



## Efforts to Reduce Cigarette Smoke Exposure through Non-Smoking Area Regulation

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### Article Info

#### Article History:

Submitted January 2019

Accepted February 2019

Published March 2019

#### Keywords:

Non-Smoking Area,  
Regulation,  
Campus, Academics

#### DOI

<https://doi.org/10.15294/kemas.v14i3.17851>

### Abstract

Pollution caused by cigarette smoke causes health problems and even death in humans. Active smokers contribute to this. The number of smokers increases every year, including among the students. This study aimed to develop a Non-Smoking Area model in campus area. This study used quantitative approach supported by qualitative data. The population was every campus members in the Faculty of Sports Sciences, Semarang State University (UNNES). In the quantitative approach, a sample of 170 respondents was determined by accidental sampling technique. We used questionnaire as the instrument and the data obtained were analyzed by correlation test. We involved 10 respondents in Focused Group Discussion (FGD) to obtain the qualitative data. The results showed that 1) 25.88% smoked actively; 2) 91.2% knew about cigarette and its health risks; 3) 68.2% supported smoking ban regulations on campus; 4) respondents' knowledge and attitude influenced smoking behavior; 5) promotional messages about the dangers of cigarettes on health must be campaigned in a communicative and effective language at a strategic location; 6) Written regulation from campus officials is critical to strengthen the implementation of No Smoking Area policy on campus.

### Introduction

Exposure to cigarette smoke negatively impact on health for all ages. Some research findings suggested that there is a correlation between cigarette smoke exposure and lung cancer (Hori et al., 2016; Kusumawardani et al., 2016). Other findings suggest that smoking predisposes to tuberculosis (TBC) and coronary heart disease (Patra et al., 2015). In addition, cigarettes also negatively impact pregnancy such as fetal growth disturbance, low birth weight, preterm birth, and even death (Paek et al., 2009). 480,000 premature infant deaths in the United States were estimated to be caused by smoking and cigarette smoke exposure (Drehmer et al., 2017). WHO data (World Health Organization) mentioned that 6 million people die each year due to smoking and cigarette smoke exposure. If this continues,

it is predicted that by 2030 there will be 8 million deaths per year, 80% of which occur in poor and developing countries (WHO, 2017).

Cigarette smoke negatively impact people around the smokers directly and indirectly. Cigarette smoke released by smokers can be inhaled directly by secondhand smokers (Kopp et al., 2016). In fact, the chemicals inside cigarette smoke can stick on the surface of the walls, ceilings, and furnitures for a long time and this can still be inhaled by the next passive smoker (Third-hand smokers) (Bahl et al., 2018). This is because chemicals in cigarettes, namely tar and nicotine, will be processed into pollution. The residues (nicotine, nitric acid) mixes with air and inhaled by the next passive smoker; they are carcinogenic substances that can cause lung cancer (Drehmer et al., 2017).

In Indonesia, the number of smokers

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aged 15 years and above increases every year. In 2010, the prevalence of smokers was 65.8% and increased to 66% in 2013 (Pusat Data dan Informasi Kementerian Kesehatan RI, 2015). In 2016, most smokers were adults (15 years and above), 53,248,000 people, and the majority were male. 76.2% (WHO, 2017; Qodri, BM, & Riyanti, 2016). This includes college students. Based on the results of the preliminary study, the number of students who smoked at Faculty of Sports Sciences, Semarang State University was 17%. This contributes to the cigarettes smoke exposure for passive smokers.

Solutions such as opening windows and providing fans are not effective to prevent cigarette smoke inhalation by passive smokers (Drehmer et al., 2017). A more effective strategy such as application of Non-Smoking Areas (KTR) is needed to reduce cigarette smoke exposure. This is in line with the efforts of the World Health Organization (WHO) in increasing the number of facilities that provide Non-Smoking Areas (WHO, 2017). It is supported by the Health Law No.36 / 2009 article 115 paragraph 2 which states that regional government is obliged to create non-smoking area without its territory (Indonesia, 2009). To increase the effectiveness of these rules, local policies are set out in the Regional Regulations concerning the above (Juanita, 2012). Semarang City Government also issued Regional Regulation number 3 of 2013, which states that the regional governments must establish a non-smoking area its territory. Non-smoking areas include: 1) schools/places of teaching and learning, including campuses or colleges, 2) open and closed playing areas for children. Non-Smoking Area is expected to provide protection for passive smokers from cigarette smoke exposure (Popa et al., 2016).

Based on the description above, the researchers will conduct a study on efforts to reduce cigarette smoke exposure by creating Non-Smoking Area in the Faculty of Sports Sciences, Semarang State University.

### **Method**

This research used a quantitative approach supported by qualitative data. The stages of this research were: (1) Epidemiological diagnoses to describe smoking behavior, (2) Behavioral and environmental diagnoses to determine

factors that influence smoking behavior, and (3) Educational and organizational diagnoses to analyze the need for creating non-smoking areas (need assessment) with questionnaires. Administrative and policy diagnosis was carried out as a support to design the implementation of the Non-Smoking Area on campus by Focused Group Discussion (FGD).

The population in this study was 3701 people and consisted of 3521 students, 106 lecturers, and 50 employees. Samples was determined by accidental sampling technique and we obtained 170 respondents, all of them were male. Univariate and bivariate data were tested statistically using correlation tests. Qualitative data was obtained from the results of Focused Group Discussions (FGD) conducted on 10 participants which consisted of 2 lecturers, 3 employees and 5 students.

### **Results and Discussion**

Based on the table 1, most of the respondents were students (85.88%). In addition, out of 170 respondents, 74% were non-smokers and 25% were smokers. Hence the 25% smokers contributed to cigarette smoke exposure for the 74% nonsmokers. This was in line with research findings that there was an increased risk of lung cancer in non-smokers (Hori et al., 2016). The risk of lung cancer experienced by passive smokers could be caused by levels of carcinogens delivered by smokers. In addition, this disease was also caused by residues containing harmful chemicals that were on the surface and dust that were in the room or area where smoking activity occurred (Thomas et al., 2014).

From table 1, it was known that the majority of respondents (91.2%) had sufficient knowledge about smoking and its dangers to health, only 15 respondents (8.8%) had insufficient knowledge about cigarettes and their dangers. The results of this study were different from the results of research at a Bali university, which found that only 25% students who smoked had sufficient knowledge about the dangers of smoking (Putra et al., 2018). The difference in understanding of the dangers of smoking could be caused by differences in the application of organizational culture and different ways of socializing the effects of smoking on human health.

Table 1. Respondents Characteristics

Variable	Total	%
Stayus		
Lecturer	12	7.06
Employee	12	7.06
Students	146	85.88
Smoking Behaviour		
Smoker	44	25.88
Non Smoker	126	74.12
Knowledge		
Poor	15	8.8
Satisfactory	155	91.2

Source: Primary Data. 2018

Table 2. Cross Table between Knowledge and Smoking Behavior of Respondents

		Smoking Behaviour			p value
		Smoker	Non Smoker	Total	
Knowledge	Poor	15	0	15	0.00001
	Satisfactory	29	126	155	
	Total	44	126	170	

Source: Primary Data. 2018

Table 3. Overview of Respondents' Attitudes towards Smoking Prohibition in the Campus Environment

Attitudes towards the Prohibition of Smoking in Campus Environment	Total	%
Unsupportive	54	31.8
Supportive	116	68.2
Total	170	100.0

Source: Primary Data. 2018

Based on bivariate analysis, it was known that there was a relationship between knowledge about cigarettes and the dangers of smoking for health with smoking behavior among respondents (p value=0.00001). The following was a cross table between respondents' knowledge and smoking behavior.

From table 2, we could see that respondents with satisfactory knowledge had a tendency to not smoke. Factors such as knowledge, attitude and commitment (predisposing factor) had an effect on the success of the KTR policy

From table 3 above, we could see that 156 respondents (68.2%) supported smoking ban regulation in campus. However, 31.8% of respondents who are not supportive of

smoking bans in campus. They still considered that smoking in the campus environment is reasonable and comfortable. Although there were written warnings on smoking ban, they had never been warned before and even stated that they often saw employees and lecturers smoking inside the campus area. Based on FGD results, we found that the comfortable places to smoke were gazebo, a corner terrace in the classroom, toilet, at the corners of the field, and inside the classroom clandestinely. However, according to the Non-Smoking Area policy in Semarang city, it is stated that place of teaching and learning is a building that is used for learning, teaching, education, and/or training processes and thus must be smoke-free.

From table 4, we could see that

Table 4. Cross-Table between Attitudes and Smoking Behavior of Respondents

		Smoking Behaviour			p value
		Smoker	Non Smoker	Total	
Attitude	Less Supportive	41	13	54	0.00002
	Supportive	3	113	116	
	Total	44	126	170	

Source: Primary Data. 2018

Table 5. Overview of Needs in Creating Non-Smoking Areas on Campus

Needs in Creating Non-Smoking Areas on Campus	Total	%
Not needed	14	8.2
Required	156	91.8
Total	220	100.0

Source: Primary Data. 2018

respondents who supported smoking ban in the campus environment had a tendency to not smoke in the campus environment ( $p$  value = 0.00002). This result was in line with Kurniasih et al., (2016) who stated that knowledge, attitudes, and commitment (predisposing factors) were influential on the success of the KTR policy.

From the table 4, we could see that 156 respondents (91.8%) stated that the campus really needed a non-smoking area (KTR). This was also in line with the opinion of most participants in the Focused Group Discussion (FGD), who stated that the campus must be a healthy environment and free from cigarette smoke. Another opinion also stated that Semarang State University, a pro-conservation university, should implement non-smoking area (KTR) in its environment and prioritize its socializations to the academics community. Socialization is expected to improve academic community's knowledge so that there would be a behavioral change to comply with Non-Smoking Area policy. This opinion was reinforced by the findings in another university in Semarang which stated that students lacked sufficient knowledge about Non-Smoking Areas because of lack of socialization on the matters (Kurniasih et al., 2016; Azmi et al., 2016). Good communication on the implementation of KTR policies was absolutely necessary, one of which was through socialization and utilization of media.

Based on the FGD results, we found that promotional messages about the dangers of cigarettes for health must be campaigned, including in the campus. The message had to be arranged in a communicative and effective language. In addition, it was necessary to pay attention to the marketing strategies, including in the aspect of place. We should place the messages and promotional media in strategic places that are usually the center of attention of the audiences (academics). FGD results found that the strategic for KTR promotion media are Dean hall's lobby, department lobby, meeting halls, canteen, area around the mosque, and the main entrance of each building. The results of there was a relationship between media usage and information acquisition through the media towards implementation of KTR policies. Media plays a major role in KTR implementation process, both in terms of usage and utilization. The types of media used to provide information includes information boards, banners, bulletins / leaflets / leaflets, internet / websites and others.

The FGD results found that to support and strengthen the implementation of Non-Smoking Areas in the campus environment, written regulations are urgently needed as a reference and legal basis for implementing this policy. This regulation contained the rules, rights, authority, duties of each academic community in supporting the creation of KTR in the campus environment. Implement KTR policy, four main components were needed,

namely: communication, resources, attitude and commitment, and working procedures (Standard Operating Procedure/ SOP) for Non-Smoking Area policy. The result of Non-Smoking Areas studies in Bali and West Sumatra also stated that clear KTR rules and guidelines, leadership, commitment, stakeholder compliance, supervision, and disciplinary sanctions could support Non-Smoking Area (KTR) policy (Azkha, 2013; Rahajeng, 2015). Furthermore, other researchers added that the academic community could be an agent of change to support Non-Smoking Area policy.

### Conclusions

Based on the results of the study, it can be concluded that 25.88% of respondents were active smokers. Almost all respondents (91.2%) had satisfactory knowledge on smoking and its dangers to health. More than half (68.2%) of the respondents supported smoking ban inside the campus. Knowledge and attitude of respondents influenced smoking behavior. Promotional messages about the dangers of cigarettes for health must be campaigned and had to be arranged with communicative and effective language by taking marketing strategy into account, especially strategic places to instal promotional media. Written regulations from the campus leaders are needed to support and strengthen the implementation of Non-Smoking Areas in campus.

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