Implementation of the Smoke-Free Policy in the Tourist Destination Area of Lake Toba, Toba Samosir Regency, Indonesia

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Abstract

The prevalence of smoking in Indonesia remains alarmingly high, with early initiation among children and adolescents contributing to a significant burden of smoking-attributable diseases and escalating national healthcare costs. Despite the implementation of a Smoke-Free Policy (SFP) in Toba Samosir Regency, particularly in the Lake Toba tourist area, compliance remains low, undermining efforts to create a healthy, smoke-free environment for both residents and visitors.Objectives: Beautiful scenery of Lake Toba is not followed by clean and healthy air; this is because there are still many smokers found, the smell of cigarette smoke and cigarette butts in the priority tourist attractions of Lake Toba, Toba Samosir Regency. This study aims to determine the implementation of the Toba Samosir Regents smoke-free policy on the Regional Regulation No. 55 of 2018 Toba Samosir in the priority tourist destination area of Lake Toba, Toba Samosir Regency. This study uses a cross-sectional design. The object of this research is the priority tourist destination area of Lake Toba, Toba Samosir Regency Random cluster sampling was used to choose samples from the population. These samples included 100 tourist facilities on Lake Toba, 100 tourists on Lake Toba tourist facilities, and 100 tourist managers. JASP version 16 was used to analyze the data. The results of this study show that tourist facilities still need to follow the smoke-free policy (SFP) more (21%). Beaches and waterfalls have the lowest rates of smoke-free policy (SFP) compliance for tourist facilities (0%), restaurants and cafes (8.3%), hills and mountains (20%), monuments (22.2%), hotels (38.1%), and markets and souvenir places (60%). Most smoke-free policy (SFP) violations are no sign (68%), smoking (42%), ashtrays (38%), and cigarette butts (32%). Overall compliance was low in Toba Samosir Regency due to many challenges. This information provides lessons regarding tobacco control policy in underdeveloped areas far from the central government.

Keyword: Compliance, Smoke, Smoke-free policy, Tourism facilities.

INTRODUCTION

The number of adolescents who smoke has increased in several countries around the world. In 2010, the World Health Organization (WHO) estimated that over 36% of Indonesia's population —approximately60.3 million people – were smokers (Nasution, 2022). WHO projects that by 2025, the number of smokers in Indonesia could rise to 45% of the total population, or about 96.8 million people, if tobacco control measures do not improve(WHO, 2020b). As a result, Indonesia is unlikely to achieve the global target of reducing tobacco use by 30% by 2025 (WHO, 2020a). Despite this alarming trends, Indonesia remains one of only

nine countries whose governments have yet to ratify the World Health Organization's Framework Convention on Tobacco Control (Wahyuti, 2019) (Nurhayati, 2022).

Although most people are aware of the dangers of smoking, its prevalence continues to rise. In Indonesia, smoking remains a widespread habit. According to data from the 2018 Basic Health Research survey, 24.3% of Indonesians reported smoking daily, while 4.6% smoked occasionally (Kementerian Kesehatan RI, 2013). The same survey revealed that 2.5% of children aged 5 to 9 had tried smoking, and 23.1% of those aged 10 to 14 reported smoking for the first time(Kementerian Kesehatan RI, 2018). This trend is especially pronounced among males: 67% of Indonesian men aged 15 and older smoke—one of the highest rates in the world. Among boys aged 13 to 14, the smoking rate is also high at 36.2%. This is particularly concerning, as younger smokers are more likely to develop long-term habits, increasing their risk of serious health problems later in life (Lorenza, 2024; Mumtaz, 2024).

In 2016, heart disease accounted for 353 million disability-adjusted life years (DALYs) globally, with 44% of these attributed to smoking(Zhang, 2023) (Mboi, 2022). Similarly, in 2017, smoking was one of the leading causes of DALYs in Indonesia(Ahmad, 2023). The country is experiencing a shift in disease patterns, with non-communicable diseases (NCDs) on the rise. Cases of catastrophic illnesses—those requiring specialized treatment, advanced medical technology, and long-term care—continue to increase(O'Dell, 2021) (Pozzer, 2023). This trend is evident in the frequent use of national health insurance to treat serious conditions. Catastrophic diseases account for approximately 17–19% of Indonesia's total annual healthcare expenditure. According to the Indonesian National Health Insurance (BPJS Kesehatan) , spending on catastrophic illness reached IDR 554.1 trillion, or 18.58% of total healthcare costs, between 2018 and 2020. Heart disease had the highest number of cases and costs, with 13.041.463 cases and a total cost of IDR 102 trillion, followed by cancer (2.452.749 cases; IDR 35 trillion) and stroke (2.127.609 cases; IDR 25 trillion)(Watkins, 2021). While catastrophic diseases have multiple risk factors, unhealthy lifestyles, particularly smoking, are among the most significant. Many of these illnesses fall under the category of smoking-attributable morbidity (SAM). The Centers for Disease Control and Prevention (CDC) regularly estimates the mortality and economic burden of smoking (Yunarman et al., 2021) yet the broader population-level impact of smoking-related diseases remains underexplored(Burstein, 2021).

The smoke-free policy (SFP) proposed under the Framework Convention on Tobacco Control has proven to be one of the most effective anti-smoking measures (Wahidin, 2020; Yunarman, 2020). Previous studies have linked its implementation to a range of positive outcomes: reduced smoking rates in the United States, decreased indoor smoking in the United

Kingdom, lower secondhand smoke exposure in New Zealand, reduced myocardial mortality in Belgium, and improved indoor air quality in 15 countries across North America and Europe (Jackson, 2024; Leventhal, 2022; Zafari, 2021).

In Indonesia, the smoke-free policy (SFP) is governed by Health Act No. 36/2009 (President of Indonesia, 2009) and Presidential Decree No. 109/2012 (President of Indonesia, 2012). The Act mandates the implementation of SFP across all provinces, cities, and municipalities, while the Decree provides detailed guidelines for enforcement. The law prohibits the production, sale, advertisement, promotion, and use of tobacco products in designated smoke-free facilities such as schools and hospitals (Boderie, 2022). The right to health includes the right to breathe clean air; however, this right is often compromised by individuals who smoke in public spaces—areas frequently occupied by vulnerable populations such as children, toddlers, the elderly, and pregnant women (Martini, 2022; Radó, 2021). The SFP in public areas aims to purify the air and is one of the key strategies for reducing pollution caused by the chemical compounds in cigarette smoke(Trisnowati, 2018).

North Sumatra Province is one of the regions in Indonesia with the highest smoking rates among individuals over the age of 10. This high prevalence is closely linked to cultural and social norms that encourage smoking, particularly among teenagers and even elementary school students. One of the districts known for its tourism—especially around Lake Toba—is Toba Samosir Regency. Alarmingly, smoking begins at a young age in this area: 0.58% of children aged 5 to 9, 4.35% of those aged 10 to 14, and 38.24% of adolescents aged 15 to 19 are reported to smoke. The average number of cigarettes smoked per day in Toba Samosir Regency is also high, at 16.23 cigarettes per person.

Lake Toba, a nationally prioritized tourist destination known for its natural beauty, aims to provide a clean and comfortable environment for visitors. To support this goal, the local government of Toba Samosir Regency issued Regent Regulation No. 58 on the Smoke-Free Policy (SFP). This regulation designates public spaces—including hotels, playgrounds, tourist attractions, and places of worship—as smoke-free facilities.

The SFP is intended to allow tourists to enjoy a smoke-free environment without the risk of exposure to secondhand smoke. However, the policy has had limited impact on reducing smoking behavior among the local community, particularly in the Lake Toba tourist area. As a result, visitors—especially international tourists seeking clean air and scenic views—are often disappointed by the persistent presence of cigarette smoke.

METHODS

is on the Lake Toba priority tourist destination area, located in Toba Samosir Regency, specifically targeting tourism facilities (e.g., hotels, beaches, parks) that fall under the Smoke-Free Policy (SFP) designation.

Using random cluster sampling, 150 tourist facilities certified under the SFP, including hotels, parks, airports, tourist attractions, and places of worship, were selected as the study population. Researchers will interview 300 visitors to Lake Toba's key tourist areas and 150 managers of priority tourist facilities.

Key regional stakeholders will also be involved, including the Regent or Deputy Regent of Toba Samosir, the Heads of the Health and Tourism Offices, the Head of Satpol PP, the Chairman of the Toba Samosir Regency DPRD, and the Chairman of Commission B of the DPRD.

Researchers will monitor compliance with the SFP at Lake Toba's main tourist sites by observing the absence of smoking individuals, cigarette ashtrays, tobacco vendors, cigarette advertisements, and the presence of "No Smoking" signage. Structured questionnaires will be used to assess visitors' and facility managers' understanding, perceptions, and support for the SFP. In-depth interviews will also be conducted with stakeholders, community leaders, traditional leaders, and non-governmental organizations (NGOs) to explore the implementation of Toba Samosir Regency Regulation No. 55 of 2018. These interviews will examine aspects such as communication, resources, bureaucratic structure, and administrative disposition related to the SFP.

The study instruments include an observation checklist aligned with regulatory standards for evaluating SFP implementation. Quantitative data will be collected through structured questions on regulatory enforcement and designated smoke-free areas, while qualitative data will be gathered using open-ended, semi-structured interview guides. Researchers will also record the GPS coordinates of key tourist facilities using the Way Points program, which will be mapped using QGIS 3.0 and buffered against coordinates from the Toba Samosir Regency government office. Quantitative data will be analyzed using STATA version 15, employing frequency distributions and cross-tabulations.

RESULTS

Table 1. Implementation of the Smoke-Free Policy (SFP) in the Lake Toba Tourist Area, Toba Samosir Regency

Facilities (N=100)	n	Smoke-free policy (SFP) Compliance						
		Smoking	No sign	Ashtray	Cigarette Butts	Cigarette Ads	Cigarette Sellers	Compliance all 6
Hotel	21	3	6	11	1	3	1	8
Monument	18	3	23	0	4	2	1	4
Beaches/Waterfalls	13	4	24	1	5	5	5	0
Markets/ souvenir places	5	1	3	0	1	1	0	3
Restaurants /Café	36	29	31	24	18	14	19	3
Hill/mountains	5	2	4	2	3	2	2	1
Terminals/Airports	2	0	0	0	0	0	0	2
Total	100	42	68	38	32	27	28	21

The results of this study show that tourist facilities still need to follow the smoke-free policy (SFP) more (21%). Beaches and waterfalls have the lowest rates of smoke-free policy (SFP) compliance for tourist facilities (0%), restaurants and cafes (8.3%), hills and mountains (20%), monuments (22.2%), hotels (38.1%), and markets and souvenir places (60%). Most smoke-free policy (SFP) violations are no sign (68%), smoking (42%), ashtrays (38%), and cigarette butts (32%).

Table 2. Perceptions of Management's Knowledge of the Smoke-Free Policy (SFP) in Toba Samosir Regency

Facilities	n	Smoke-free policy (SFP)	
		Yes	No
Sign no smoking	100	27	73
Smoking Room	100	16	84
Tourist Smoking	100	78	22
Workers Smoking	100	59	41

The results of this study indicate that management of tourist facilities still has many SFP violations, namely the no smoking sign (73%), no smoking room (84%), tourist smoking (78%), and worker smoking (59%).

Table 3. Perceptions of Tourist Attraction Managers on the Smoke-Free Policy in Toba Samosir Regency

Facilities	n	The smoke-free policy (SFP)		
		Positive Community Response	Manager gets angry with smokers in facility	Manager's Response Scold with smokers in facility
Hotel	21	19	4	16
Monument	18	13	11	3

Beaches/Waterfalls	13	12	12	3
Markets/souvenir places	5	5	2	3
Restaurants/Café	36	30	18	10
Bukit/Hill	5	4	1	3
Terminals/Airports	2	2	0	2
Total	100	85	48	40

The results of this study show that the community gives a positive response to SFP (85%), the manager gets angry with smokers in the facility (48%), and the manager's response scolds smokers in the facility (40%).

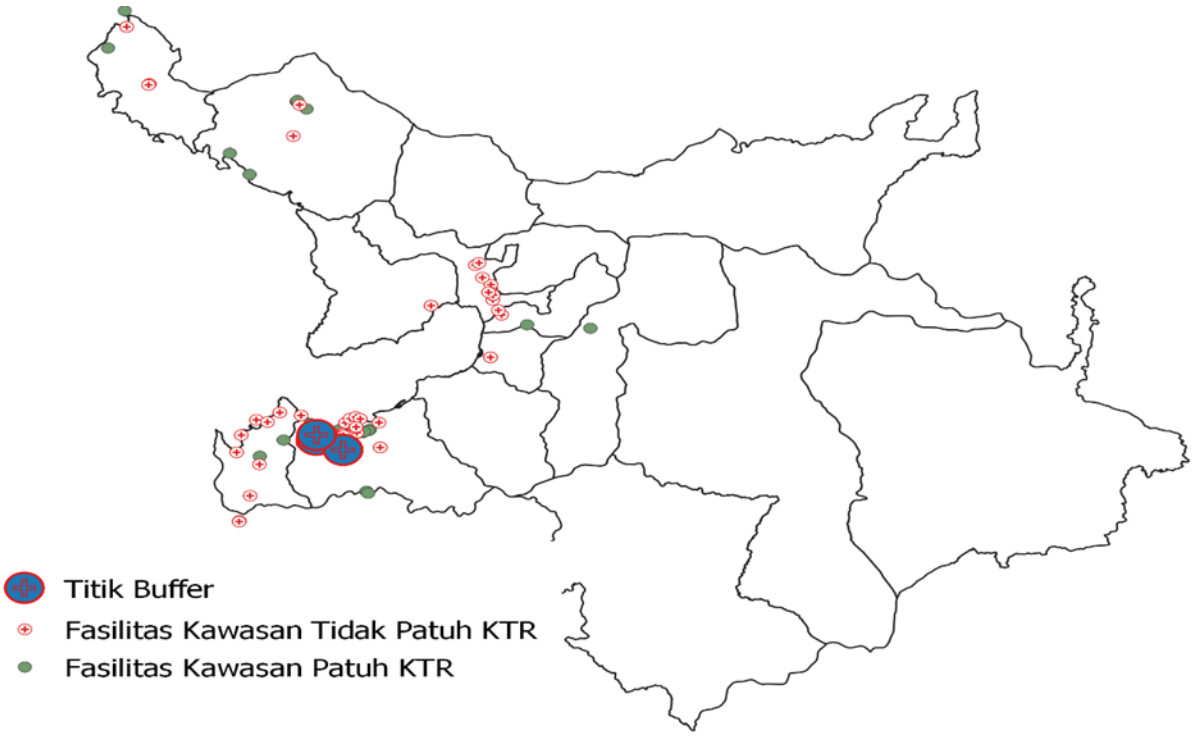

Figure 1. Maping Facilities that Did and Did not Comply with the Smoke-Free Policy in the Toba Samosir regency

DISCUSSION

Toba Regency is one of the regencies of Indonesia's North Sumatra Province. In addition, Balige City serves as the capital of the Toba Regency. Toba Regency is one of the seven regencies encompassing Indonesia's biggest lake, Lake Toba. Toba Regency is one of the most popular tourist sites for out-of-area travelers due to its breathtaking natural landscape.

Public Sites and other places have been designated as one of the Toba government's top priorities for achieving a clean and healthy Toba Regency. Contrary to the findings of field observations done at the Lake Toba Priority Tourist Destination Area, Toba Regency, this is different. In this instance, researchers discovered that most compliance categories with

noncompliance types dominated more than those with obedient types, 79 (79%) vs 21 (21%). Children's hotels/homestays, monuments, beaches/waterfalls, restaurants/cafés, and playgrounds have a greater noncompliance rate than the current compliance rate. This finding aligns with research on the implementation of the Smoke-Free Policy (SFP) in Pekanbaru City, which showed that the "Not Implemented" category (≤ mean / 50%) dominated in terms of regional compliance, with 236 samples falling into this group (18). However, these results contrast with the findings ofAldani, (2018) whose study in the Sabang City Tourist Area revealed strong tourist support for the SFP. In that study, 95 respondents (47.5%) strongly agreed with the policy, and the highest level of agreement with SFP implementation reached 89% (19)

According to the Indonesian Penal Code, smoking in designated non-smoking areas constitutes a violation of the smoking ban. These areas include health facilities, service centers, educational institutions, playgrounds, places of worship, public transportation, public spaces, workplaces, and other specified locations. Violations in these areas are subject to penalties in accordance with applicable regulations. Additionally, individuals who intentionally smoke in no-smoking zones may face criminal fines, which can be enforced without exception(Wiraatmadja & Ayu, 2020).

Based on interviews and observations conducted in the Lake Toba Priority Tourist Destination Area, several key findings emerged:

First, most managers were unaware of the Smoke-Free Policy (SFP) signage. A total of 73 managers (73%) did not recognize the SFP sign, compared to only 27 managers (27%) who did.

Second, regarding awareness of regional regulations on the SFP, 60 managers (60%) reported not knowing about the SFP bylaws, while 40 managers (40%) were familiar with them.

Third, the availability of designated smoking rooms was limited. A majority of tourist areas—84 locations (84%)—did not have smoking rooms, compared to only 16 locations (16%) that did. Research in Bali has shown that hotel managers who are knowledgeable about and supportive of SFP regulations can significantly improve compliance with smoke-free policies(Kharisma et al., 2018) .

Fourth, the number of non-smoking visitors was higher, with 78 individuals (78%) identifying as non-smokers, compared to 22 (22%) who smoked.

Fifth, more workers were identified as smokers—59 individuals (59%)—compared to 41 (41%) who were non-smokers. In Yogyakarta, the city government has addressed this issue

by providing designated smoking rooms to prevent secondhand smoke from disturbing other visitors(Wibowo, 2024).

Sixth, regarding visitor smoking behavior, most managers allowed visitors to smoke in tourist areas—48 managers (48%). Meanwhile, 40 managers (40%) reported reprimanding visitors, 9 managers (9%) provided designated smoking areas, and 3 managers (3%) scolded visitors who smoked.

Seventh, among visitors who were reprimanded for smoking, the majority responded positively—85 individuals (85%)—while 15 (15%) responded negatively. Encouragingly, based on SFP compliance criteria, most facilities—particularly restaurants and hotels—demonstrated high compliance with regulations prohibiting tobacco advertising, sales, and active smoking. However, compliance was notably lower in public parks, where only 33% of individuals adhered to the no-smoking rule(Weigel, 2022).

This is a promising sign for reducing smoking, indoor smoking, and secondhand smoke exposure in city-managed SFP facilities.

The findings of this study have important implications for strengthening the implementation of regional SFP regulations. Increasing managerial awareness and administrative engagement are key factors in enhancing support for the policy. Managerial support plays a critical role in ensuring compliance with SFP regulations. Therefore, it is essential to implement ongoing initiatives that raise awareness and build support—such as distributing leaflets and brochures, installing SFP signage, and providing coaching and mentoring on SFP enforcement in each area.

These activities should actively involve management representatives. Not only should local government development teams be given opportunities to deliver materials, lead discussions, and advocate for compliance, but organizational representatives should also be encouraged to participate. With stronger engagement from competent managers, broader support for the SFP will be easier to achieve.

This issue should also concern lawmakers, as community members, including children, frequently visit places of worship such as mosques for daily prayers and Quran classes after school. In addition, declining air quality(Connolly, 2009), and increased exposure to secondhand smoke in workplaces should serve as a warning to all relevant stakeholders. Recent studies have shown that smoke-free workplaces in countries like India and Nigeria are associated with smoke-free households (Kaleta, 2015; Lee, 2014). suggesting that Indonesia would similarly benefit from implementing smoke-free workplace policies(Trisnowati, 2016). Notably, the lowest compliance rate, just 17%, was observed in outdoor public parks. To reduce

smoking in these areas, a concerted effort is needed to expand smoke-free zones, even through simple measures such as installing no-smoking signage(Handayani, 2020).

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