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## Implementation of the Smoke-Free Policy in Medan City, Indonesia: Compliance and Challenges

### Abstract

**Background:** Indonesia has an estimated 61.4 million current smokers, and the smoking prevalence among adults is persistently high while that among youth is increasing. In 2014, Medan city enacted the smoke-free policy (SFP) to protect community members against the adverse effects of smoking. Our study examines the implementation of SFP in terms of compliance and challenges. **Methods:** We conducted a mixed-methods study. Quantitative analyses examined the compliance with six criteria including having signage, no active smoking, no selling, no advertisement, no smoke, and no ashtray at SFP facilities. They included health facilities, educational facilities, places of worship, workplaces, and indoor/outdoor public facilities. The qualitative analysis examined the challenges through in-depth interviews of six key informants. **Results:** We found the overall compliance of 44%, ranging from 0% at outdoor public facilities to 83% at health facilities. We found relatively higher compliance among facilities within 1-km from the provincial and city health offices compared to those outside of the buffer (but not significant at 5% level,  $P = 0.070$ ). The challenges identified were lack of budget, monitoring, enforcement, and sensitization. **Conclusions:** The implementation of SFP in Medan city still has lower compliance and faces many challenges.

**Keywords:** Challenge, compliance, implementation, Indonesia, Medan, smoke-free policy

### Introduction

Indonesia, with a total of 264 million population, has an estimated 61.4 million current smokers in 2018.<sup>[1]</sup> The latest Basic Health Research, a nationally representative survey, showed a persistently high smoking prevalence among adults and an increasing prevalence among 10–18 years old in 2018.<sup>[2]</sup> The latest Global Adult Tobacco Survey also showed that 59 million adults were exposed to secondhand smoke at workplaces or restaurants in 2011.<sup>[3]</sup> All this indicates the need for an effective smoke-free policy (SFP). Studies from high-income countries have shown that SFP is associated with reductions of smoking rates in the United States,<sup>[4]</sup> indoor smoking in the United Kingdom,<sup>[5]</sup> indoor air pollution in North America and Europe,<sup>[6]</sup> secondhand smoke exposure in New Zealand,<sup>[7]</sup> and population rate of myocardial mortality in Belgium.<sup>[8]</sup>

However, the national tobacco control efforts are not comprehensive in Indonesia, due partly to the lack of the

Framework Convention on Tobacco Control (FCTC).<sup>[9]</sup> There are two national laws related to SFP: Health Act 36/2009 and Presidential Decree 109/2012. The Act provided a recommendation for local governments to implement SFP, and the Decree stipulated that producing, selling, advertising, promoting, and smoking of tobacco products (vaping excluded) are prohibited indoor and within the fence/gate of selected facilities.<sup>[10,11]</sup> However, only 67% of districts (345 of 514 total) have adopted some form of SFP regulation (with and without approval from local parliament) by December 2018, 10 years after the Act.<sup>[12]</sup> This is because, due to the decentralization policy, the adoption of SFP relies on local governments (city/district). Also, depending on various local factors, the compliance varies from Jayapura city 17% (2018) to 78% in Bogor city (2011).<sup>[13,14]</sup>

Medan city is the capital of North Sumatera province with a population estimate of 2.3 million in 2018.<sup>[15]</sup> The SFP was adopted in Medan city through the Local Bill 3/2014, supported by the mayor and local parliament. The bill was to create a clean

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and healthy environment that protects community members from the harmful effects of smoking and or secondhand smoke. The law banned selling, advertising, promotion, and smoking of tobacco products in health facilities, educational facilities, places of worship, workplaces, and indoor/outdoor public facilities. There is anecdotal evidence on the lack of compliance among government offices and public facilities after the policy started.<sup>[16]</sup> Our study evaluates SFP implementation in Medan city for compliance and challenges, which is currently lacking.

## Methods

We used a mixed-methods study comprising of quantitative and qualitative methods. First, the quantitative approach assessed the compliance with six SFP criteria: “no smoking” signage, no active smoking, no selling, no adverts, no cigarette smoke, and no ashtray. Sample facilities included health facilities (e.g., hospitals, clinics, and pharmacies), educational facilities (e.g., kindergarten, high schools, university, and tuition), places of worship (e.g., mosques, churches), workplaces (e.g., government offices, banks), indoor public facilities (e.g., public transport vehicles, malls, hotels, restaurants, child play stations), and outdoor public facilities (e.g., bus stations, traditional markets, and parks). Due to limited resources, we employed a purposive sampling of 144 facilities, including 24 health facilities, 26 educational facilities, 23 places of worship, 34 workplaces, 31 indoor public facilities, and 16 outdoor public facilities [Table 1]. We visited the facilities and conducted data collection using a paper-based observation checklist, which later entered into Excel. Second, the qualitative method aimed to explore challenges in implementing SFP. We conducted face-to-face in-depth interviews with six key informants with a good understanding of the SFP and local context. They included two religious leaders, two community leaders, and two health practitioners. Seven trained enumerators and interviewers conducted data collection during October to November 2019.

We employed both quantitative analysis (e.g., descriptive and spatial analyses) and qualitative analysis (e.g., thematic content analysis). Descriptive analysis, using in STATA 15.1, provided the compliance rates overall and by facility groups. Spatial analysis, using ArcMap 10.6, explored any spatial patterning in the compliance. We used the geoprocessing buffer tool to generate 1-km buffers (approximately 15-min walk) from the main SFP supporters such as the governor, mayor, and health offices.<sup>[13]</sup> The compliance rates among facilities within and outside the buffer were compared, as shown in Figure 1. Using Google MyMaps, we obtained geolocation data of each facility (post survey). For qualitative data, we used content analysis in exploring the challenges to SFP implementation.<sup>[13]</sup>

Ethical approval was obtained from the University of Hasanuddin Review Board (No. 055/EC/KEPK.UISU/II/2020).

## Results

Table 1 shows the overall sample of 144 facilities, including 24 (16%) health facility, 26 (18%) educational facility, 13 (9%) places of worship, 34 (24%) workplaces, 31 (22%) indoor public facilities, and 16 (11%) outdoor public facilities. Among all sampled facilities, the overall compliance with six criteria was 44%, ranging from 61% compliance with having “no smoking” signage to 96% compliance with no ashtrays. Notably, the overall compliance with no advertisement was very high ranged 81% among indoor and outdoor public facilities to 100% among health facilities, education facilities, places of worship, and workplaces. It is notable that the overall compliance with no advertisement was very high, ranging from 81% among indoor/outdoor public facilities to 100% among health facilities, education facilities, places of worship, and workplaces. Similarly, the overall compliance with no selling was high among all facility groups (81% to 96%), except among outdoor public facilities (25%). Also, the overall compliance with no active smoking was high among most facility groups (82% to 100%), except among outdoor and indoor public facilities (19% and 77%, respectively).

Among health facilities, 100% of clinics/pharmacies complied with six criteria, while only 74% of the hospitals did (mainly from no selling criteria). Among educational facilities, 88% of senior high schools complied with six criteria while none of the kindergartens did (mainly due to violation with no signage). Among places of worship, 33% of churches met all criteria, while only 10% of mosques did (mostly due to violation with no signage, for both facilities). Among workplaces, 75% of private company offices complied with all criteria, while only 52% of government offices did (mainly due to violation with no signage and active smoking). Among indoor public facilities, 50% of public transport vehicles complied with all criteria, while only 13% of malls did. Among outdoor public facilities, none of the bus stations, markets, and public parks complied with all criteria.

Figure 1 shows the mapping of the facilities to explore any spatial patterning in terms of compliance. Panel a shows the overall Medan city, and panel b shows the area around the city center and the offices of provincial and city governments. Blue and red dots show facilities that did and did not comply, respectively (only 141 of 144 facilities were included in this analysis). Gray circles show a 1-km (dissolved) buffer around the governor’s office, mayor’s office, provincial health office, and district health office as a proxy for the main supporters of SFP. Results show relatively higher compliance rates with six criteria among facilities inside the buffer (55%, 27 complied out of 49 facilities) compared to those outside (39%, 36 complied out of 92 facilities), but the difference was not significant at 5% level ( $P$ -value = 0.070).

Results from the qualitative content analysis show several challenges in the SFP implementation, including the lack

**Table 1: Compliance rates of smoke-free policy by facility group in Medan city, 2019**

	<i>n</i>	Signage	No smoking	No sale	No advert	No smoke	No ashtrays	Compliance with all 6
(a) Overall	144	61	81	81	94	91	96	44
(b) Group								
Health facility	24	100	100	83	100	100	100	83
Educational facility	26	62	96	96	100	96	100	58
Place of worship	13	31	100	85	100	100	92	15
Workplace	34	71	82	91	100	94	100	56
Public facility indoor	31	52	77	81	81	84	87	26
Public facility outdoor	16	25	19	25	81	69	94	0
(c) Facility								
Health								
Hospitals	15	100	100	73	100	100	100	73
Clinics/pharmacy	9	100	100	100	100	100	100	100
Education								
Kindergarten	5	0	100	100	100	100	100	0
Senior high school	8	88	100	100	100	100	100	88
University	9	67	89	89	100	89	100	56
Tuition	4	75	100	100	100	100	100	75
Place of worship								
Mosque	10	30	100	80	100	100	90	10
Church	3	33	100	100	100	100	100	33
Workplace								
Government office	21	71	71	90	100	90	100	52
Govt-owned company	9	67	100	89	100	100	100	56
Private company	4	75	100	100	100	100	100	75
Public indoor								
Public transport vehicle	4	50	50	100	100	50	100	50
Mall	8	75	88	38	38	100	75	13
Hotel	4	50	75	100	100	100	100	25
Cafe, restaurant, store	12	42	75	100	92	75	83	25
Child play station	3	33	100	67	100	100	100	33
Public outdoor								
Bus station	5	60	40	20	60	80	80	0
Traditional market	2	0	0	0	100	0	100	0
Public parks	9	11	11	33	89	78	100	0

*n*=sample (purposive), % = proportion, Govt=government; No smoking=no active smoking, no smoke=no cigarette smoke. Places of worship include mosques and churches. Tuitions include extracurriculars on math and English. Public transport vehicles include bus and taxis. Bus stations include bus and taxis terminals. Public parks include one swimming pool. Compliance with all 6=signage, no active smoking, no selling, no advert, no smoke, and no ashtray. For the overall (panel a), the rates with confidence intervals: signage 61% (CI: 53%, 69%), no smoking 81% (75%, 88%), no sale 81% (74%, 87%), no advert 94% (90%, 98%), no smoke 91% (86%, 96%), no ashtrays 96% (93%, 99%), compliance with all 44% (36%, 53%)

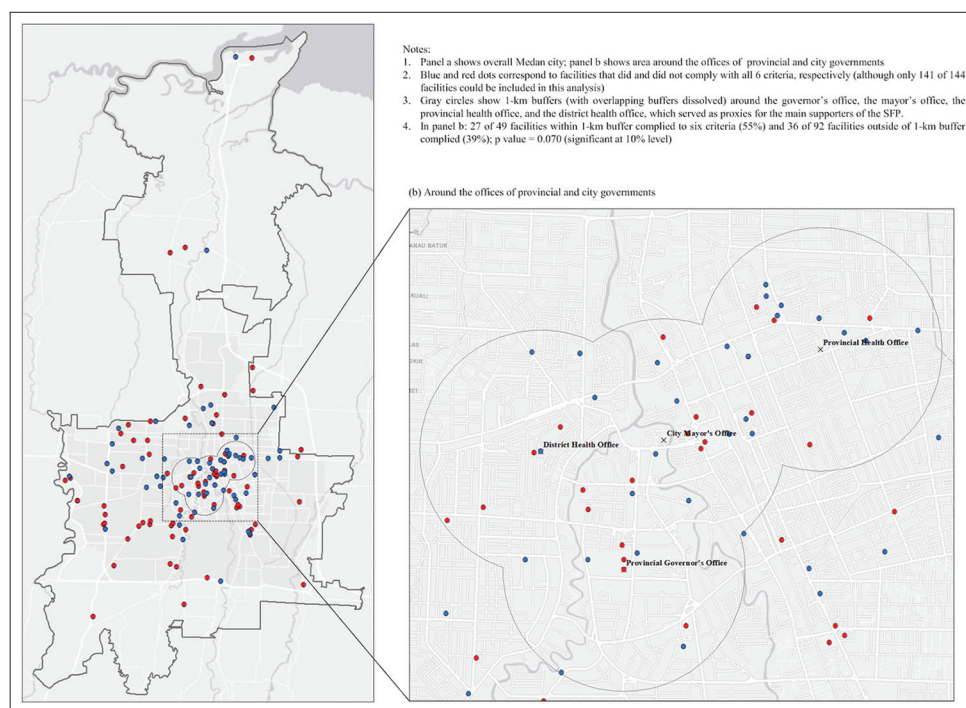
of budget, monitoring, enforcement, and sensitization. The lack of funding contributed to a lack of officers to monitor and enforce SFP. The standard practice for enforcement is to have a small mobile court, which requires support for vehicles and judges. Also, there are activities to raise awareness through billboards, stickers, leaflets, mass media, and community groups; such efforts were lacking at workplaces, places of worship, as well as indoor and outdoor public facilities.

### Discussion

Our results showed that the overall SFP compliance of 44% in Medan city, the capital of North Sumatera

province. While the compliance rate was higher than that in Jayapura city (17% in 2018), it was lower than that in Bogor city (78% in 2011).<sup>[13,14]</sup> Similar evidence in other low- and middle-income countries is limited to a study in Punjab, India, showing high compliance of 84%.<sup>[17]</sup>

By facility group, the compliance was highest among health facilities (83%). This result is similar to the Punjab study that also showed the highest compliance among health facilities (90%).<sup>[17]</sup> Within health facilities, it is notable that all clinics and pharmacies complied with all six criteria; however, some hospitals violated SFP by still selling cigarette products. Moreover, the compliance was lowest



**Figure 1: Mapping facilities that did and did not comply with smoke-free policy in the city of Medan, 2019**

among outdoor public facilities (0%) such as bus stations, traditional markets, and public parks. In comparison, while the Punjab study showed that the compliance was lowest among transit stations, the rate was much higher at 79%. Also, we found mainly three main violations among outdoor public facilities, including no signage, active smoking, and cigarette sale. A study at Florida public parks in the United States suggested that smoke-free signs can socially denormalize tobacco use.<sup>[18]</sup>

Notably, the compliance among places of worship was very low at 15%, which was mainly due to no signage from potentially lack of sensitization at these facilities (as shown by our qualitative analysis). The relatively low compliance among workplaces 56% should also be noted. Studies in India and Nigeria showed that smoke-free workplaces are associated with a higher proportion of adults reporting a smoke-free home,<sup>[19,20]</sup> an initiative that is also currently lacking in Indonesia.<sup>[21]</sup>

Our findings should alert local and national policymakers to act by increasing the commitment to SPF, including for budget, which will enable better monitoring and enforcement. While our findings showed relatively higher compliance (not statistically significant) among facilities closer to the governor's and mayor's offices, efforts to improve compliance should be throughout the city.

Our study has at least two limitations. First, we used purposive sampling and had a relatively limited number of sample/facilities. Further studies should consider using random sampling and including more facilities and rural areas where the current evidence is lacking. Second, using

a cross-sectional study design is appropriate to provide a snapshot of SFP compliance but may be limited in correlates of compliance. Nonetheless, our findings have important policy implications for Indonesia and beyond.

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### Conflicts of interest

There are no conflicts of interest.

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