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Protecting Adolescents in Indonesia from the Dangers of Smoking and Tobacco Products

A Narrative Review and Policy Implementation Perspectives

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ABSTRACT

The World Health Organization states that the prevalence of tobacco product use among young people aged 15-24 is 13.3%, while in Indonesia reached 47.1%. Smoking has an impact on morbidity and mortality due to degenerative and infectious diseases, lost work productivity due to illness, and health care financing. It is necessary to understand what policy strategies are in place to protect adolescents from the dangers of smoking and tobacco products. This study uses a narrative review approach with a broad focus on identifying the problem of adolescent smoking in Indonesia, policy responses, gaps in the literature, and strategies for improving policy implementation. The increasing trend of cigarette and tobacco product use among Indonesian adolescents indicates the need for effective strategies to accelerate the implementation of global commitments to reduce it. In line with the mandate of the Framework Convention on Tobacco Control (FCTC), six (6) MPOWER messages can be implemented, namely: monitoring tobacco use and prevention policies; protecting the community against cigarette smoke; offering support to quit smoking; warning of the consequences of smoking; enforcing bans on cigarette advertising, promotion, and sponsorship; and raising tobacco taxes. In addition, cross-programme and cross-sectoral cooperation is needed to implement existing policies more effectively and efficiently. These are expected to reduce smoking prevalence as well as improve healthcare efficiency.

Keywords
Adolescents
Policy
Smoking
Tobacco Products

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Introduction

Tobacco use poses a public health threat to the entire world. This threat applies not only to tobacco users but also to non-users who are exposed to tobacco residue and smoke. Between 2015 and 2020, the global prevalence of tobacco product use declined from 23.9% to 21.7%. Meanwhile, tobacco product use prevalence among 15–24-year-old adolescents reached 13.3% overall, 21.8% among male adolescents, and 4.8% among female adolescents. Of the six WHO regions, Southeast Asia has the highest prevalence of tobacco use, at 26.5% overall and 10.3% among 13–15-year-olds [1].

Indonesia has the highest rate of tobacco use in Southeast Asia, exceeding the global rate of 36.5% [1]. A national survey conducted in 2018 showed that smoking prevalence was 28.9%, expected to decrease by 1.9% by 2023. The survey in 2023 also revealed that smoking prevalence is particularly high among adolescents, at an average of 16.7% among 15–19 year-olds and 30.4% among 20–24 year-olds. While smoking prevalence decreased from 2018 to 2023, it remained a potential health risk to the community [2], [3].

Adolescents are individuals aged between 10 and 24 years who are transitioning from childhood to adulthood. Psychologically, this group is characterised by a desire to try new things and a readiness to take risks, such as smoking [4]. The desire to smoke is inextricably linked to peer pressure and the social norms that emerge among adolescents [5], [6]. Easy access to cigarettes and aggressive advertising further increase the likelihood of adolescents trying to smoke [5]. Most smokers start smoking in their teens, often before the age of 18 [7]. The younger a person is when they start smoking, the stronger the correlation with an earlier onset of tobacco-related diseases, including both communicable and non-communicable diseases.

Adolescents are a human resource whose quality must be ensured, including their health, so that they can productively support future development. According to Article 149(1) of Law Number 17 on Health (2023), the production, distribution, and use of addictive substances must not disrupt or endanger the health of individuals, families, communities, or the environment [8]. Tobacco products are one example of addictive substances and include cigarettes, cigars, leaf cigarettes, sliced tobacco, solid and liquid tobacco, and other processed tobacco products. To enhance protection for adolescents from the threats posed by cigarettes and other tobacco products, it is necessary to strengthen the implementation of relevant policies [9]. Six (6) MPOWER messages are a powerful policy included in the Framework

Convention on Tobacco Control (FCTC) since 2005. It can serve as a basis for preventive and promotional programmes involving the broader community. This study aims to explore policy implementation strategies in Indonesia based on six (6) MPOWER messages to protect adolescents from smoking and tobacco use.

Material and Methods

The literature searches were conducted using general websites, such as Google Scholar, as well as policy documents published by the Indonesian government. This study used documents related to tobacco control policies implemented in Indonesia, as well as relevant supporting articles. The study was not limited to publications in English; policy documents and articles published in the Indonesian language were also included. The oldest referenced policy was published in 2002, while the supporting articles were published between 2015 and 2025. The results of the searches for policy documents and related articles were analysed descriptively and presented in narrative form.

This narrative review comments on the prevalence of tobacco use and policies in Indonesia and how it's impact on adolescents. It has been reported that Indonesia is the only country in the Asia Pacific that has not ratified the Framework Convention on Tobacco Control (FCTC). The framework brings six messages to the MPOWER concept. MPOWER includes monitoring tobacco use and policies for its prevention; protecting people from second-hand smoke; offering or assisting to quit smoking; warning of the dangers of smoking; banning tobacco advertising, promotion, and sponsorship; and raising tobacco taxes. All these policies have been implemented in Indonesia, but should be optimised. That is why we discuss the strategies for protecting adolescents from the dangers of smoking and tobacco products.

Results and Discussions

A. Prevalence of Tobacco Use and Policies in Indonesia

The use of tobacco products is becoming increasingly widespread in Indonesia. According to global projections, the prevalence of tobacco product use in Indonesia will increase from 36.2% to 38.7% between 2010 and 2025, while 10 other countries in the Southeast Asian region will experience a significant decline. [1]. The growing number of new smokers is also considered alarming, with prevalence rates of nearly 20% among 15–19 year olds and 31% among 20–24 year olds. This indicates an increased risk of public health problems related to smoking in Indonesia, which is a significant issue that needs to be addressed [2], [3].

Smoking can affect not only the health of smokers, but also that of passive smokers. It is associated with an increased risk of degenerative diseases such as lung cancer, heart disease, hypertension, and stroke, as well as conditions such as Buerger's disease, gum disease, peripheral artery disease (PAD), visual impairment, partial paralysis, and speech impairment

[10]. In addition, the build-up of residue from cigarette smoke or other tobacco products in the respiratory organs weakens the immune system, reducing the body's ability to fight disease-causing agents and making it susceptible to infectious diseases such as influenza, pneumonia, COVID-19, tuberculosis, and HIV [11], [12], [13], [14], [15]. In addition to increasing morbidity rates, tobacco use also increases mortality rates. A total of 225,700 people die from smoking-related causes in Indonesia each year, with 31% of these deaths due to cancer, 26% due to cardiovascular diseases (CVD), and 15% due to other diseases.

The health risks associated with tobacco use, including smoking, have economic implications. In 2019, the economic burden caused by smoking among Indonesia's entire population ranged from Rp 184.36 trillion to Rp 410.76 trillion, equivalent to 2.59% of Gross Domestic Product (GDP). The estimated direct costs of smoking for the entire population ranged from Rp 17.9 trillion to Rp 27.7 trillion, 56.3–58.6% of which was covered by BPJS-Health (Badan Penyelenggara Jaminan Sosial-Kesehatan/ Social Security Administration Agency for Health). BPJS-Health allocated between Rp 10.4 trillion and Rp 15.6 trillion to cover healthcare costs caused by smoking, representing 61.2%–91.8% of the 2019 deficit. A policy review shows that government health expenditure on smoking-related diseases poses a greater risk to public finances as healthcare coverage expands. The tobacco tax policy of 2020 was found to be insufficient to cover smoking-related healthcare expenses, as the amount earmarked for National Health Insurance (JKN) did not exceed 5% [16].

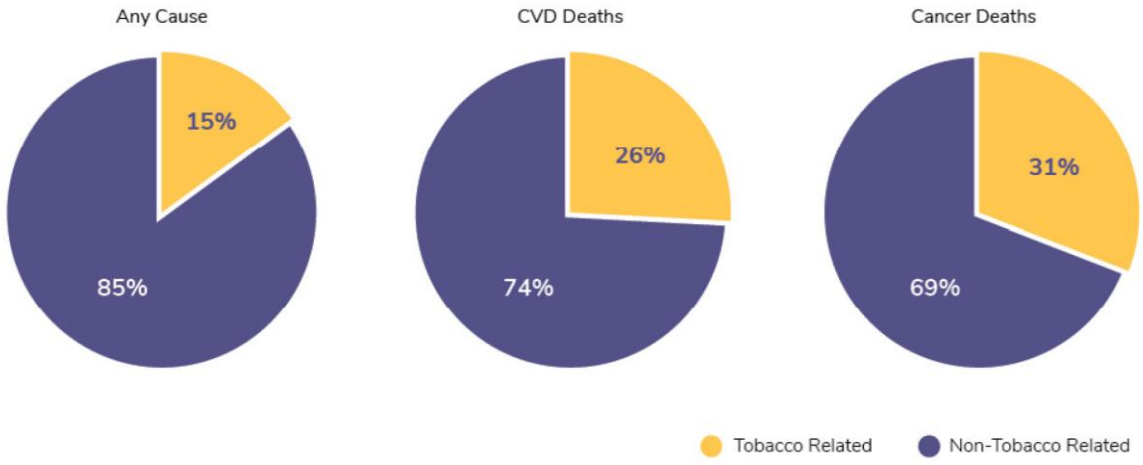


Fig. 1. Mortality Rates Due to Smoking
Source: World Health Organization, "Raising tobacco taxes and prices for a healthy and prosperous Indonesia," 2020.

Other measures that can be used to calculate the losses resulting from tobacco use include QALYs (Quality Adjusted Life Years), PALYs (Productivity Adjusted Life Years), the cost of productivity loss, and healthcare costs. QALYs are a metric used to measure the value of healthcare by combining the quality and quantity of life. A study examining the health and productivity impact of smoking on the working-age Indonesian population estimates that it

causes 41,629,391 lost QALYs (95% CI: 26.1–100 million). Another measure, PALYs, is a metric that quantifies the social burden of chronic diseases and conditions by calculating lost productivity. It is estimated that smoking causes 15,616,260 lost PALYs overall (95% CI: 13.0 to 16.0 million). Smoking also causes lost productivity due to illness, disability, care, or premature death. The loss of GDP per smoker is estimated to reach US$3,435 among the working-age population and continues to be lost until retirement. The estimated overall healthcare costs in Indonesia are US$1,837 (669,140,149) (95% CI 1.82–1.85 trillion) [17].

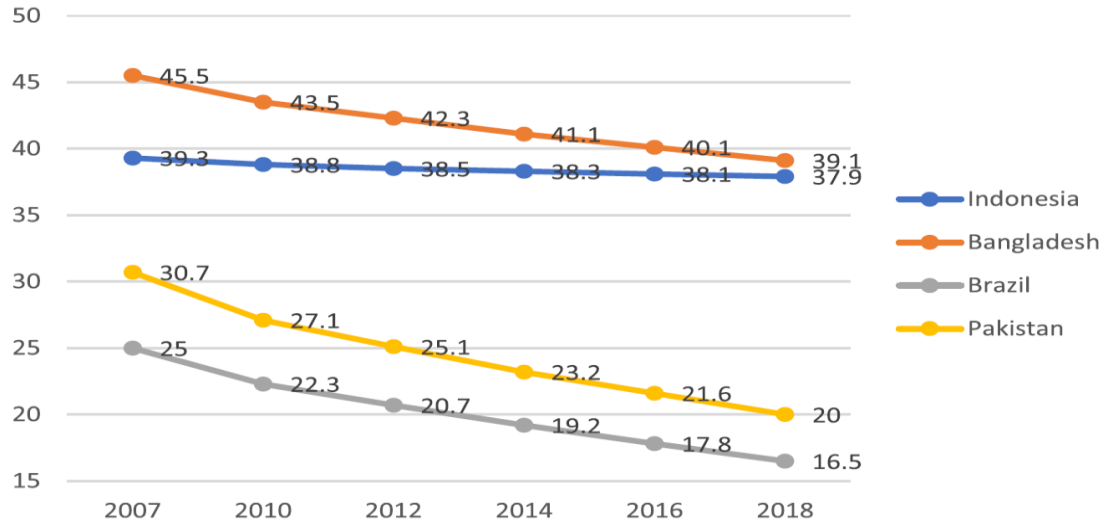


Fig. 2. Comparison of Declining Smoking Prevalence in Indonesia, Bangladesh, Brazil, and Pakistan [18]

Various efforts are being made to control global threats related to tobacco use. One such effort was the unanimous adoption of the WHO Framework Convention on Tobacco Control (WHO FCTC) by 192 WHO member countries in 2003 [1]. This framework is considered an important protocol for promoting the enactment of tobacco control regulations. However, Indonesia is the only country in the Asia-Pacific region yet to ratify the FCTC. This has led to smoking prevalence rates stagnating, decreasing by no more than 2% between 2007 and 2018. This is in contrast to Brazil, Pakistan, and Bangladesh, which have similarly sized populations and are also classified as middle-income developing countries, where smoking prevalence rates decreased by 10% during the same period [18]. The controversy surrounding the FCTC in Indonesia is heavily politicised, with fears that ratifying the treaty will negatively impact the economy by reducing tobacco production and economic activity in the national cigarette industry. Additionally, concerns have been raised that this could reduce the welfare of tobacco farmers, increase unemployment among cigarette industry workers, exacerbate poverty, and lower GDP per capita. However, in reality, there is no significant correlation between countries signing the FCTC since 2005 and a subsequent decline in GDP [18].

The FCTC incorporates the MPOWER message, consisting of six measures for the implementation of tobacco control in each country. These measures include monitoring

tobacco use and prevention policies; protecting the public from second-hand smoke; providing assistance to help people quit smoking; issuing warnings about the dangers of smoking; banning tobacco advertising, promotion, and sponsorship; and raising tobacco taxes [18]. In fact, the implementation of this concept faces significant obstacles in Indonesia. For instance, some argue that Indonesia does not need to ratify the FCTC as it already has legal regulations in place, such as Government Regulation No. 109 of 2012, which addresses the safety of materials containing addictive substances, including tobacco products, from a health perspective. However, this regulation does not include any provisions relating to tobacco taxes, whereas the FCTC emphasises the need for tax and price control mechanisms to reduce demand for tobacco products.

Smoke-free areas (SFA) can also be used to strengthen protection for adolescents against cigarette smoke. Law Number 36 on Health (2009) requires the creation of smoke-free areas (SFAs), where the production, marketing, advertising, promotion, or smoking of tobacco products is prohibited. The regulation covers seven designated SFA areas: health facilities, educational institutions, children's playgrounds, places of worship, public transport, workplaces, and other public places or specific locations [19]. Local regulations are needed to strengthen the establishment of SFAs, demonstrating local leaders' commitment to protecting the community from environments polluted by cigarette smoke and the health problems it can cause. However, as of 2014, only 49 districts/cities in 13 provinces had SFA regulations in place [20]. Most adolescents are in educational institutions, where smoke-free environments should be enforced. However, most schools have not yet implemented smoke-free regulations.

As a major consumer of tobacco products, the government has introduced the Quitline.INA programme to protect against the adverse effects of smoking. This programme offers smoking cessation consultations via automated messages, enabling it to reach a wider audience of people who want to become smoke-free. Throughout 2018, an average of 16,836 Quitline service calls were made per month, covering 29 provinces - around 85% of Indonesia's total. The programme report indicates a high level of interest among young people in the Quitline INA programme, as 32% of calls came from those aged 20–24. Nevertheless, smoking remains relatively prevalent among adolescents [21]. Therefore, the government should prioritize supporting smoking cessation among adolescents.

Warning messages about the dangers of smoking in Indonesia are regulated by Regulation of the Minister of Health of the Republic of Indonesia Number 56 Concerning Amendments to Regulation of the Minister of Health of the Republic of Indonesia Number 28 of 2013 Concerning the Inclusion of Health Warnings and Health Information on Tobacco Product Packaging (2017). The purpose of this message is to deter novice smokers from taking up the habit. In addition, the public has the right to receive comprehensive and truthful information,

enabling them to make informed choices based on their understanding of the facts. Warning messages on cigarette packs in Indonesia use a fear-based approach by showing images of a man with wounds/holes in his chest and neck, or of damaged teeth and mouth. However, these health warning images are relatively small, covering only 40% of the front and back of cigarette packets, unlike those used in other countries. This falls far short of the European Union's recommendation that warning images cover a minimum of 65% of the front and back of cigarette packs [23], [24].

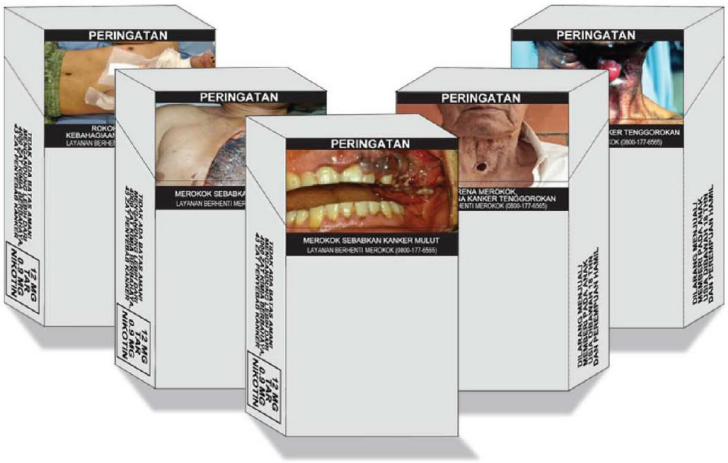


Fig. 3. Image of Health Warning Messages in Indonesia [22]

Cigarette companies spend large sums of money on advertising to attract new smokers. Current cigarette adverts depict an image that contrasts with the effects of smoking, such as portraying male strength, social bonding, and cultural experiences Cigarette adverts can also be found in printed materials, such as posters and banner ads, as well as in the form of discounts or giveaways. Survey results indicate that most teenagers are exposed to tobacco advertisements in the street or in minimarkets. Although Indonesia has not yet ratified the FCTC, progress has been made in adopting tobacco control policies, such as Law No. 32 on Broadcasting, which restricts tobacco advertising in the media [25] and [26] which prohibits tobacco advertising outside of retailers, the promotion of tobacco products in the form of free samples and branding on non-tobacco products, such as tobacco company logos, images or names on lighters, T-shirts, hats or other products [26]. It also forbids branding at individual or institutional events. However, there are no nationally enforced regulations banning tobacco advertising or the display of tobacco products [27].

Cigarettes and tobacco products are subject to excise tax based on their nature or characteristics because their use can have negative impacts on society or the environment. Although Indonesia has a tiered tax structure designed to support small producers, this has instead led to an increase in the availability of tobacco products because their prices remain

affordable. When it comes to the prices of cigarettes, Indonesia is the cheapest country in the Asia-Pacific region when compared to other countries in the region. This enables lower-middle-class individuals and teenagers to purchase cigarettes either by the stick or in packs [28]. Therefore, a strong political decision is needed to raise cigarette excise and taxes.

B. Ratification of the Framework Convention on Tobacco Control (FCTC)

Since 2003, 192 countries have signed the Framework Convention on Tobacco Control (FCTC). Unfortunately, Indonesia is the only country in the Asia-Pacific region that has not yet done so. A study showed that the negative effects related to smoking prevalence in Indonesia are linked to the fact that the FCTC has not yet been ratified [18]. From 2007 to 2018, smoking prevalence in Indonesia only decreased by around 2%. To reduce smoking prevalence, Indonesia should follow the example of other middle-income developing countries with similar characteristics, such as Brazil, Pakistan, and Bangladesh. During this period, these countries successfully reduced their smoking prevalence rates by 6.4%, 8.5%, and 10.7%, respectively. Furthermore, ratification of the FCTC has not been shown to affect GDP per capita in these countries. Conversely, BPJS-Health allocates an annual budget of between 10.4 and 15.6 trillion Indonesian rupiah for healthcare expenses incurred due to smoking-related diseases [16]. Therefore, the government must demonstrate a strong commitment to ratifying the FCTC immediately, in order to streamline the health financing budget.

C. Expansion and Supervision of Smoke-Free Areas (SFA)

The government has taken action, through Law Number 36 on Health (2009). The implementation of Smoke-Free Areas (SFA) has been mandated in seven areas, including health facilities, schools, childcare centres, places of worship, public transport, working places, and other designated public areas. However, policies on smoke-free areas have only been issued in 49 districts/cities in 13 out of 34 Indonesian provinces [20]. Schools and universities are ideal areas for implementing smoke-free policies to achieve comprehensive protection for adolescents. It is hoped that, through the comprehensive implementation of smoke-free policies in every university and school, adolescents can be educated and prevented from becoming smokers. However, a study of 900 Indonesian schools in 24 provinces revealed that just 66.7% of those implementing SFA adhere to the required standards, such as having no designated smoking areas or rooms, cigarette signs and odours in the school environment, ashtrays and cigarette butts around the school, people smoking in the school, and items bearing cigarette or tobacco company logos, including advertisements, promotions, and sponsorships [29]. Therefore, supervision of the implementation of the SFA, particularly in educational institutions, must be strengthened to increase compliance with this regulation. According to a study, the strict enforcement of smoke-free areas tends to be associated with a decreasing prevalence of smoking among adolescents [30].

D. Socialization and Evaluation of Smoking Cessation Services (Quitline, INA)

The smoking cessation counselling service offered by Quitline INA is part of the government's commitment to providing these services to the public. There is a high level of public interest in this service. This is evident from the statistics, which show that around 16,836 calls are made every month via the Omnix app and CMS. Unfortunately, 70% of these calls are from casual users who are not committed to quitting smoking. From the incoming calls, it appears that the majority are from young people aged 20–24. This indicates that there is already a significant level of interest in quitting smoking among young people. Therefore, the government needs to evaluate the effectiveness of the counselling services provided, as well as conduct outreach to a wider audience about the counselling programme, in order to reduce the number of calls from individuals who are not committed to quitting smoking. A study in Queensland, Australia, concluded that there needs to be coordination between health promotion efforts and local healthcare providers to promote and encourage referrals and the use of the Quitline [31]. Additionally, it is essential to guarantee that existing programmes can reach those in need, adapt to new developments, and fulfil the community's requirements [32].

E. Increasing the Percentage of Warning Images on Cigarette Packages

Health warnings on cigarette packets in Indonesia tend to be smaller than in other countries. In Indonesia, graphic health warnings cover only 40% of the front and back of cigarette packs. The country should adopt the European Union's recommendation that graphic warnings cover at least 65% of cigarette packs [23]. The message conveyed by the images is intended to elicit a cognitive response that reminds people of the health risks and motivates them to stop smoking. A study found that when images covered 40% of the package, around 32%-39% of respondents had negative reactions, such as feeling afraid, disturbed, or disgusted, after seeing the message. Meanwhile, 33%–40% of respondents reported quitting smoking after seeing the image [NO_PRINTED_FORM] [24]. There is an increasing association between the cognitive effect and the percentage of the cigarette pack displaying a pictorial health warning. For example, Myanmar, Canada, Laos, Brunei, and Tajikistan have a policy of displaying an image covering 75% of the pack [33].

F. Ban on Tobacco Advertising

Advertising is a way for the tobacco industry to attract teenage novices by portraying masculinity. While there are currently no prohibitions on tobacco advertising, there are restrictions in place. Aggressive advertising entices teenagers to start smoking by offering discounts or free products at exhibitions. Studies show that exposure to tobacco promotions and sponsorships increases both the number of smokers and tobacco consumption [34]. Depok is one of the Indonesian cities that has implemented a ban on Point-of-Sale (POS) advertising and displays of tobacco products. Since the ban came into effect in 2021, adherence to

prohibitions on tobacco advertising and product displays in modern retailers has increased significantly. The majority of contemporary retailers continue to exhibit tobacco products. Additionally, traditional retailers tend to be non-compliant, frequently displaying tobacco products in areas accessible to adolescents [27]. This will increase the risk of teenagers becoming smokers. Therefore, local governments must commit to introducing and enforcing regulations that ban cigarette advertising by both modern and traditional retailers.

G. Raising Cigarette Excise and Taxes

Tobacco products, including cigarettes, have negative consequences for public health and the environment and are therefore subject to excise duties and taxes. However, cigarettes in Indonesia remain affordable for the lower-middle class and teenagers due to the relatively low level of excise duties and taxes [1]. Compared to the rest of the Asia-Pacific region countries, Indonesia offers the lowest cigarette prices. A study of 16 African countries shows that increasing the price of cigarettes significantly reduces the likelihood of adolescents smoking and lowers the number of cigarettes they smoke. Increasing excise taxes to raise retail prices has a positive effect in reducing tobacco use among youth in Africa. Therefore, the government of Indonesia should take similar steps regarding cigarette excise and tax policies to limit teenagers' access to cigarettes [35]. Additionally, policies prohibiting retail sales per stick and to children and adolescents under the age of 24 must be strengthened.

H. Cooperation Across Sectors and Programmes in Policy Implementation

Strengthening policy implementation through cross-programme and cross-sectoral cooperation is particularly important in terms of monitoring. The aim is to protect specific groups, such as adolescents, from the dangers of smoking. Key stakeholders at the central and regional levels include the Ministry of Health (MoH), Provincial and district health offices, technical support organizations, research organizations, non-governmental organizations, communities, and the media, who can all take on collaborative roles. Today, adolescents' lives are inextricably linked to social media, which they use to connect and interact with their social networks and wider communities. The wide reach of social media, its minimal costs, and the inadequate regulations in place enable the spread of harmful tobacco-related content. However, social media's power simultaneously makes it a promising channel for disseminating health information, promoting smoking cessation programmes, and countering positive social norms related to tobacco use among adolescents [36]. During the implementation of policies, there may be opposition from lobby groups, particularly from the tobacco industry. The tobacco industry is a powerful opposition group that has a negative impact on policy implementation. A supportive political-administrative framework is therefore required at the provincial and district levels, as well as the availability of institutional structures and resources, to take concrete actions related to the policy. Multi-tiered and efficient cross-sectoral

leadership must be reinforced through a fair allocation of roles among the participating entities [37].

Conclusion

Adolescents are the tobacco industry's target consumers. The earlier a person starts smoking, the faster degenerative diseases will develop, and the higher the risk of contracting infectious diseases will be. Therefore, stronger policies are needed to protect teenagers from the dangers of smoking. Steps that the government could take include signing the FCTC and issuing binding policies, such as expanding and supervising the implementation of smoke-free areas, promoting and evaluating smoking cessation services (Quitline, INA), increasing the percentage of warning images on cigarette packaging, banning cigarette advertising, raising cigarette tax and excise duties, and encouraging cross-sectoral and cross-programme collaboration in policy implementation. However, the implementation of tobacco control policies will face obstacles due to the influence of interest groups such as the tobacco industry, given that Indonesia relies heavily on state/regional revenues from this sector. Implementing these policies will be a lengthy process, so sustained and consistent efforts are needed to promote comprehensive tobacco control policies that prioritise public health.

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Conflict of Interest

The authors declare no conflict of interest.

References

[1] World Health Organization, *WHO global report on trends in prevalence of tobacco use 2000-2030*. 2024. [Online]. Available: https://iris.who.int/.
[2] Indonesian Ministry of Health, "Main results of Riskesdas 2018," Jakarta, 2018.
[3] Indonesian Ministry of Health, "Indonesian health survey 2023," Jakarta, 2023.
[4] S. Altwicker-Hámori *et al.*, "Risk factors for smoking in adolescence: Evidence from a cross-sectional survey in Switzerland," *BMC Public Health*, vol. 24, no. 1, pp. 1165–1175, Dec. 2024, doi: 10.1186/s12889-024-18695-4.
[5] Y.-C. Lee, L.-C. Chang, C. Hsu, and P.-C. Chen, "Comparing the characteristics of cigarette smoking and e-cigarette and IQOS use among adolescents in Taiwan," *J Environ Public Health*, vol. 2020, no. 6, pp. 1–8, 2020, doi: 10.1155/2020/7391587.
[6] P. Lozano, E. Arillo-Santillán, I. Barrientos-Gutíerrez, L. M. Reynales Shigematsu, and J. F. Thrasher, "E-cigarette social norms and risk perceptions among susceptible adolescents in a country that bans e-cigarettes," *Health Education and Behavior*, vol. 46, no. 2, pp. 275–285, Apr. 2019, doi: 10.1177/1090198118818239.
[7] Kavita-Jetly, A. M. Nawi, and N. Shuhada, "Smoking in Malaysia: early initiation and ways to overcome," *IMJM*, vol. 20, no. 3, pp. 164–172, 2021, doi: https://doi.org/10.31436/imjm.v20i3.
[8] Indonesia, *Law number 17 on Health*. Indonesia, 2023.

[9] K. Peltzer and S. Pengpid, "Tobacco use and its association with mental morbidity and health-compromising behaviours in adolescents in Indonesia," *Asian Pacific Journal of Cancer Prevention*, vol. 22, no. 1, pp. 31–35, 2021, doi: 10.31557/APJCP.2021.22.1.31.
[10] U.S. Centers for Disease Control and Prevention, "Tips from former smokers: Real people, real stories." Accessed: Dec. 26, 2024. [Online]. Available: https://www.cdc.gov/tobacco/campaign/tips/about/index.html
[11] C. Jiang, Q. Chen, and M. Xie, "Smoking increases the risk of infectious diseases: A narrative review," *Tob Induc Dis*, vol. 18, no. 7, pp. 60–77, Jul. 2020, doi: 10.18332/tid/123845.
[12] S. B. Maggirwar and J. H. Khalsa, "The link between cannabis use, immune system, and viral infections," *Viruses*, vol. 13, no. 6, pp. 1099–1114, Jun. 2021, doi: 10.3390/v13061099.
[13] D. Murakami *et al.*, "Exposure to cigarette smoke enhances Pneumococcal transmission among littermates in an infant mouse model," *Front Cell Infect Microbiol*, vol. 11, no. 1, pp. 1–10, Mar. 2021, doi: 10.3389/fcimb.2021.651495.
[14] M. Mustafa Assem, D. Falih Ahmed, and M. Badr Mahmood, "Association of smoking type, status, number of times of smoking and their effect on infected people by COVID-19," *Diyala Journal of Medicine*, vol. 23, no. 1, pp. 88–98, 2022, doi: 10.26505/DJM.23016580609.
[15] C. Feldman, A. J. Theron, M. C. Cholo, and R. Anderson, "Cigarette smoking as a risk factor for tuberculosis in adults: Epidemiology and aspects of disease pathogenesis," *Pathogens*, vol. 13, no. 2, pp. 151–167, Feb. 2024, doi: 10.3390/pathogens13020151.
[16] Y. Meilissa, D. Nugroho, N. N. H. W. Luntungan, and T. Dartanto, "The 2019 economic cost of smoking-attributable diseases in Indonesia," *Tob Control*, vol. 31, no. 1, pp. s133–s139, 2022, doi: 10.1136/tobaccocontrol-2021-056890.
[17] R. P. U. Satyana, R. E. Uli, D. Magliano, E. Zomer, D. Liew, and Z. Ademi, "Assessing the impact of smoking on the health and productivity of the working-age Indonesian population using modelling," *BMJ Open*, vol. 10, no. 11, pp. 1–12, Nov. 2020, doi: 10.1136/bmjopen-2020-041832.
[18] A. Ahsan, R. Afin, N. Amalia, M. Hindriyani, A. R. Jacinda, and E. Kramer, "FCTC ratification, smoking prevalence, and GDP per capita: lessons for Indonesia and the rest of the world," *Global Health*, vol. 18, no. 1, pp. 11–16, Dec. 2022, doi: 10.1186/s12992-022-00810-y.
[19] Indonesia, *Law number 36 on Health*. Indonesia, 2009.
[20] S. Martini, K. D. Artanti, A. Hargono, S. Widati, A. Ahsan, and Y. S. Prabandari, "Association between percentage of smokers and prevalence of smoking attributable morbidity in Indonesia: one decade after implementation of smoke-free area regulation," *BMC Public Health*, vol. 22, no. 1, pp. 2202–2209, Dec. 2022, doi: 10.1186/s12889-022-14435-8.
[21] National Cancer Control Committee, *Action strategy guidelines: Controlling tobacco and alcohol consumption*. Jakarta: National Cancer Control Committee, 2019.
[22] Minister of Health of the Republic of Indonesia, *Regulation number 56 concerning amendments to Regulation of the Minister of Health of the Republic of Indonesia number 28 of 2013 concerning the inclusion of health warnings and health information on tobacco product packaging*. Indonesia, 2017.
[23] B. Amalia, N. Nguyen, K. Welding, K. Clegg Smith, and J. E. Cohen, "Another day, another tobacco company's devious behaviour: cutout health warning labels on Indonesian cigarette packs," *Tob Control*, vol. 33, no. 1, pp. e278–e280, Dec. 2023, doi: 10.1136/tc-2023-058239.
[24] R. Dhani, A. Artini, S. T. Pannindriya, A. Albert, A. Ahsan, and D. Kusuma, "Effects of pictorial health warnings on cognitive, affective, and smoking behavior: A mixed methods study in four cities in Indonesia," *Asian Pacific Journal of Cancer Prevention*, vol. 22, no. 2, pp. 397–405, 2021, doi: 10.31557/APJCP.2021.22.2.397.
[25] Indonesia, *Law number 32 on broadcasting*. Indonesia: Secretariat of State, 2002.
[26] Indonesia, *Government regulation of the Republic of Indonesia number 109 concerning the safety of materials containing addictive substances in the form of tobacco products for health*. Indonesia: Secretariat of State, 2012.
[27] Q. Nian *et al.*, "Changes in compliance with bans on tobacco product display and advertising at traditional and modern point-of-sale retailers in Depok, Indonesia, 2019–2021," *Nicotine and Tobacco Research*, vol. 26, no. 1, pp. 1497–1503, Oct. 2024, doi: 10.1093/ntr/ntae099.
[28] World Health Organization, "Raising tobacco taxes and prices for a healthy and prosperous Indonesia," 2020. Accessed: Dec. 31, 2024. [Online]. Available: https://iris.who.int/bitstream/handle/10665/336149/9789290227748-eng.pdf?sequence=1
[29] A. Asyary, M. Veruswati, C. P. Arianie, T. S. Diah Ratih, and A. Hamzah, "Prevalence of Smoke-Free Zone Compliance among Schools in Indonesia: A Nationwide Representative Survey," *Asian Pacific Journal of Cancer Prevention*, vol. 22, no. 2, pp. 359–363, 2021, doi: 10.31557/APJCP.2021.22.2.359.

[30] W. Septiono, M. A. G. Kuipers, N. Ng, and A. E. Kunst, "Changes in adolescent smoking with implementation of local smoke-free policies in Indonesia: Quasi-experimental repeat cross-sectional analysis of national surveys of 2007 and 2013," *Drug Alcohol Depend*, vol. 209, no. 1, pp. 107954–107960, Apr. 2020, doi: 10.1016/j.drugalcdep.2020.107954.
[31] A. Khan, K. Green, G. Khandaker, S. Lawler, and C. Gartner, "The impact of a regional smoking cessation program on referrals and use of Quitline services in Queensland, Australia: a controlled interrupted time series analysis," *Lancet Reg Health West Pac*, vol. 14, no. 1, pp. 100210–100220, Sep. 2021, doi: 10.1016/j.lanwpc.2021.100210.
[32] R. M. Glover-Kudon and E. F. Gates, "The role of Quitlines in tobacco cessation: An introduction," *Am J Prev Med*, vol. 60, no. 3, pp. S99–S102, Mar. 2021, doi: 10.1016/j.amepre.2020.12.003.
[33] R. Yuliati, B. K. Sarwono, A. Ahsan, I. G. L. A. K. Wibhisono, and D. Kusuma, "Effect of message approach and image size on pictorial health warning effectiveness on cigarette pack in Indonesia: A mixed factorial experiment," *Int J Environ Res Public Health*, vol. 18, no. 13, pp. 6854–6864, Jul. 2021, doi: 10.3390/ijerph18136854.
[34] H. Megatsari, E. Astutik, K. Gandeswari, S. K. Sebayang, S. R. Nadhiroh, and S. Martini, "Tobacco advertising, promotion, sponsorship and youth smoking behavior: The Indonesian 2019 Global Youth Tobacco Survey (GYTS)," *Tob Induc Dis*, vol. 21, no. December, Dec. 2023, doi: 10.18332/tid/174644.
[35] S. Filby and C. Van Walbeek, "Cigarette prices and smoking among youth in 16 African Countries: Evidence from the Global Youth Tobacco Survey," *Nicotine and Tobacco Research*, vol. 24, no. 8, pp. 1218–1227, Aug. 2022, doi: 10.1093/ntr/ntac017.
[36] G. Kong, K. D. Blake, and D. Romer, "Advances in Social Media Research to Reduce Tobacco Use," *Nicotine and Tobacco Research*, vol. 26, pp. S1–S2, Feb. 2024, doi: 10.1093/ntr/ntad250.
[37] S. Mondal, S. V. Van Belle, U. Bhojani, S. Law, and A. Maioni, "Policy processes in multisectoral tobacco control in India: The role of institutional architecture, political engagement and legal Interventions," *Int J Health Policy Manag*, vol. 11, no. 9, pp. 1703–1714, Sep. 2022, doi: 10.34172/IJHPM.2021.66.

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