

Quantitative Analysis of the prevalence and effects of smoking on Indonesian youth

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Abstract:

Indonesia faces a burgeoning public health crisis due to the alarming rates of smoking among its youth. Despite the known health risks associated with tobacco consumption, a significant portion of Indonesian adolescents are engaging in this harmful behavior. Factors contributing to this trend include peer pressure, easy access to cigarettes, and the lack of comprehensive tobacco control measures. The consequences of youth smoking are severe, encompassing both physical and mental health implications. Smoking-related diseases, such as lung cancer, heart disease, and chronic obstructive pulmonary disease (COPD), impose a substantial burden on the healthcare system and the nation's economy. Additionally, smoking can negatively impact mental health, leading to increased anxiety, depression, and even cognitive decline. To address this pressing issue, Indonesia must implement effective tobacco control measures. This includes strengthening regulations on tobacco advertising and promotion, enforcing smoke-free zones, and implementing comprehensive education programs in schools. Furthermore, increasing taxes on tobacco products can reduce affordability and discourage consumption. By taking decisive action, Indonesia can protect its youth from the devastating consequences of smoking and build a healthier future for its population.

Keywords: Youth smoking, Indonesia, public health, socioeconomic factors, tobacco industry, regulations, WHO FCTC

Introduction:

Tobacco use, particularly cigarette smoking, is the leading cause of preventable death worldwide and causes over 8 million deaths annually ("Tobacco," n.d.). In 2023 alone nearly 1 billion people smoked with 25 million of those individuals being children aged 13-15 ("Tobacco Atlas: Global Tobacco Users at 1.3 Billion; Smoking Among Young Teens Increases in 63 Countries," n.d.). Indonesia, the world's third largest tobacco consumer, faces a pressing challenge due to high smoking prevalence among its youth ((ADMIN 2020). According to the Indonesian 2019 Global Youth Tobacco Survey the smoking prevalence was found at a stageerring 19.2% with up to 41% being males and 3.5% being female ("Tobacco Advertising, Promotion, Sponsorship and Youth Smoking Behavior: The Indonesian 2019 Global Youth Tobacco Survey (GYTS) - PMC," 2023). This early initiation into smoking carries severe health and socioeconomic consequences.

Understanding the factors contributing to smoking initiation and its consequences in Indonesian youth is crucial for developing effective prevention and intervention strategies. This study aims

to explore the prevalence, socioeconomic causes, and health implications of smoking among young people in Indonesia. By examining these aspects this review hopes to shed light on the current situation and inform targeted public health initiatives to curb youth smoking in the country.

Tobacco and health risks:

Tobacco related products are a complex mixture containing over 7,000 chemicals, of which at least 270 are known to be harmful and over 70 confirmed carcinogens (“Harmful Chemicals in Tobacco Products,” n.d.), with some shown in *figure 1*. These chemicals cause severe harm to the body at the cellular level, leading to a cascade of detrimental effects across nearly every organ system. Furthermore, recent studies have also revealed that not only do tobacco products have a dreadful impact on organs but also mental health.

Toxicants	Induced Cancer Type	Related Biomarkers
Acetaldehyde *	Lung, nasal	Leukocyte DNA adducts
Acrolein *	Lung	3-HPMA in urine
Benzene *	Lung, leukemia	SPMA in urine
Benzo[a]pyrene *	Lung	1-hydroxypyrene in urine
1,3-Butadiene *	Lung, leukemia, liver	MHBMA in urine
Carbon monoxide *	N/A	Exhaled CO
NNK, NNN *	Lung, nasal, oral cavity, liver, oesophageal, pancreatic, cervical	NNAL and NNN in urine
PAH *	Lung, laryngeal, oral cavity, cervical	I-HOP
Formaldehyde	Lung, nasal	Leukocyte DNA adducts
Nicotine *	N/A	Nicotine, cotinine, 3'-hydroxycotinine and other their glucuronides in urine
Nickel *	Lung, nasal	N/A

Figure 1 - toxicants in tobacco products and their induced cancer type

Cigarette smoke contains polycyclic aromatic hydrocarbons (PAHs), nitrosamines, and reactive oxygen species (ROS). PAHs have the ability to mutate the DNA code, while nitrosamines add to the damage. ROS, highly reactive molecules, create oxidative stress within cells, indirectly harming the DNA. This onslaught disrupts the delicate controls governing cell growth and division. Normally, cells follow a programmed cycle, but smoking throws this into chaos, leading to uncontrolled cell proliferation – a defining characteristic of cancer. Genes like p53, which act as guardians of the genome by preventing damaged cells from dividing, are frequently mutated in smoking-related cancers. With this safeguard compromised, damaged cells can continue dividing, potentially becoming cancerous. Additionally, smoking can activate oncogenes, genes that promote cell division, further tipping the balance towards cancer development (Caliri, Tommasi, and Besaratinia 2021; Barnes et al. 2018; Valavanidis, Vlachogianni, and Fiotakis 2009). Table 1 quantifies these damages in terms of how much the risk of various cancers is increased.

Type of cancer	Risk
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Nasal cavity	2 times
Paranasal cavity	2 times
Oral cavity	4 to 5 times
Nasopharynx	2 times
Oropharynx	4 to 5 times
Hypopharynx	4 to 5 times
Larynx	10 times
Oesophagus	2 to 5 times
Stomach	2 times
Pancreas	2 to 4 times
Cervix	2 times

Table 1 - increase in risk factor of cancer types due to frequent smoking

Smoking is the leading cause of lung cancer and is responsible for over 90% of cases in men and 80% of cases in women (CDCTobaccoFree 2022). Tar and carcinogens in cigarette smoke damage lung tissue, triggering uncontrolled cell growth and tumor formation. It can also cause Chronic obstructive pulmonary disease (COPD), a progressive lung disease encompassing emphysema and chronic bronchitis. Smoking irritates and inflames the airways, leading to difficulty breathing, coughing, and wheezing (Prevention (US), Promotion (US), and Health (US) 2010).

Smoking is also a major risk factor for heart disease with one out of every 5 smoking-related deaths caused by heart disease (“Smoking and Cardiovascular Disease | Johns Hopkins Medicine,” n.d.). One of the most prevalent diseases is coronary heart disease (CHD), the leading cause of death worldwide. CHD arises from damaged blood vessels and plaque buildup in the arteries, both of which are promoted by smoking. This can lead to heart attacks, strokes, and peripheral artery disease (PAD). Smoking also weakens the aortic wall, increasing the risk of a life-threatening condition called an aortic aneurysm, where the main artery leaving the heart bulges and potentially ruptures (“Cardiovascular Diseases (CVDs),” n.d.).

Smoking can also contribute to type 2 diabetes by hindering the body's ability to utilize insulin effectively. A weakened immune system is another consequence, making smokers more susceptible to infections like pneumonia and tuberculosis. Reproductive health is compromised

as well, with both male and female fertility declining due to smoking. Pregnant women who smoke expose their unborn babies to increased risks of premature birth and low birth weight. Even bone health suffers, with smoking decreasing bone density and promoting osteoporosis, a condition that weakens bones and makes them more prone to fractures(Maddatu, Anderson-Baucum, and Evans-Molina 2017, 2).

While some smokers may initially perceive cigarettes as a stress reliever, the reality is more complex. Smoking disrupts the delicate balance of neurotransmitters in the brain, including dopamine, which can contribute to anxiety and depression. The temporary pleasure associated with nicotine fades quickly, leaving behind cravings and withdrawal symptoms that can worsen mood and exacerbate mental health issues (Lawless et al. 2015).

The negative impact of smoking goes even deeper, increasing the risk of neurodegenerative diseases like Alzheimer's dementia. Smoking damages blood vessels throughout the body, including those supplying the brain. This impaired blood flow can starve brain cells of oxygen and nutrients, contributing to cognitive decline and the development of dementia. Smoking also increases inflammation throughout the body, including in the brain, which further accelerates neurodegeneration. The toxins in cigarette smoke can directly harm brain cells and impair their function, adding to the risk of Alzheimer's disease ("Smoking and Increased Alzheimer's Disease Risk: A Review of Potential Mechanisms - PMC," n.d.).

In addition to these specific concerns, smoking can worsen symptoms of existing mental health conditions. For instance, individuals with schizophrenia may smoke more heavily in an attempt to self-medicate, but this can actually exacerbate their symptoms (Ding and Hu 2021). Smoking can also interact with certain medications used to treat mental health conditions, reducing their effectiveness.

Smoking Prevalence in Indonesia: Breakdown of the numbers

In the last 2 years the percentage of smokers aged 10-12 has nearly doubled going from 0.07% 2021 to 0.14% in 2023 while smokers aged 13-15 have increased by around 0.2%, as shown in Table 3("Percentage of Smoking in People Aged \leq 18 Years According to Age Group - Statistical Data - BPS-Statistics Indonesia," 2024).

Smoker Age Group	Percentage of Smoking in People Aged ≤ 18 Years According to Age Group (Percent)		
	2021	2022	2023
10 - 12	0,07	0,11	0,14
13 - 15	1,44	1,45	1,63
16 - 18	9,59	8,92	9,30
Indonesia	3,69	3,44	3,65

Table 2: Percentage of smoking in people aged below 18 from 2021-2023

We can also see that the majority of smokers below 18 are from rural areas as shown in Table 3 (“Percentage of Smoking in Populations ≤ 18 Years Old by Region - Statistical Data - BPS-Statistics Indonesia,” 2024).

Area of Residence	Percentage of Smoking in Populations ≤ 18 Years Old by Region (Percent)		
	2021	2022	2023
Urban	3,32	2,84	3,14
Rural	4,15	4,23	4,34
Urban + Rural	3,69	3,44	3,65

Table 3: Percentage of smoking in people aged below 18 in urban versus rural areas

Table 4 displays various provinces and the age when smoking was initiated. We can observe that the highest percentage was in the bengkulu province, which is ranked 29 in GDP per capita throughout all the provinces whereas the lowest rate was in Maluku which is ranked as one of the lowest. This could be due to the strong religious beliefs and limited access to cigarettes (Susilowati 2010).

Province	Age started smoking everyday (years)						Don't know
	5-9	10-14	15-19	20-24	25-29	> 30	
NAD	0.0	6.8	30.6	17.4	3.4	2.5	39.4
North Sumatra	0.0	7.3	33.5	20.0	3.3	2.5	33.4
West Sumatra	0.0	13.6	40.0	13.8	3.1	1.9	27.5
Riau	0.0	9.3	37.5	14.3	2.3	1.7	34.8
Jambi	0.0	12.8	43.6	14.9	2.8	1.8	24.0
South Sumatra	0.0	10.9	38.0	12.4	3.2	1.7	33.8
Bengkulu	0.0	10.6	36.8	11.4	2.4	1.8	37.1
Lampung	0.0	9.3	36.3	13.9	3.1	2.2	34.6
Bangka Belitung	0.0	12.2	46.5	15.1	3.5	3.2	19.5
Kepulauan Riau	0.0	9.3	44.7	14.3	2.9	1.9	26.9
DKI Jakarta	0.0	12.3	59.7	18.8	4.9	2.9	1.4
West Java	0.0	9.3	39.6	19.0	5.3	4.2	22.7
Central Java	0.0	10.8	34.9	18.4	6.4	5.0	24.4
DI Yogyakarta	0.0	12.6	39.3	16.5	4.8	5.1	21.6
East Java	0.0	10.1	36.3	17.0	6.0	3.9	26.7
Banten	0.0	10.6	35.4	12.9	2.9	2.0	36.2
Bali	0.0	4.6	36.0	17.4	5.6	7.3	29.1
West Nusa Tenggara	0.0	11.8	39.6	13.0	3.2	1.9	30.6
East Nusa Tenggara	0.4	5.4	28.3	18.1	6.7	4.8	36.2
West Kalimantan	0.0	8.0	33.0	14.8	3.6	2.5	38.1
Central Kalimantan	0.0	9.9	38.6	15.8	5.3	3.5	27.0
South Kalimantan	0.0	12.8	36.8	17.5	5.0	3.4	24.4
East Kalimantan	0.0	8.2	36.7	17.1	3.9	2.7	31.4
North Sulawesi	0.2	7.0	44.1	17.7	4.4	2.5	24.1
Central Sulawesi	0.0	10.4	34.7	18.7	5.2	3.8	27.1
South Sulawesi	0.8	10.0	32.2	15.4	4.4	2.7	34.5
Southeast Sulawesi	0.0	8.0	26.4	13.9	3.3	1.6	46.9
Gorontalo	0.0	12.9	35.5	11.2	3.3	1.7	35.5
West Sulawesi	0.0	6.7	29.2	8.0	2.6	1.0	52.5
Maluku	0.3	5.8	39.2	18.6	4.2	3.3	28.6
North Maluku	1.4	6.4	35.6	18.4	5.2	3.5	29.5
West Papua	1.2	6.8	33.4	18.0	6.7	4.6	29.3
Papua	3.2	11.0	26.7	13.7	3.1	2.1	40.2
Indonesia	0.1	9.6	36.3	16.3	4.4	3.2	30.0

Table 4: Prevalence of smoking in Indonesia categorized by provinces and the age at which individuals started smoking

Data also shows that while most youth are not daily smokers they are occasional smokers. The average number of cigarettes consumed in ages 15-24 is also nearly identical to the national average as shown in table 5. Clove-flavored cigarettes called kreteks are the most widely consumed type of cigarette in Indonesia, representing about 95% of the cigarette market. However, it is not just cigarette smoking but 66.2% of youth are exposed to secondhand smoke in enclosed public places and 57.3% are exposed to secondhand smoke at home (Ma et al. 2023).

Age group (years)	Current smokers ⁵			Do not smoke	
	Daily smokers ⁴	Occasional smokers	Average of cigarettes consumed/day	Ex smokers	Non smokers
10-14	0.7	1.3	10	0.3	97.7
15-24	17.3	7.3	12	1.1	74.3
National	23.7	5.5	12.2	3.0	67.8

Table 5: Smoking frequencies categorized by age group, including daily smokers, occasional smokers, and the average number of cigarettes consumed per day. The table also presents data on non-smokers and ex-smokers, providing a comprehensive overview of smoking behaviors across different age groups alongside the national average.

Figure 2 also shows that people aged 15 to 19 have the highest prevalence of smoking 5-9 cigarettes per day and don't fall far behind the older population who smokes 5-15 cigarettes a day.

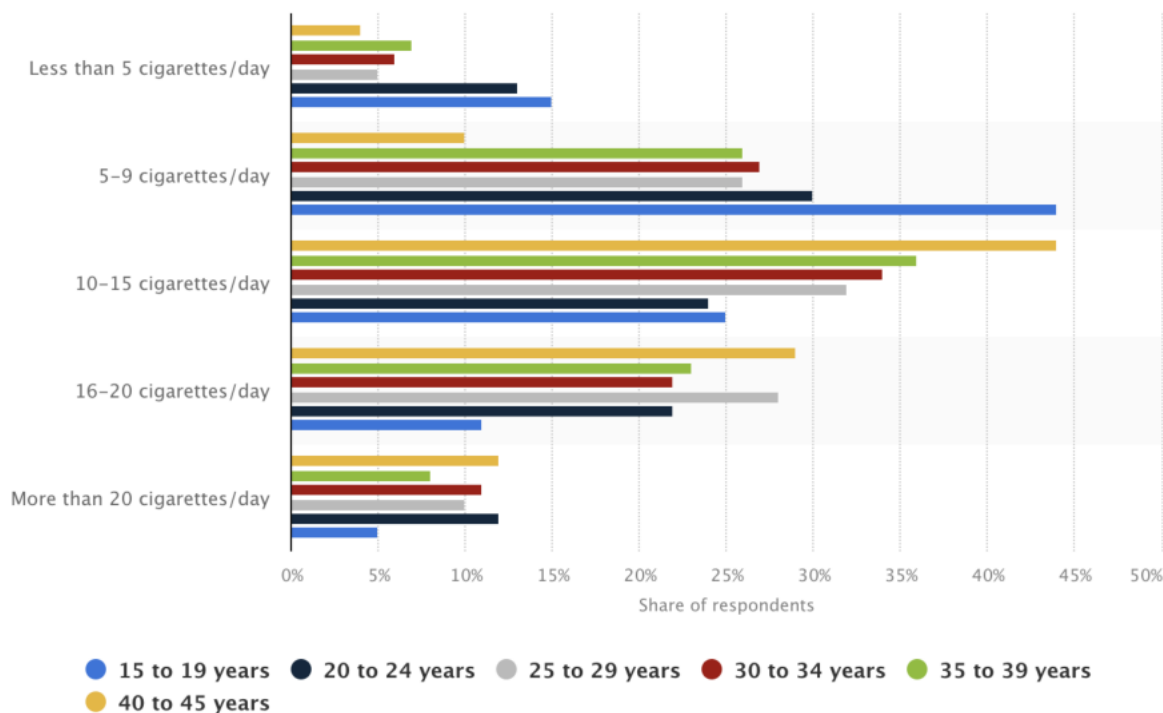


Figure 2: Bar chart showing the number of cigarettes smoked per age group

Socioeconomic causes behind the prevalence:

For youth from low-income backgrounds, financial constraints restrict access to healthy alternatives and recreational activities. Cigarettes, although ultimately detrimental to health, offer a deceptive sense of affordability and a fleeting escape from the hardships of poverty. A national survey from 2021 reveals that households with smokers dedicate 11.5% of their monthly income to tobacco products (“(PDF) Tobacco Economics in Indonesia,” 2008.). This highlights the difficult choices these families face, often sacrificing nutrition for a perceived, albeit temporary,

relief. Furthermore, the stresses and frustrations associated with poverty can push youth towards smoking as a perceived coping mechanism.

Additionally, the influence of family and peers plays a significant role in shaping smoking habits. Exposure to parental smoking creates a normalized environment where cigarettes become a familiar part of daily life (Sharma et al. 2020). Parental disapproval of smoking can be a powerful deterrent, but when parents themselves smoke, the message becomes mixed and the barrier to initiation weakens. Peer pressure during adolescence is another potent force. The desire to fit in and gain social acceptance can be immense, especially within a group where smoking is prevalent. Experimentation with cigarettes in such settings can easily lead to a regular habit.

A 2015 Indonesian study found a significant correlation between having one or both parents who smoke and adolescent smoking behavior. Peer pressure during adolescence is another potent force (Fithria et al. 2021). The desire to fit in and gain social acceptance can be immense, especially within a group where smoking is prevalent. Experimentation with cigarettes in such settings can easily lead to a regular habit.

Tobacco companies are also adorned with attractive packaging, subtly placed within popular media, and promoted by social media influencers who project an image of coolness, rebellion, or even success. This targeted marketing creates a false narrative which glamorizes and normalizes smoking. Furthermore, the widespread availability and affordability of cigarettes in Indonesia make it alarmingly easy for youth to initiate and maintain the habit. A 2019 report revealed that nearly 89% of Indonesian retail outlets sell cigarettes, making them readily accessible to youth despite existing minimum age restrictions (Rosilawati, Rafique, and Sudiwijaya 2024). The Global youth Tobacco Survey reveals the link between poverty, youth smoking, and marketing. It highlights that adolescents exposed to any form of tobacco promotion or sponsorship were more likely to be current smokers or susceptible to smoking initiation. This suggests that targeted marketing tactics by tobacco companies disproportionately affect youth from lower socioeconomic backgrounds.



Figure 3: Examples of smoking advertisements in Indonesia that promote smoking as a symbol of aggressive masculinity

Another factor behind the prevalence of smoking is Indonesia's predominantly muslim population. Islamic teachings generally discourage smoking, considering it harmful and wasteful. Studies suggest that strong religious adherence can be a protective factor against smoking initiation among youth. However, the relationship is not always straightforward. Social circles and peer pressure can overpower religious teachings, and some smokers might engage in a form of mental compartmentalization, justifying their behavior despite religious beliefs ("Smoking and Religion: Untangling Associations Using English Survey Data - PMC," 2017). Surveys have shown that a deeper personal connection to religious teachings is more likely to have a more significant deterrent effect on smoking initiation. However, the way communities interpret and enforce religious rules can influence how strictly smoking is discouraged. Variations in social norms can create a gap between religious ideals and everyday practices.

In conclusion, youth smoking in Indonesia is not simply a matter of individual choice but rather a consequence of a complex interplay between social and economic factors. Understanding the economic disparities that limit options, the influence of family dynamics and peer pressure, the manipulative tactics of tobacco marketing, and the nuanced role of religion is essential for crafting effective interventions.

Current and future consequences:

Indonesia faces a critical public health challenge due to high youth smoking rates. The current consequences are already substantial, placing a significant burden on both the healthcare system and the nation's youth. If left unchecked, the future holds even more devastating implications.

Smoking-attributable diseases generate enormous healthcare costs in Indonesia, estimated between Rp17.9 trillion and Rp27.7 trillion annually. This translates to a significant drain on national resources, consuming 0.1% to 0.2% of Indonesia's GDP. The Social Security Administrative Body carries a disproportionate burden, covering 56.3% to 58.6% of these costs. This consumes a staggering 86.3% to 87.6% of the Agency's budget, leaving less for other healthcare needs. Individuals and families grapple with the remaining healthcare expenses (41.4% to 43.7%), stemming from uncovered medical costs, out-of-pocket payments, and transportation costs related to smoking-related illnesses. These expenses can push families into poverty or worsen existing financial strain especially since data reveals that Indonesians spent 11.5% of household income on tobacco products, compared with 11% of available income on fish, meat, eggs and milk combined, and 3.2% for education (Meilissa 2021).

The human cost is even more profound. An estimated 290,000 people in Indonesia die annually due to tobacco use, with over 52,000 succumbing to secondhand smoke exposure. Tobacco accounts for a staggering 17% of all deaths in the country, claiming a disproportionate number of men (25.3%) and women (7.2%). Smoking is a major driver of chronic diseases, responsible for a significant portion of deaths from lung cancer (59.6%), chronic obstructive pulmonary disease (59.3%), heart disease (28.6%), diabetes (20.6%), and stroke (19.7%) (“The Toll of Tobacco in Indonesia | Campaign for Tobacco-Free Kids,” n.d.).

These are only some of the current consequences, the future issues for the youth range from economic to healthcare. The current healthcare costs are expected to rise dramatically, squeezing the national budget and potentially leading to decreased funding for essential services and reduced access to quality care for all Indonesians. The increasing burden of chronic diseases could also outpace the growth of healthcare professionals, resulting in longer wait times, inadequate treatment, and a potential collapse of the system under the weight of these illnesses. Furthermore, the rise in antibiotic use to treat smoking-related respiratory infections could fuel the emergence of antibiotic-resistant bacteria, creating a scenario where common infections become untreatable.

The economic consequences extend far beyond healthcare. A generation plagued by smoking-related illnesses will experience decreased work capacity and higher absenteeism, hindering economic growth and national development. Early deaths due to smoking leave families without breadwinners, potentially pushing them into poverty and increasing dependence on social welfare programs. Additionally, increased disability rates will strain social security systems. Unchecked youth smoking could also make Indonesia less attractive to foreign investors, further hindering economic prospects.

Moreover, the social and demographic impacts are equally concerning. Premature deaths due to smoking deprive Indonesia of talented individuals who could contribute to innovation and progress. This brain drain will have a long-term impact on the country's development potential. The death or illness of a family member due to smoking can have a devastating impact on families, leading to emotional distress, financial hardship, and disruption of family structures. The economic burden of these illnesses, coupled with the loss of income from premature deaths, can push families into poverty and worsen social inequalities.

Tobacco industry and tax revenues:

In 2023 alone preliminary figures showed that the gross domestic product (GDP) from the manufacture of tobacco products in Indonesia was about 147.83 trillion Indonesian rupiah. In 2022 over 225 thousand metric tons of tobacco were produced, accounting for 3% of total tobacco production worldwide and the total planted area of tobacco estates was estimated at around 191,800 hectares. In 2023, the export value of tobacco and their manufactured

substitutes from Indonesia amounted to approximately 1.75 billion U.S. dollars. In comparison, the import value of tobacco and their manufactured substitutes to Indonesia amounted to around 941.3 million U.S. dollars in the same year. Some of the top companies in Indonesia such as Gudang Garam had an annual revenue of 119 trillion Indonesian rupiah (“Indonesia: GDP from Manufacture of Tobacco Products 2023,” n.d.).

Tobacco manufacturing represents only a small share of economy-wide employment (0.60 percent). Additionally, the contribution of tobacco manufacturing to employment in the manufacturing sector is quite small (5.3 percent) in comparison to the contribution of the food (27.43 percent), garment (11.43 percent), and textile (7.90 percent) sectors. Although small, tobacco manufacturing jobs are heavily concentrated, with about 94 percent of tobacco manufacturing workers in Central Java, East Java, and West Nusa Tenggara. In these provinces, several districts are quite dependent on tobacco sector employment, for example, Kudus (30 percent), Temanggung (27.6 percent), and Kediri (26 percent). Most tobacco manufacturing workers are female and unskilled, representing 66% of the total (“The Economics of Tobacco Taxation and Employment in Indonesia : Policy Note,” n.d.).

Indonesia primarily relies on excise taxes on tobacco products, contributing significantly to the national budget. Estimates suggest these taxes make up between 5.7% and 9.8% of total government revenue (“(PDF) Tobacco Economics in Indonesia,” n.d.). The government periodically adjusts these taxes to balance revenue generation with public health goals. It currently has one of the most complex cigarette excise tax structures in the world which is divided into 12 tiers, based on the type of cigarettes, the number of cigarette productions, and per-unit retail price. The tiers aim to accommodate smaller scale cigarette firms as they account for more than half of the total factories (Bella et al. 2024).

Current policies versus global policies and WHO standard:

Indonesia's Regulation No. 109 of 2012 mandates smoke-free areas in public spaces like healthcare facilities, educational institutions, places of worship, and children's playgrounds (Bella et al. 2024). However, enforcement remains a crucial barrier. A 2020 study found that only 38.5% of healthcare facilities in Indonesia adhered to smoke-free zone regulations strictly (Kaufman et al. 2014). This inconsistency creates confusion and undermines the policy's effectiveness.

Furthermore, Indonesia enforces a partial ban on tobacco advertising in electronic and print media through Government Regulation No. 103 of 2019. However, this regulation primarily targets direct product promotion, leaving loopholes for more subtle marketing tactics. Influencer endorsements and brand sponsorships, for instance, are not explicitly prohibited. Furthermore, 78.3% of Indonesian adolescents were exposed to tobacco advertising through social media

(Ma et al. 2023). Tobacco advertising and promotion is also only allowed between the hours of 21:30 and 05:00. All advertisements, however, may not show cigarettes, the shape of cigarettes, tobacco product branding, or smoking (Bella et al. 2024).

Indonesia also has regulations on tobacco packaging and labeling which require pictorial health warnings to cover at least 40% of the main display areas parallel to the top edge of the packaging. Five health warnings must also appear concurrently and misleading terms such as “low tar” and prohibited. However, other misleading aspects such as colors, numbers, and symbols are prohibited and the regulation does not apply to tobacco products that already had these misleading words in their branding (“Tobacco Control in Indonesia | The Union,” n.d.).

One of the major differences between Indonesia and other nations is that there are no national laws restricting the sale, use, advertising, or packaging and labeling of e-cigarettes which is partially the reason for the high prevalence of youth smoking as there are no legal regulations against it. In contrast, the law prohibits the sale of tobacco products to persons under the age of 18 however there are no restrictions on internet sales or the sale of single cigarettes (“Smoking Among Minors Still a Major Problem in Indonesia,” 2019).

A comparison with regional neighbors like Singapore and Thailand reveals that there are stricter and more detailed regulations regarding tobacco regulations. Singapore enforces comprehensive bans on tobacco advertising and utilizes graphic health warnings (“MOH | News Highlights,” 2010). Thailand goes a step further with smoke-free zone enforcement and bans on single cigarette sales, making initiation more difficult for youth (“Use of E-Cigarettes and Associated Factors among Youth in Thailand - PMC,” 2021.).

Indonesia's compliance with the World Health Organization's (WHO) Framework Convention on Tobacco Control (FCTC) remains a contentious issue. Despite having signed the FCTC in 2006, Indonesia has yet to ratify it, meaning it hasn't formally adopted the treaty's recommendations. This non-ratification puts Indonesia at odds with the global effort to reduce tobacco use and hinders its access to resources and best practices offered by the WHO (FHUI, 2016.).

Several key aspects of Indonesia's current regulations fall short of the WHO's guidelines. The partial ban on tobacco advertising, for instance, allows for loopholes that expose youth to marketing tactics like influencer endorsements and brand sponsorships. Additionally, the size and graphic nature of health warnings on cigarette packs in Indonesia are less impactful compared to those mandated by the FCTC. Furthermore, enforcement of smoke-free zones in public spaces remains weak, leaving many young people vulnerable to secondhand smoke exposure. By ratifying the FCTC and implementing stricter regulations that align with its recommendations, Indonesia can demonstrate a stronger commitment to tobacco control and create a healthier environment for its youth.

Recommendations:

We predict that raising cigarette taxes by an average of 47% and simplifying the cigarette tax structure to 6 tiers will reduce cigarette demand by 2 percent, increase government revenue by 6.4 percent, and reduce gross employment in the tobacco manufacturing sector by less than 0.50 percent (Rizal 2023). That means a reduction of 2,914 tobacco manufacturing jobs, most of them in the SKT industry (2,245 less jobs). Given the additional revenues government will obtain with the reform (IDR 10,915 billion), there is scope to implement measures to reduce the impact on the tobacco workers' livelihoods (such as cash transfers or expanded access to social safety nets) or to find alternative occupations for the workers affected (retraining programs, educational grants, etc.).

Reducing the prevalence of smoking among Indonesian youth requires a multifaceted approach that includes policy recommendations focused on education, regulation, and community engagement. One crucial policy recommendation is the implementation of comprehensive anti-smoking education programs in schools. These programs should start at an early age and focus on the health risks associated with smoking, the dangers of nicotine addiction, and the tactics used by the tobacco industry to target young people. Incorporating interactive and engaging content, such as testimonials from former smokers and the use of digital media, can make these programs more effective in resonating with young audiences.

Another key policy recommendation is the strengthening of regulations on tobacco advertising, promotion, and sponsorship. Indonesia could enforce stricter bans on tobacco advertisements in all forms of media, including online platforms, where youth are increasingly exposed. Additionally, implementing plain packaging laws that remove brand logos and use graphic health warnings on cigarette packages can reduce the appeal of smoking among young people. Limiting the visibility of tobacco products in retail settings, such as prohibiting displays near cash registers and restricting sales to licensed vendors, can also decrease youth access to cigarettes.

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