506	50.32
Seen a cigarette ads promo on tv		
Yes	698	67.68
No	325	32.32
Seen cigarette ads in cigarette products in newspapers or magazines		
Yes	321	30.53
No	702	69.47
Seen cigarette ads in outdoor media		
Yes	656	64.43
No	367	35.57
Seen cigarette ads internet/social media		
Yes	417	39.46
No	606	60.54
Seen cigarette ads in sales centres (shops, stalls, kiosks and minimarket)		
Yes	644	62.54
No	379	37.46
Seen cigarette ads at sports events		
Yes	279	26.48
No	744	73.52
Seen cigarette ads at music concerts		
Yes	264	25.83
No	759	74.17
Seen cigarette ads at community events/ social gatherings		
Yes	247	25.00
No	776	75.00
Total	1023	100.00

Table 2. The Relationship between Advertising and the Intention to Quit Smoking in Students

Variables	OR Crude (95% CI)	p- value	OR Adjusted (95% CI)	p- value
Anti-tobacco Ads				
Seen or heard anti-tobacco messages on various media (ref: No)	1.63 (1.14 – 2.34)	0.007*	-	
Seen or heard anti-tobacco messages at various events (ref: No)	1.39 (0.98 – 1.97)	0.064	-	
Seen pictorial health warning on the cigarette packs (ref: No)	3.46 (2.40 – 4.97)	0.001*	2.53 (1.67 -3.81)	0.001*
Thought quitting smoking when seeing a cigarette pack warning (ref: No)	3.03 (2,16 – 4,26)	0.001*	1.87 (1.27 – 2,76)	0.001*
Education about harmful tobacco at school past 12 months (ref: No)	1.40 (1.00 – 1.96)	0.045*	-	
Pro-Tobacco Ads				
Seen any people using tobacco on TV, in videos, or in movies (ref: Yes)	0.76 (0.55 – 1.06)	0.117	-	
Seen cigarette ads promo on tv (ref: Yes)	0.95 (0.67 – 1.35)	0.788	-	
Seen cigarette ads in cigarette products in newspapers or magazines (ref: Yes)	1.14 (0.80 – 1.62)	0.465	-	
Seen cigarette ads in outdoor media (ref: Yes)	1.18 (0.83 – 1.68)	0.330	-	
Seen cigarette ads internet/social media (ref: Yes)	0.87 (0.62 – 1.22)	0.442	-	
Seen cigarette ads in sales centres (such as shops and minimarket) (ref: Yes)	0.82 (0.58 – 1.15)	0.263	-	
Seen cigarette ads at sports events (ref: Yes)	1.18 (0.82 – 1.70)	0.368	-	
Seen cigarette ads at music concerts (ref: Yes)	1.27 (0.88 – 1.85)	0.194	-	
Seen cigarette ads at community events/social gatherings (ref: Yes)	1.11 (0.75 – 1.62)	0.588	-	

There are five pictorial health warnings on cigarette packs circulating in Indonesia which are determined based on PMK 28/2013, namely pictures of mouth cancer; smoking kills you, throat cancer, smoking near children endangers them and lung cancer. Not all types of pictorial warnings on cigarette packs affect the intention to stop smoking (Hamdan, 2015). Among the five Pictorial Health Warnings (PHWs), the image depicting lung cancer was identified as the most effective in motivating individuals to quit smoking (Alkaff *et al.*, 2020). Smokers also agreed that the PHW was effective and induced fear and worry (Hall *et al.*, 2019; Yuliati *et al.*, 2021).

Pictorial health warnings can change awareness among smokers to stop smoking within the next 12 months (91.2%) and an average time off will be quit smoking of 18.78 months (Suyasa and Santhi, 2018). A randomized trial study over four weeks revealed that PHW would have a psychological outcome such as intention to quit smoking, try not to smoke and succeed in stopping smoking. (Brewer *et al.*, 2017; Peebles *et al.*, 2016). The PHW mechanism can change smoking behavior to stop. PHW will attract smokers' attention and read warnings about the dangers of smoking on cigarette packs. Then PHW, such as pictures of lung cancer, throat cancer and other pictures, will create fear and anxiety about the effects of smoking on health in the future. Repeated exposure from PHW will keep the warnings on their minds. This will further increase the intention to quit smoking. (Brewer *et al.*, 2019).

However, PHW does not significantly change smoking behavior to quit cigarettes, especially in adults. First, adult smokers avoid paying attention to pictures and messages on cigarette packs. Second, they tend to underestimate the warnings about the dangers of smoking and believe in their view that smoking is not dangerous, even though such thinking is wrong. (Hall *et al.*, 2019). The initial period after the introduction of pictorial health warning will be increased the intention to quit cigarettes, but the impact of the warning may wane over time. Change and increasing the size

of pictorial warnings may help prevent warning wear-out (Parada *et al.*, 2018). The small size of PHW provides inadequate information to smokers about the dangers of smoking health (Sychareun *et al.*, 2015). Only 14.7% of smokers felt that a pictorial health warning with 40% cover packs in getting them to quit smoking (Fauzi and Bam *et al.*, 2018). PHW on cigarette packs is a low-cost and effective tool to educate the general public, especially smokers, about the dangers of smoking. However, there is not updating PHW periodically and increasing its size causes PHW to wear-out effect among smokers (Woelbert and Hombres, 2019).

The rules stipulated by FCTC that the size of the PHW must be at least 30- 50 % of the overall display of a cigarette pack (WHO, 2003). Based on PP 109/2012 and PMK 28/2013, the regulation of pictorial health warnings on cigarette packs in Indonesia is still using a size of 40% and from 2014 until now, has never been altered. This law is lagging compared to other countries because some countries have altered the size of pictorial health warnings by up to 90%. More than half of smokers felt that the pictorial health warning cover 90% was very effective in motivating smokers to quit smoking (Fauzi and Bam *et al.*, 2018). Even Australia has required plain cigarette packs. Plain-pack cigarettes can reduce the appeal of cigarette packs to young adult smokers (Johnson *et al.*, 2021). Previously, a study conducted by TCSC-IAKMI stated that most of the public supported increasing the PHW on cigarette packs to 70 to 90%. (Fauzi and Bam *et al.*, 2018).

The strength of the research used a large and diverse sample from valid survey data GYTS so that the findings of this study can represent the actual conditions related to smoking behavior among students in Indonesia. The study's limitation was not measuring the influence of other variables outside of pro and anti-smoking advertisements that may encourage smoking cessation, such as knowledge and attitudes about the dangers of smoking, second-hand smoke at home and in public places, and others.

Conclusion

The exposure of tobacco advertising, promotion, and sponsorship to students in Indonesia is very massive. Seven of 10 students have seen cigarette advertisements on TV, outdoor media and in shops or stores in the last 30 days. Approximately 80% of students have the intention to quit smoking. PHW has significantly affected the intention to quit smoking in students in Indonesia. The existing laws must comprehensively regulate TAPS prohibition, including in the school environment. As a result, smoking initiative increased among students who did not smoke, and difficulty quitting among students who smoked.

One of the strategies that should be implemented to reduce smoking in youth is Increasing the size and creating a novelty of pictorial health warnings from 40% to 75-90%. In addition, it is necessary to optimize smoking-free areas to create smoke-free schools and educate students that smoking harms health. For future research, evaluating the effectiveness of the old PHW attached to cigarette packs is essential. This is needed as evidence-based in formulating policies so that cigarette companies update PHW regularly.

Abbreviations

GYTS: Global Youth Tobacco Survey; OR: Odds Ratio; PHW: Pictorial Health Warning; WHO: World Health Organization; RPJMN: Rencana Pembangunan Jangka Menengah Nasional; FCTC: Framework Convention on Tobacco Control; TAPS: Tobacco Advertising, Promotion and Sponsorship; UU: Undang-Undang; PP: Peraturan Pemerintah; SMP: Sekolah Menengah Pertama (Junior High School); SMA: Sekolah Menengah Atas (Senior High School).

Declarations

Ethics Approval and Consent Participant

The GYTS Indonesia 2019 has been approved by the Ministry of Health (MoH) Indonesia. The instruments in the survey

have been standardized by World Health Organization (WHO).

Conflict of Interest

No conflict of interest exists with anyone and any institution in this study.

Availability of Data and Materials

GYTS is public data access which can be downloaded at <https://www.cdc.gov/tobacco/global/gtss/gtssdata/index.html>.

Authors' Contribution

The DRF was the main contributor who did the analysis and wrote the original draft, such as background, methods, results and discussion. TS conducted research concepts, selected variables and revised the articles.

Funding Source

Not applicable.

Acknowledgement

We thank WHO, CDC and National Health Research and Development (NHDR) MoH Indonesia.

References

- Alkaff, F.F. *et al.* (2020) 'The effectivity of pictorial health warning to motivate smoking cessation in rural area: A study from Losari village, Indonesia', *Journal of Education and Health Promotion*, 9, p. 67. Available at: https://doi.org/10.4103/jehp.jehp_436_19.
- Arrazola, R.A. *et al.* (2017) 'Current Tobacco Smoking and Desire to Quit Smoking Among Students Aged 13-15 Years - Global Youth Tobacco Survey, 61 Countries, 2012-2015', *MMWR. Morbidity and mortality weekly report*, 66(20), pp. 533-537. Available at: <https://doi.org/10.15585/mmwr.mm6620a3>.
- Astuti, P.A.S. *et al.* (2019) 'Cigarette retailer density around schools and neighbourhoods in Bali, Indonesia: A GIS mapping', *Tobacco Induced*

- Diseases*, 17, p. 55. Available at: <https://doi.org/10.18332/tid/110004>.
- Bam, T.S., Chand, A. and Shah, B. (2021) 'Evidence of the Effectiveness of Pictorial Health Warnings on Cigarette Packaging in Nepal', *Asian Pacific Journal of Cancer Prevention*, 22(S2), pp. 35–44. Available at: <https://doi.org/10.31557/APJCP.2021.22.S2.35>.
- Benziger, C.P., Roth, G.A. and Moran, A.E. (2016) 'The Global Burden of Disease Study and the Preventable Burden of NCD', *Global Heart*, 11(4), p. 393. Available at: <https://doi.org/10.1016/j.gheart.2016.10.024>.
- Brewer, N.T. *et al.* (2016) 'Effect of Pictorial Cigarette Pack Warnings on Changes in Smoking Behavior: A Randomized Clinical Trial', *JAMA Internal Medicine*, 176(7), p. 905. Available at: <https://doi.org/10.1001/jamainternmed.2016.2621>.
- Brewer, N.T. *et al.* (2019) 'Understanding Why Pictorial Cigarette Pack Warnings Increase Quit Attempts', *Annals of Behavioral Medicine*, 53(3), pp. 232–243. Available at: <https://doi.org/10.1093/abm/kay032>.
- Brown, J.L. *et al.* (2023) 'Spinning a global web: tactics used by Big Tobacco to attract children at tobacco points-of-sale', *Tobacco Control*, 32(5), pp. 645–651. Available at: <https://doi.org/10.1136/tobaccocontrol-2021-057095>.
- Budreviciute, A. *et al.* (2020) 'Management and Prevention Strategies for Non-communicable Diseases (NCDs) and Their Risk Factors', *Frontiers in Public Health*, 8, p. 574111. Available at: <https://doi.org/10.3389/fpubh.2020.574111>.
- CDC (2019) 'Datasets for South-East Asian (SEAR) Region, Indonesia, Indonesia - National'. Available at: <https://nccd.cdc.gov/GTSSDataSurveyResources/Ancillary/DataReports.aspx?CAID=2>.
- Dewi, D.M.S.K. *et al.* (2022) 'Density of Cigarette Retailers Near Facilities for Children and Adolescents in Urban and Rural Areas in Indonesia: A Geospatial Analysis', *Asia-Pacific Journal of Public Health*, 34(4), pp. 384–391. Available at: <https://doi.org/10.1177/10105395221085067>.
- Dewi, D.M.S.K., Sebayang, S.K. and Lailiyah, S. (2020) 'Density of cigarette retailers near schools and sales to minors in Banyuwangi, Indonesia: A GIS mapping', *Tobacco Induced Diseases*, 18, p. 06. Available at: <https://doi.org/10.18332/tid/115798>.
- Fauzi, R., Ma'ruf, M.A., *et al.* (2018) *Hubungan Terpaan Iklan, Promosi dan Sponsor Rokok dengan Status Merokok di Indonesia*. TCSC – IAKMI. Available at: https://www.tcsc-indonesia.org/wp-content/uploads/2018/10/Hasil-Studi-Paparan-Iklan-Promosi-dan-Sponsor-Rokok-di-Indonesia_TCSC-IAKMI.pdf.
- Fauzi, R., Bam, T.S., *et al.* (2018) *Opini Publik: Efektifitas Peringatan Kesehatan Bergambar di Indonesia*. Jakarta: IAKMI. Available at: <https://www.tcsc-indonesia.org/wp-content/uploads/2019/03/TCSC-A4-ISBN-02-1.pdf>.
- Flor, L.S. *et al.* (2021) 'The effects of tobacco control policies on global smoking prevalence', *Nature Medicine*, 27(2), pp. 239–243. Available at: <https://doi.org/10.1038/s41591-020-01210-8>.
- Hall, M.G. *et al.* (2018) 'Why smokers avoid cigarette pack risk messages: Two randomized clinical trials in the United States', *Social Science & Medicine*, 213, pp. 165–172. Available at: <https://doi.org/10.1016/j.socscimed.2018.07.049>.
- Hamdan, S.R. (2015) 'Pengaruh Peringatan Bahaya Rokok Bergambar Pada Intensi Berhenti Merokok', *MIMBAR, Jurnal Sosial dan Pembangunan*, 31(1), p. 241. Available at: <https://doi.org/10.29313/mimbar.v31i1.1323>.

- Hammond, D. *et al.* (2019) 'Are the Same Health Warnings Effective Across Different Countries? An Experimental Study in Seven Countries', *Nicotine & Tobacco Research*, 21(7), pp. 887–895. Available at: <https://doi.org/10.1093/ntr/nty248>.
- Hwang, J. and Cho, S. (2020) 'The association between new graphic health warning labels on tobacco products and attitudes toward smoking among south Korean adolescents: a national cross-sectional study', *BMC Public Health*, 20(1), p. 748. Available at: <https://doi.org/10.1186/s12889-020-08638-0>.
- Johnson, A.C. *et al.* (2021) 'Effects of pictorial warning label message framing and standardized packaging on cigarette packaging appeal among young adult smokers', *Addictive Behaviors*, 120, p. 106951. Available at: <https://doi.org/10.1016/j.addbeh.2021.106951>.
- Kaai, S.C. *et al.* (2023) 'Quasi-experimental evaluation of Kenya's pictorial health warnings versus Zambia's single text-only warning: findings from the International Tobacco Control (ITC) Project', *Tobacco Control*, 32(2), pp. 139–145. Available at: <https://doi.org/10.1136/tobaccocontrol-2020-056396>.
- Lochbuehler, K. *et al.* (2018) 'Effect of message congruency on attention and recall in pictorial health warning labels', *Tobacco Control*, 27(3), pp. 266–271. Available at: <https://doi.org/10.1136/tobaccocontrol-2016-053615>.
- Mays, D. *et al.* (2015) 'Framing Pictorial Cigarette Warning Labels to Motivate Young Smokers to Quit', *Nicotine & Tobacco Research*, 17(7), pp. 769–775. Available at: <https://doi.org/10.1093/ntr/ntu164>.
- Megatsari, H. *et al.* (2023) 'The influence of anti-smoking messages to Indonesian youth smoking behavior: the Indonesian 2019 Global Youth Tobacco Survey (GYTS)', *BMC Public Health*, 23(1), p. 907. Available at: <https://doi.org/10.1186/s12889-023-15830-5>.
- Mia, M.T. *et al.* (2021) 'Effects of Graphic Health Warning on Tobacco Packs: A Cross-Sectional Study among Low Socioeconomic Group in Bangladesh', *Journal of Smoking Cessation*, 2021, p. e1354885. Available at: <https://doi.org/10.1155/2021/1354885>.
- Ministry of Health (2018) *Basic Health Research (Riskesmas) 2018*. Ministry of Health Republic of Indonesia.
- Moodie, C. *et al.* (2021) 'The Response of Smokers to Health Warnings on Packs in the United Kingdom and Norway Following the Introduction of Standardized Packaging', *Nicotine & Tobacco Research*, 23(9), pp. 1551–1558. Available at: <https://doi.org/10.1093/ntr/ntab027>.
- Morrison, C.N. *et al.* (2021) 'The geographic distribution of retail tobacco outlets in Yogyakarta, Indonesia', *Drug and Alcohol Review*, 40(7), pp. 1315–1324. Available at: <https://doi.org/10.1111/dar.13285>.
- Mutiara, P. (2021) 'Remaja Merokok Ancaman Bagi Masa Depan Bangsa', *Kementerian Koordinator Bidang Pembangunan Manusia dan Kebudayaan*. Available at: <https://www.kemendikbud.go.id/remaja-merokok-ancaman-bagi-masa-depan-bangsa>.
- Napirah, M.R. *et al.* (2020) 'A Model of Cigarette Advertisement Policy in Preventing Children Smoking Habits in Palu City, Indonesia: A Systematic Review', *Indian Journal of Forensic Medicine & Toxicology* [Preprint]. Available at: <https://doi.org/10.37506/ijfmt.v14i4.12838>.
- Noar, S.M. *et al.* (2016) 'Pictorial cigarette pack warnings: a meta-analysis of experimental studies', *Tobacco Control*, 25(3), pp. 341–354. Available at: <https://doi.org/10.1136/tobaccocontrol-2014-051978>.
- Nurcahyani, E.W. *et al.* (2019) 'The Impact of Cigarette Advertisements on

- Adolescents: A Literature Review', *Jurnal Ilmu Kesehatan Masyarakat*, 10(2), pp. 74–82. Available at: <https://doi.org/10.26553/jikm.2019.10.2.74-82>.
- Oudah, M. (2020) 'Study the prevalence of smoking phenomenon among institute students at the city of Nasiriya / Iraq', *Systematic Reviews in Pharmacy* [Preprint]. Available at: <https://www.semanticscholar.org/paper/Study-the-prevalence-of-smoking-phenomenon-among-at-Oudah/c17ef786e39e62d8c86de0a2f75a63961c59d04d> (Accessed: 29 November 2023).
- Owens, D.K. *et al.* (2020) 'Primary Care Interventions for Prevention and Cessation of Tobacco Use in Children and Adolescents: US Preventive Services Task Force Recommendation Statement', *JAMA*, 323(16), p. 1590. Available at: <https://doi.org/10.1001/jama.2020.4679>.
- Parada, H. *et al.* (2018) 'Trajectories of Responses to Pictorial Cigarette Pack Warnings', *Nicotine & Tobacco Research*, 20(7), pp. 876–881. Available at: <https://doi.org/10.1093/ntr/ntx182>.
- Patton, G.C. *et al.* (2016) 'Our future: a Lancet commission on adolescent health and wellbeing', *The Lancet*, 387(10036), pp. 2423–2478. Available at: [https://doi.org/10.1016/S0140-6736\(16\)00579-1](https://doi.org/10.1016/S0140-6736(16)00579-1).
- Peebles, K. *et al.* (2016) 'Adolescents' Responses to Pictorial Warnings on Their Parents' Cigarette Packs', *Journal of Adolescent Health*, 59(6), pp. 635–641. Available at: <https://doi.org/10.1016/j.jadohealth.2016.07.003>.
- Putra, H.S. *et al.* (2020) 'The Effect of Cigarette Advertising on Smoking Behaviour of Students in Banda Aceh City, Indonesia', *Jurnal Komunikasi: Malaysian Journal of Communication*, 36(2), pp. 348–363. Available at: <https://doi.org/10.17576/JKMJC-2020-3602-21>.
- Ratih, S.P. and Susanna, D. (2018) 'Perceived effectiveness of pictorial health warnings on changes in smoking behaviour in Asia: a literature review', *BMC public health*, 18(1), p. 1165. Available at: <https://doi.org/10.1186/s12889-018-6072-7>.
- Rosemary, R. *et al.* (2021) 'Perceived Effectiveness of the Anti-Smoking Public Service Advertisement on YouTube (#SuaraTanpaRokok)', *Communicare: Journal of Communication Studies*, 8(1), p. 1. Available at: <https://doi.org/10.37535/101008120211>.
- Sabri, L. and Hastono, S.P. (2018) *Statistik Kesehatan - Luknis Sabri*. Depok: Rajawali Pers.
- Sari, M.P., Ayunin, E.N. and Setyowati, Y.D. (2022) 'Determinants of Adolescents' Desire to Quit Smoking in Indonesia: Data Analysis of the 2014 Global Youth Tobacco Survey', *Disease Prevention and Public Health Journal*, 16(2), pp. 85–92. Available at: <https://doi.org/10.12928/dpphj.v16i2.4860>.
- Septiono, W. *et al.* (2022) 'Self-reported exposure of Indonesian adolescents to online and offline tobacco advertising, promotion and sponsorship (TAPS)', *Tobacco Control*, 31(1), pp. 98–105. Available at: <https://doi.org/10.1136/tobaccocontrol-2020-056080>.
- Suyasa, I.N.G. and Santhi, D.G.D.D. (2018) 'Efektifitas tulisan dan gambar peringatan kesehatan pada produk rokok terhadap kesadaran merokok di Kabupaten Badung, Bali-2015', *Intisari Sains Medis*, 9(1). Available at: <https://doi.org/10.15562/ism.v9i1.148>
- Sychareun, V. *et al.* (2015) 'Perceptions and acceptability of pictorial health warning labels vs text only - a cross-sectional study in Lao PDR', *BMC Public Health*, 15(1), p. 1094. Available at:

- <https://doi.org/10.1186/s12889-015-2415-9>.
- Talukder, M.M.A. *et al.* (2022) 'Corrigendum to "Effects of Graphic Health Warning on Tobacco Packs: A Cross-Sectional Study among Low Socioeconomic Group in Bangladesh"', *Journal of Smoking Cessation*, 2022, pp. 1–1. Available at: <https://doi.org/10.1155/2022/9804931>.
- WHO (2003) *WHO Framework Convention on Tobacco Control overview*. Available at: <https://fctc.who.int/who-fctc/overview>.
- WHO (2019) *WHO global report on trends in prevalence of tobacco use 2000-2025*. 3rd ed. Geneva: World Health Organization. Available at: <https://iris.who.int/handle/10665/330221>.
- WHO (2020) *Raise tobacco taxes and prices for a healthy and prosperous Indonesia*. Jakarta: WHO South-East Asia. Available at: <https://www.who.int/publications-detail-redirect/9789290227748>.
- WHO (2023) *Tobacco, Key facts*. Available at: <https://www.who.int/news-room/fact-sheets/detail/tobacco>.
- Woelbert, E. and d'Hombres, B. (2019) 'Pictorial health warnings and wear-out effects: evidence from a web experiment in 10 European countries', *Tobacco Control*, 28(e1), pp. e71–e76. Available at: <https://doi.org/10.1136/tobaccocontrol-2018-054402>.
- Yuliati, R. *et al.* (2021) 'Effect of Message Approach and Image Size on Pictorial Health Warning Effectiveness on Cigarette Pack in Indonesia: A Mixed Factorial Experiment', *International Journal of Environmental Research and Public Health*, 18(13), p. 6854. Available at: <https://doi.org/10.3390/ijerph18136854>.