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SMOKE FREE REGULATION FOR CLEAN AND HEALTHY EVIRONMENT IN BLITAR DISTRICT INDONESIA

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Abstract

Introduction: *The implementation of smoke-free regulations is an effort to create a clean and healthy environment in the Blitar District, Indonesia. The main purpose of this research is to analyze public opinion on the smoke-free regulations drafting in the Blitar District.* ***Methods:*** *To analyze public opinion about the smoke-free regulations, we used a cross-sectional design with a RAPID survey conducted in 2015. The research involved distributing questionnaires to 1,008 respondents, with the sample size proportionally divided across 22 districts. For the implementation of the regulation, we conducted observational research over four years. The effort to draft the smoke-free regulations continued until 2019, and the implementation of the regulations is ongoing until 2023.* ***Results and Discussion:*** *Results showed that 94.5% supported the regulations. The RAPID survey results provided evidence for drafting the smoke-free regulations. This evidence was used to advocate for stakeholder support in drafting and implementing the regulations in the Blitar District. Although the smoke-free regulations were released in 2019, their implementation has been very challenging and requiring significant effort.* ***Conclusion:*** *A RAPID survey showed that almost all people in Blitar support the drafting and implementation of the smoke-free regulations. The implementation requires significant effort to ensure it proceeds smoothly and needs support from all stakeholders in the Blitar District.*

INTRODUCTION

Smoke-free regulations have a significant impact on creating a clean and healthy environment. A study in Vietnam in 2015 showed that regression analysis identified factors associated with respondents cautioning smokers to stop smoking when they saw them violating the smoke-free regulations (1). Vietnam signed the Framework Convention on Tobacco Control (FCTC) in 2003, while Indonesia has not. The rising number of smokers in Indonesia has led to an increase in cigarette-attributable diseases among its residents (2). There are 20 smoking-attributable diseases, categorized into cancer, cardiovascular disease, respiratory diseases, and others (3). This is consistent with Frazer's research across 21 countries. The meta-analysis study found that, out of 72 studies reporting health outcomes, including cardiovascular, respiratory, and perinatal diseases (4), the prevalence of male smokers in Indonesia is the highest in the world, and it is predicted that more than 97 million Indonesians are exposed to cigarette smoke. There has been an increase in the smoking prevalence among the 18-year-old population (5).

Meanwhile, the national regulations of smoking bans have had a positive impact on smoking-related diseases (6). The smoke-free regulations are public measures necessary to protect the community from the impacts of tobacco and cigarettes (7). Non-smokers can be exposed to smoke from other smokers. Therefore, the smoke-free regulations are essential to safeguard non-smokers, children, and women from tobacco-related illnesses (8). When someone smokes, people around them are exposed to the smoke, including

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non-smokers, children, and women. The smoke-free regulations require smokers to smoke only outside smoke-free areas, thereby preventing exposure to non-smokers. A study conducted in Korea from 2012 to 2014 showed that after the Korean government implemented the smoke-free area regulations, the concentration of cotinine in non-smokers' urine decreased. Cotinine is a chemical the human body produces after exposure to nicotine. The specific regulations in question include the smoke-free rules in hospitality venues introduced in July 2013 and in public places implemented since February 2014 with the results showing the significance of the smoke-free regulations in reducing cotinine levels in urine (7). $PM_{2.5}$ refers to particles with a diameter of less than 2.5 micrometers. The study on $PM_{2.5}$ at that time indicated a decrease in $PM_{2.5}$ concentrations in bars after the smoke-free regulations covering all bars were implemented in Korea (9). Nicotine particles have a diameter of less than 2.5 micrometers. Children's playgrounds should be free from cigarette smoke and cigarette butts. These initiatives aim not only to protect children but also to denormalize smoking habits in their presence. Moreover, not only does passive smoking pose health risks, but third-hand smoke (THS) does too (10). Third-hand smoke occurs due to residual exposure to cigarette smoke even after the smoker has left the area. Ashes that settle on furniture also pose risks to others. This is consistent with the results of Simon's study, which found that children's respiratory health conditions are associated with exposure to maternal passive smoking or second-hand smoke (SHS). Children whose mothers smoke or are exposed to second-hand smoke at home during pregnancy are more likely to develop asthma (11). Acuff's research indicates that not only does second-hand smoke have health impacts, but third-hand smoke does as well (12). The prevalence of smokers in the Blitar District, one of the districts in East Java province, is 30%, which is higher than the national prevalence of smokers in Indonesia, at 29.3% (13). Until 2014, there was no regulation in the Blitar District, East Java, regarding smoking. There are varied opinions about the planning of the smoke-free regulations drafting in the district. Some people perceive that the smoke-free regulations will infringe on smokers' rights. Many shops in Blitar District sell cigarettes, and they fear a decrease in income if the regulations are implemented. On the other hand, the local government relies on cigarette taxes as part of their district income, so they are concerned about potential revenue decreases as well. These concerns have sparked much polemic and discussion in Blitar. This study aims to analyze public opinion regarding the smoke-free regulations drafting in the district. The findings will provide novel insights as the first study on public opinion about the smoke-free regulations in the Blitar District.

The results of the study will be used to advocate for the support of the smoke-free regulations drafting by the local government and all stakeholders. In 2014, during policy preparation, the local government and parliament rejected the smoke-free regulations due to the lack of a study on public opinion among the people of Blitar. Therefore, this study is urgent to convince them of the importance of implementing the smoke-free regulations in the Blitar District. It aims not only to underscore the significance of the regulations but also to plan for their effective implementation following their release.

METHODS

This research is a quantitative descriptive study with a cross-sectional design. Data collection was conducted through a RAPID survey. The implementation of this research was divided into three stages: collecting public opinion data, advocacy, and the implementation of smoke-free regulations. The survey was conducted in 2015. Advocacy took place from 2016 to 2019, and the regulations have been implemented since 2019 (at the time of writing the article).

A RAPID survey was conducted in one month to ascertain public opinion about the smoke-free regulations in the Blitar District, East Java, Indonesia. The subjects involved were 1008 respondents (sample) aged 18 years and above from the district, which has a total population of 1,200,000 people. The sample was distributed across 22 subdistricts using proportionate random sampling. Each subdistrict's sample size was determined based on its proportion of the total population. Accidental sampling was employed, with enumerators visiting households door-to-door and interviewing willing respondents immediately. The sample was selected using random sampling techniques, ensuring proportional representation from each district, as indicated in Table 1.

Table 1. Sample of RAPID Survey in Blitar Indonesia in 2015

District	Populations	Sample
Bakung	30,475	24
Binangun	49,520	39
Doko	45,609	36
Gandusari	76,019	60
Garum	68,300	54
Kademangan	72,829	57
Kanigoro	77,370	61
Kesamben	58,971	46
Nglegok	76,702	60
Panggungrejo	45,098	36
Ponggok	104,083	82

District	Populations	Sample
Sanankulon	57,548	45
Selopuro	46,971	37
Selorejo	43,311	34
Srengat	66,779	53
Sutojayan	52,191	41
Talun	66,125	52
Udanawu	44,003	43
Wates	34,188	27
Wlingi	59,141	47
Wonodadi	51,474	41
Wonotitro	41,479	33
Bakung	30,475	24
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Gandusari	76,019	60
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Wonotitro	41,479	33
Total	**152,094**	**1,008**

Data were collected through interviews using a structured questionnaire administered by 16 trained enumerators. The validity and reliability of the instrument were assessed through content analysis. The questionnaire was pre-tested on 10 individuals from 10 subdistricts, confirming that all questions were valid and reliable. The content of the questionnaire was also reviewed for grammar to ensure ease of understanding. Data analysis employed cross-tabulation, with interpretations based on the largest percentage observed. In addition to using primary data, secondary data from both national sources in Indonesia and local sources in Blitar were also analyzed. The analysis focused solely on frequency distribution for descriptive analysis, ensuring no confounding variables were present. This study was approved by the Research Ethics Committee of the Faculty of Public Health, Universitas Airlangga (Approval No. 485-KEPK). The implementation of the regulations has been evaluated through observational research until 2023.

RESULTS

The characteristics of respondents in the rapid survey are shown in Table 2. All respondents were over 18 years old. The gender distribution was relatively balanced, providing perspectives from both males and females. Respondents came from diverse occupational backgrounds, including both formal and informal sectors. Over 96% of respondents had a good education level, enabling good communication and expression of their thoughts.

Table 2. Frequency Distribution of Respondent Characteristics of Blitar District Residents

Respondents' Characteristics	f	%
Age		
18 – 25	148	14.68
26 – 36	241	23.91
37 – 47	267	26.49
48 – 58	205	20.34
>= 59	147	14.58
Gender		
Male	480	47.62
Female	528	52.38
Profession		
Farmer	135	13.39
Laborers	110	10.91
Government employees	65	6.45
General Employees	139	13.79
Jobless	262	25.99
Etc.	297	29.46
Last Education		
No education	32	3.17
Elementary	242	24.01
Junior High School	236	23.41
Senior High School	360	35.71
University	138	13.69
Marital Status		
Married	802	79.6
Single	148	14.7
Divorced	58	5.8

Data from Atlas Tembakau Indonesia revealed that most of Indonesians over the age of 18 are smokers (8). This suggests that contributions from both male and female respondents, as well as smokers and non-smokers, were crucial in the survey. Thus, there is no difference in the chances for men and women participating in this survey based on whether they smoke or not.

The results of the respondents' knowledge on the effects of smoking were positive. A significant 96.53% strongly agreed that smoking is detrimental to health, while only 3.3% either denied these health effects or were unaware of them. Among smokers, 90.8% acknowledged the harmful effects of smoking, and an even higher percentage of non-smokers, 98.4%, shared this belief. Respondents demonstrated awareness of various smoking-related health effects such as lung cancer, strokes, heart attacks, impotence, and impacts on children's health. However, respondents showed less awareness of additional impacts such as blood vessel damage, blindness, and problems related to pregnancy and fetal development. Overall, most Blitar locals were aware of the negative effects of tobacco use on health. Consequently, both smokers and non-smokers agreed

that smoking was detrimental to health. According to the results, most respondents (84.3%) had been exposed to cigarette smoke in public settings such as restaurants, shopping centers, train stations, hospitals, and school buildings. This highlights that non-smokers are frequently in proximity to smokers. Only 15.77% of participants reported never having been in contact with tobacco smoke in public areas, underscoring the common exposure of non-smokers to second-hand smoke.

67% of respondents knew that breathing in other people's smoke poses a health risk. However, 4.76% were not aware of this, and 3.47% claimed that breathing in other people's smoke does not harm one's health. This suggests a lack of awareness regarding the negative effects of second-hand smoke exposure. Approximately 94.44% of respondents agreed that the district should have the smoke-free regulations inside establishments such as restaurants, shopping centers, clinics, schools, train stations, workplaces, and public transit. Similarly, most respondents would approve of the smoke-free regulations if implemented in their office space. Smokers typically light up after eating because they find it unpleasant to eat without smoke. Despite this, 69.9% of respondents said they would prefer a smoke-free restaurant. Additionally, nearly 100% of non-smoker respondents supported the smoke-free regulations in restaurant areas.

A total of 95.43% of respondents aged 26 to 36 and 97.3% of respondents aged 15 to 25 agreed that the smoking regulations should be implemented. Similarly, 94.14% of respondents aged 48 to 59 and 93.63% of respondents aged 37 to 47 agreed. Overall, 91.84% of respondents supported the smoke-free regulations. Men supported the draft smoke-free regulations by 91.6%, while women supported them by 96.97%. Approximately 81.3% of smokers and 91.6% of non-smokers believe that the smoke-free regulations are necessary to protect public health. A little over 91.84% of respondents supported the smoke-free regulations. Among them, 91.6% of men and 96.97% of women supported the smoke-free regulations. Additionally, approximately 81.3% of smokers and 91.6% of non-smokers believe that the smoke-free regulations are in place to protect public health.

All respondents were in favor of the regulations prohibiting smoking near medical institutions. Health institutions are already expected to set the standard for other areas of health improvement, including the effects of cigarettes. Approximately 75% of those surveyed are in favor of smoking bans in public areas such as shopping centers, parks, bus stops, train stations, terminals, and marketplaces. They desire these locations to be free from cigarette smoke.

Additionally, the findings demonstrated unanimous support for the smoke-free regulations in school settings among all respondents. Educational institutions covered include kindergarten, elementary, junior high school, senior high school, colleges, tutoring centers, and other formal and informal early childhood programs. Furthermore, all respondents agreed that places of worship or religious practice should be smoke-free.

94% of respondents supported the smoke-free regulations on public transit. The ban of smoking in public transportation will eventually serve as a legal safeguard for the community. Respondents in every subdistrict concurred that the Blitar region has implemented smoke-free regulations. Only a small percentage indicated uncertainty or disagreement. Most respondents in each of Blitar's districts confirmed that the smoke-free regulations are in place in office areas.

Nearly every age group (93.2%) supports Blitar's smoke-free regulations. Nearly all respondents—both married and single—endorse the smoke-free ordinances. Over 94% of respondents across various occupations also back the smoke-free regulations. Only 5.6% of those surveyed said they were unsure or disagreed. This reinforces the notion that most individuals in Blitar support the local smoke-free regulations. In Blitar, just 1% of men and women oppose the smoke-free regulations, indicating overwhelming support among respondents for the city's smoke-free ordinances.

Based on all the data, it can be concluded that most respondents were in favor of the Blitar District's smoke-free regulations and found them purposeful.

Table 3. Support for Smoke-free Regulations in Blitar District

	Supporting to Smoke-free Regulations in Blitar					
Variable	**Strongly Agree**	**Agree**	**Not Agree**	**Strongly Not Agree**	**Did Not Know**	**Total**
Non-Smoker	433 (57.0%)	298 (39.3%)	21 (2.8%)	1 (0.1%)	6 (0.8%)	759 (100.0%)
Smoker	90 (36.1%)	131 (52.6%)	24 (9.6%)	2 (0.8%)	2 (0.8%)	249 (100.0%)
Total	523 (51.9%)	429 (42.6%)	45 (4.5%)	3 (0.3%)	8 (0.8%)	1008 (100.0%)

Table 3 shows that 94.5% of respondents supported the smoke-free regulations in Blitar, with nearly all agreeing. Merely 5.5% of participants expressed disagreement with the Blitar District's smoke-free regulations. Even among smokers in the Blitar District, 88.7% supported the draft smoke-free legislation.

Based on the quick poll, it can be inferred that nearly every respondent, regardless of age, occupation,

or district, supports the implementation of the smoke-free regulations in Blitar. This sentiment is consistent across both men and women. Respondents also perceived that the objective of the regulations is to protect public health. This indicates widespread belief among respondents that the smoke-free regulations are designed to safeguard public health and promote healthy living in general.

The findings from the rapid survey indicate that the Blitar District residents are in favor of the draft smoke-free regulations, providing no grounds for rejection. These findings were subsequently published and utilized in advocacy efforts to promote the regulation's release. Five years after they were first announced and the survey results were distributed to all stakeholders, the Blitar administration finally launched and enforced the smoke-free district regulations in early 2019. As a result, seven locations were designated as smoke-free: health facilities, educational institutions, public transportation, public spaces, places of worship, workplaces, and areas near children. The regulations prohibit smoking, production, advertising, sale, or sponsorship of cigarettes in these specified areas; they state that tobacco is included.

Although Blitar's smoke-free regulations were released in 2019, their implementation has required considerable effort to become fully operational. The Local Health District has appointed officers to enforce the smoke-free regulations under the regent's authorization. However, during the pandemic, activities were relatively suspended. Following the pandemic, the Local Health District initiated training programs for these officers to ensure effective implementation. These officers include stakeholders such as public order agency, cross-sectors, health schools, and Non-Governmental Organizations (NGOs). As of the end of 2023, full implementation of the regulations has not yet been achieved.

DISCUSSION

The smoke-free regulations aim to protect people from exposure to others' smoke. The implementation of the smoke-free regulations in Korea in 2014 was effective in reducing second-hand smoke exposure (6). When someone smokes, people around him/her also inhale the smoke (15), indicating that people who do not smoke will be exposed to second-hand smoke.

Everyone deserves the right to breathe clean air. However, with the global population expanding, the number of smokers is also rising, putting more non-smokers at risk of second-hand smoke exposure (16). This highlights the urgent need for the smoke-free area regulations in Blitar. Implementing the smoke-free regulations is crucial to educate the public about the risks of second-hand and third-hand smoke.

The burden of disease from second-hand smoke exposure in several countries, particularly in the Middle East and Africa, remains unavailable. The literature shows a lack of studies on SHS exposure assessment and preventive measures in underdeveloped, middle, and low-income nations (17-18). Increased awareness of the risks associated with second-hand smoke has led to efforts to develop measures to prevent its exposure. The smoke-free regulations have been implemented to restrict smoking in indoor spaces and designate public areas as smoke-free zones. Despite the growing prevalence of the smoke-free regulations, over 80% of the global population remains unprotected. This highlights the widespread exposure to second-hand smoke in public and workplace settings. The smoke-free regulations prohibit smoking in indoor spaces and designate certain public areas, such as workplaces, public venues, and transportation (designated zones), as smoke-free (19,20-21). Although smoke-free regulations are becoming more common, over 80% of the global population remains unprotected. This leaves a significant portion of the world's population at risk of exposure to second-hand smoke in public places and workplaces.

Research in Gambia showed that more than 50% of people were exposed to tobacco smoke in public places (66.1%), with higher exposure among men (79.9%) than women (58.7%) (22). This suggests that there has been no recent improvement in second-hand smoke exposure in workplaces due to the absence of the smoke-free regulations during this period.

The only way to fully protect non-smokers from the effects of smoke is to make spaces smoke-free (23-24). Efficient smoke-free regulations that prohibit smoking in public areas and workplaces reduce smoke exposure, lower the prevalence of smoking, denormalize tobacco use, lessen the negative health effects, and potentially discourage youth smoking initiation (25). While smoke-free regulations (laws, bylaws, ordinances, rules, regulations, etc.) are becoming increasingly prevalent, defined as regulations with no exemptions for particular venue types or allowances for designated smoking areas (26-27), it's crucial to prohibit smoking in public places. Lastly, implementing smoke-free home regulations not only reduces children's and elderly non-smokers' exposure to second-hand smoke but also reduces active smoking among adults and possibly adolescents.

The public opinion survey indicates that almost all respondents agreed with the smoke-free regulations in the district. This included both non-smokers and smokers (24.7%), highlighting the crucial participation of men and women, regardless of smoking status. The survey also reveals positive awareness among

Blitar residents regarding the negative health effects of tobacco use. Nearly all participants acknowledged the detrimental impacts of tobacco use on health. They expressed concerns about both direct smoking and exposure to second-hand smoke, understanding the associated health risks. Even smokers recognized that their smoke could impact others, potentially leading to mild, moderate, or severe health consequences. The community in Blitar also understood that inhaling smoke carried the same risks for non-smokers. These findings demonstrate strong local support for implementing the smoke-free regulations to protect public health in the Blitar District.

Smoke-free regulations and policies are among the most effective interventions promoted by comprehensive tobacco prevention and control programs. They aim to reduce heart disease, lung cancer, and stroke among non-smokers, and to promote tobacco cessation among smokers (25). As a result of years of implementing the smoke-free regulation, as of December 2021, in the USA 28 states and Washington, D.C. had comprehensive or 100% smoke-free regulations covering workplaces, restaurants, and bars (28). In addition, smoke-free legislation extended to establishments such as restaurants, bars, gaming facilities, and workplaces in 36 states and Washington, D.C. Furthermore, 20 of these states and the D.C. law also included e-cigarettes under their smoke-free regulation. In today's complex environments, tobacco control professionals must focus their efforts on disparities, such as those seen in low-income housing and blue-collar workplaces, and consider emissions from e-cigarettes when promoting smoke-free regulations to protect non-smokers (29).

Smoke-free regulations and policies consider the inclusion of tobacco in smoke-free laws to provide the same protections as those for tobacco smoke (30-31). Support for complete smoking bans was lowest among cigarette smokers but significantly higher among non-smokers. Non-smokers were also less likely to be exposed to second-hand smoke in public places compared to tobacco users (32). Smoke-free regulations will demonstrate that only comprehensive laws, accompanied by strong implementation and enforcement, will be effective. Findings from the current study suggest that support for the smoke-free regulations may have increased in recent years in Blitar, indicating strong public endorsement for such measures.

Research in Jordan highlighted the negative impact of tobacco on knowledge and attitudes toward mental health problems among secondary school students (32). Despite this, smokers persist in their habits, posing risks to themselves and those around them. Some smokers continue smoking due to addiction factors caused by tar and nicotine in cigarettes. According to Benowitz, nicotine induces pleasure and reduces stress and anxiety. Because their bodies demand more tar and nicotine, smokers find it difficult to quit. The findings also indicate that nearly every respondent believed smoking causes health issues. A study in Indonesia showed that second-hand and third-hand smoke have an impact on smoking-attributable diseases (33). Based on these findings, the Local Health District in Blitar must enact smoke-free regulations. The City Health District of Blitar should reaffirm that the general population is well-aware of the dangers of cigarettes and second-hand smoke. Educational efforts could include press conferences, talk shows, and therapy sessions. This strategy has also involved various media campaigns and the establishment of designated indoor and outdoor smoking areas (34-35).

The Blitar government launched and implemented the smoke-free regulations in the Blitar District, designating seven areas as smoke-free. These areas strictly prohibited smoking, production, advertising, sale, or sponsorship of cigarettes. However, smokers are still permitted to smoke outside of these designated areas. Given that smoking is an addictive behavior, smokers generally find it challenging to reduce their smoking due to their addiction and the difficulty of quitting. Smoke-free regulations will reduce the inclination to smoke among smokers. Not only traditional smoke, but these smoke-free regulations also include tobacco products such as vapes (e-cigarettes). Vaping, a newer form of smoking, is increasingly popular among youth who find it cheaper than traditional cigarettes. This has the potential to effectively discourage youth from engaging in smoking behaviors (36). Vaping is popular in Blitar District and generally in Indonesia. Therefore, the regulations also cover vaping. Vapes are designed with a model appealing to the younger generation, as they can be smoked without combustion like traditional cigarettes. Vaping has become a trend among many young people (37). The marketing of vapes in malls, public places, and online shops has contributed to the increasing number of vape users. Teenagers perceive vaping differently from traditional cigarettes, believing it to be less harmful (36). The use of vapes among the younger generation is increasing every day. The availability of vape devices and e-liquids in various small stores and online shops has fueled this growth. E-cigarettes also pose potential choking hazards (37). Vaping is commonly used in bars, cafes, and nightclubs, where more people may

be exposed to second-hand smoke compared to other places. Many teenagers use vapes due to support from their friends or peer groups (38).

The interaction between second-hand smoke exposure and other factors, such as indoor and outdoor air pollution, may potentiate the risk values, leading to an underestimation of the disease burden attributable to second-hand smoke exposure, especially among populations younger than 20 years (39-40). A study showed that second-hand smoke is associated with more than 1.2 million deaths per year among non-smokers (22). Another study in Indonesia highlighted a significant relationship between a high percentage of smokers and the prevalence of diabetes, hypertension, and lung tuberculosis (25). In summary, second-hand smoke exposure and its related disease burden have posed a serious public health challenge worldwide over the past three decades. In general, despite a decline in prevalence, the number of deaths attributable to second-hand smoke exposure has increased due to population growth and aging (41). These findings emphasize the urgency of implementing the smoke-free regulations in Blitar to protect those in close proximity to smokers. The regulations ensure the right to clean air and freedom from diseases linked to tobacco use. It aligns with the WHO's initiative to mitigate the impacts cigarettes (42).

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CONCLUSION

The RAPID survey showed that almost all respondents in the Blitar District support the smoke-free regulations. These results could provide evidence for the release of the smoke-free regulations. Before their implementation, it is crucial to disseminate the results and advocate for various stakeholders, including the executive branch, parliament, mass media, non-governmental organizations, and all citizens in the Blitar District. Once the smoke-free regulations are passed by parliament, they will require officers to implement them. Training for all officers will also be necessary to ensure effective enforcement.

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