



## Analysis of factors influencing smoker behavior in designated non-smoking zone on campus

### Analisis faktor kepatuhan perilaku para perokok di kawasan kampus bebas rokok

Felix Leonardi<sup>1</sup>, Mutiara Ulfa Trirasetya<sup>1</sup>, Suhartomi<sup>1</sup>, Widya Yanti Sihotang<sup>1,2</sup>, Rizki Edmi Edison<sup>3,4\*</sup>

<sup>1</sup>Faculty of Medicine, Dentistry, and Health Science - Universitas Prima Indonesia

<sup>2</sup>Center of Excellence Diabetic Care and Tech - Universitas Prima Indonesia

<sup>3</sup>Institute for Leadership, Innovation and Advancement - Universiti Brunei Darussalam

<sup>4</sup>Neuroscience Institute - Universitas Prima Indonesia

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Rizki Edmi Edison,  
[edmi.edison@ubd.edu.bn](mailto:edmi.edison@ubd.edu.bn)

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#### ABSTRACT

**Background:** The GATS research findings indicate that tobacco use in Indonesia is the highest worldwide among teenagers, with a percentage of 34.8% consumed by individuals aged 15 and above. Tobacco companies leverage this legality to market cigarettes widely to students, including university students. Smoke-free areas are government efforts to prevent smoking on campuses.

**Objective:** To identify determinant factors affecting non-smoking behavior among smokers in smoke-free campus areas.

**Methods:** This research study is descriptive quantitative with a cross-sectional design. It used a purposive sampling technique with criteria of 74 male smoker students from the Faculty of Medicine and Dentistry at Universitas Prima Indonesia and was analyzed using a chi-square test.

**Results:** The chi-square test analysis results indicated an effect between knowledge and attitude on non-smoking behavior in smoke-free campus areas with a P-value of 0.001.

**Conclusion:** The research findings found that knowledge and attitude are determinant factors of non-smoking behavior among smokers in smoke-free campus areas.

**Keywords:** *Attitude, Knowledge, Non-Smoking Behavior, Smoke-Free Campus Areas*

#### ABSTRAK

**Latar Belakang:** Hasil riset GATS menunjukkan bahwa penggunaan rokok di Indonesia tertinggi di seluruh dunia di kalangan remaja, dengan persentase 34,8% yang dikonsumsi oleh orang-orang di usia 15 tahun ke atas. Pabrik tembakau menggunakan legalitas ini untuk memasarkan rokok secara luas ke kalangan pelajar, termasuk mahasiswa. Kawasan Tanpa Rokok adalah upaya pemerintah untuk mencegah merokok di kampus.

**Tujuan:** untuk mengetahui faktor determinan perilaku tidak merokok para perokok di kawasan kampus bebas rokok.

**Metode:** studi penelitian ini bersifat deskriptif kuantitatif dengan desain cross-sectional dan digunakan teknik purposive sampling dengan kriteria mahasiswa pria yang merokok sebanyak 74 orang di Fakultas Kedokteran dan Kedokteran Gigi Universitas Prima Indonesia serta dianalisis dengan uji *Chi-Square*.

**Hasil:** Hasil uji analisis *Chi-Square* menunjukkan terdapat pengaruh antara pengetahuan dan sikap terhadap perilaku tidak merokok di kawasan kampus bebas rokok dengan nilai *P-value* sebesar 0,001.

**Kesimpulan:** Hasil penelitian ditemukan bahwa pengetahuan dan sikap merupakan faktor determinan perilaku tidak merokok para perokok di kawasan kampus bebas rokok.

**Kata kunci:** Kawasan Kampus Bebas Rokok, Pengetahuan, Perilaku Tidak Merokok, Sikap



## INTRODUCTION

The smoking issue has reached pandemic proportions as seen in many countries around the world with relatively high prevalence and increasing trends among consumers. The highest proportion of tobacco consumption is found in five countries, namely China (38%), Russia (7%), the United States (5%), including Indonesia (4%), and Japan (4%)<sup>1</sup>. The results of the Global Adult Tobacco Survey (GATS) research show that Indonesia has the highest tobacco use among teenagers worldwide and the highest among those aged 15 years and older, with a percentage of 34.8%, and tobacco consumption tends to be dominated by men, accounting for 67% compared to women, who only account for 2.7%<sup>2</sup>. Tobacco is the second largest risk factor for premature death and disability in Indonesia<sup>3</sup>. Over the past decade, the number of adult smokers in Indonesia has increased. The results of the GATS research in 2021, launched by the Indonesian Ministry of Health, show an increase in the number of adult smokers by 8.8 million people, from 60.3 million in 2011 to 69.1 million smokers in 2021<sup>4</sup>.

The World Health Organization (WHO) estimates that smoking-related diseases will become a global health problem. For every 10 adults who die, one will die due to the effects of smoking. The latest WHO data in 2004 shows that 5 million people die each year, 70% of whom are in developing countries, particularly in Asia and Indonesia. By 2025, when the number of smokers worldwide

reaches 650 million people, it is estimated that there will be 10 million deaths annually<sup>5</sup>.

Smoking-related diseases also cause various types of cancer and several non-communicable diseases such as heart disease and respiratory diseases. Additionally, smoking can lead to reduced fertility, increased cases of ectopic pregnancy, slowed fetal growth (both physical and IQ), seizures during pregnancy, immune system disorders in infants, and increased perinatal mortality<sup>6</sup>. Overall, this indicates that Indonesia has a significant impact on the occurrence of tobacco-related diseases worldwide<sup>7</sup>.

Smoking behavior provides a comprehensive description of the epidemiology of health consequences due to tobacco product consumption through tobacco control in the form of the Framework Convention on Tobacco Control (FCTC). Additionally, the Monitor, Protect, Deliver, Warn, Enforce, and Elevate (MPOWER) strategy represents a commitment to implementing tobacco control policies worldwide. The implementation of FCTC and MPOWER measures by the World Health Organization (WHO) is intended to protect everyone in the world from the dangers of smoking<sup>8</sup>. WHO has been monitoring MPOWER measures since 2007 and has been proven to save lives and reduce costs through savings in healthcare expenditure<sup>9</sup>.

On the other hand, cigarettes, which have long been declared legal for consumption, tobacco companies actually use

this legality to massively market cigarettes to students, including university students<sup>10</sup>. In this context, the effective efforts made by the government to protect individuals from smoking habits are by establishing Smoke-Free Areas (SFAs)<sup>11</sup>. Besides implementing health graphic warning on tobacco package<sup>12</sup>.

This has been affirmed by the Indonesian Health Law Number 36 of 2009, Article 115 regarding Smoke-Free Areas (SFAs)<sup>13</sup>. According to data from the World Health Organization in June 2023, Indonesia has implemented SFA policies in 456 cities and districts, equivalent to 86% of the 520 cities in Indonesia<sup>14</sup>.

The hope is that through this policy, particularly in higher education institutions, there will be a tendency to behave and reduce smoking habits, thus producing intelligent graduates who are free from addictive smoking desires<sup>10</sup>, enabling society to enjoy clean and healthy air and be protected from various threats to health and life<sup>11</sup>. Additionally, smoking behavior can be addressed, and smoking habits can gradually diminish or disappear<sup>15</sup>.

Based on the research conducted by Rin Agustina in 2020 on the "Implementation of Regional Regulations on Smoke-Free Areas at the Health Office of Yogyakarta City," she stated in her study that the implementation of regional regulations at the Health Office of Yogyakarta City has been quite successful, as generally, the employees are sufficiently compliant with the smoke-free area

regulations, although there are still some office employees who violate these regulations<sup>16</sup>.

Based on the background description above and research by Rin Agustina indicating that most areas have been successful in implementing these policies, the researcher aims to identify the determinant factors that affect non-smoking behavior in Smoke-Free Areas, especially in campus areas.

## MATERIALS AND METHODS

This study employed a cross-sectional approach with a descriptive quantitative research design. It was conducted from February to April 2024 at Universitas Prima Indonesia Medan. The research population consisted of students from the faculties of medicine and dentistry at Universitas Prima Indonesia. A purposive sampling technique was utilized, meaning the sample selection was based on specific considerations<sup>17</sup>. In this case, the consideration was male students who were smokers and currently enrolled. The sample size obtained for this study was 74 students, in accordance with the sample selection criteria. The dependent variable in this study was non-smoking behavior, while the independent variables were knowledge and attitude. Data collection was carried out using a questionnaire consisting of 34 items on a Likert scale for each variable. Data analysis involved two approaches: univariate and bivariate analysis, with data testing conducted using the chi-square test.

## RESULTS AND DISCUSSION

The results based on respondent characteristics.

**Table 1. Respondents Characteristic Based on Semester Levels (n=74)**

Level	Frequency	Percentage (%)
<b>Department of Medicine and Dentistry</b>		
2 <sup>nd</sup> semester	22	29,7%
4 <sup>th</sup> semester	29	39,2%
6 <sup>th</sup> semester	23	31,1%
<b>Total</b>	<b>74</b>	<b>100%</b>

Source: Primary Data, 2024

Based on the respondent characteristics in table 1 above, it is indicated that the most smoking behavior were found on the 4<sup>th</sup> semester with 29 (39,2%) and followed by the least number of respondents enrolled in the 2<sup>nd</sup> semester with 22 (29,7%).

**Table 2. Data Distribution of Respondents Based on Behavior (n=74)**

Behavior	Frequency	Percentage (%)
Smoking on Campus	22	29.7%
Non-Smoking on Campus	52	70.3%
<b>Total</b>	<b>74</b>	<b>100%</b>

Source: Primary Data, 2024

Based on the distribution data in Table 2 above, it is indicated that respondents who exhibit non-smoking behavior on campus dominate more with 52 (70.3%), while the remaining still exhibit smoking behavior on campus, with 22 people (29.7%). The number of respondents who do not smoke on campus is a significant percentage of 70.3%, with the rest still smoking on campus. As know that Smoking behavior is defined as smoking a type of tobacco such as cigarette <sup>18</sup>. This is similar to last year's research, which revealed that the percentage of respondents who do not smoke in the campus environment exceeds 70%, meaning the majority of non-smoking behavior occurs while in the learning

environment <sup>19</sup>. In order to create a smoke-free environment, campuses are intended by the government to be designated as non-smoking areas. Other studies indicate that campus rules, such as no smoking in the learning environment, determine students' compliance with Tobacco Policy Regulation (TPR) policies <sup>1</sup>.

**Table 3. Data Distribution of Respondents Based on Knowledge (n=74)**

Knowledge	Frequency	Percentage (%)
High	49	66,2%
Low	25	33,8%
<b>Total</b>	<b>74</b>	<b>100%</b>

Source: Primary Data, 2024

Based on the distribution data in Table 3 above, it is indicated that respondents with high levels of knowledge regarding the dangers of smoking and non-smoking area regulations amount to 49 (66.2%), while respondents with low levels of knowledge are found to be 25 (33.8%). This means that almost all respondents have adequate insight into the broad definition of smoking, the impacts of smoking, the harmful substances in cigarettes, and smoke-free areas. Similar results from other studies also indicate that the majority of respondents are well aware of smoke-free campus areas and the dangers of smoking. Individual knowledge is known as a crucial component in determining a person's behavior, and behavior based on this knowledge tends to endure longer than behavior not based on knowledge <sup>13</sup>

**Table 4. Data Distribution of Respondents Based on Attitude (n=74)**

Attitude	Frequency	Percentage (%)
Good	54	73%
Poor	20	27%
<b>Total</b>	<b>74</b>	<b>100%</b>

Source: Primary Data, 2024

Based on the distribution data in Table 4 above, it is indicated that the majority of respondents have a good attitude regarding the dangers of smoking and non-smoking area regulations, totaling 54 (73%), while the remaining respondents have a poor attitude, amounting to 20 (27%). This is consistent with previous research findings that most students have a positive attitude toward smoke-free areas, with 46 students (54.1%), and the study found that knowledge can affect one's attitude<sup>20</sup>. The reason why smokers cannot avoid smoking in non-smoking areas is due to this attitude. However, if one has a positive attitude toward smoke-free campus areas, they can control such desires<sup>21</sup>.

**Table 5. Chi-Square Test Results Between Non-Smoking Behavior on Campus and Knowledge (n=74)**

		Smoking Behavior			P Value
		Smoking on Campus	Non-Smoking on Campus	Total	
Knowledge	High	8 (36.4%)	41 (78.8%)	49 (66.2%)	0.001
	Low	14 (63.6%)	11 (21.2%)	25 (33.8%)	
<b>Total</b>		<b>22 (100%)</b>	<b>52 (100%)</b>	<b>74 (100%)</b>	

Source: Primary Data, 2024

The results of the data analysis using the Chi-Square test indicate that respondents with high levels of knowledge who smoke on campus amount to 8 (36.4%), while those who do not smoke on campus tend to dominate with 41 (78.8%). Then, respondents with low levels of knowledge who smoke on campus amount to 14 (63.6%), while those who do not smoke on campus are 11 (21.2%). Based on the table above, shows that non-smoking behavior on campus tends to be more prevalent among respondents with high levels of knowledge compared to respondents with low levels of knowledge who do not smoke on campus. From the Chi-Square test result, a p-value of 0.001 is obtained, which means that the null hypothesis (H<sub>0</sub>) is rejected, thus it can be concluded that "There is an Effect Between Knowledge and Non-Smoking Behavior of Smokers in Smoke-Free Campus Areas."

The researcher states that the more knowledge an individual has about the regulations of Smoke-Free Areas and the dangers of smoking on campus, the more compliant they are with the Smoke-Free Areas regulations. Hence it is pertinent the knowledge to desired from stop smoking<sup>22</sup>. Because individuals with high knowledge believe that cigarette smoke can disturb others and the environment, they prefer not to smoke on campuses that are designated as smoke-free areas. This has shown that they have a higher level of compliance in adhering to smoke-free campus areas. This finding is consistent with previous research indicating that good knowledge will affect behavior to

refrain from smoking<sup>23</sup>. Previous research conducted by Irna Yuliza also aligns with the researcher's findings; the study found that the majority of respondents were aware of the implementation of Smoke-Free Areas (KTR) at the University of Riau<sup>20</sup>. However, it does not attach knowledge about the dangers of smoking. Therefore, in this opportunity, the researcher aims to investigate the dangers of smoking for individuals.

**Table 1. Chi-Square Test Results Between Non-Smoking Behavior on Campus and Attitude (n=74)**

		Smoking Behavior		Total	P Value
		Smoking on Campus	Non-Smoking on Campus		
Attitude	Good	10 (45.5%)	44 (84.6%)	54 (73.0%)	0.001
	Poor	12 (54.5%)	8 (15.4%)	20 (27.0%)	
<b>Total</b>		22 (100%)	52 (100%)	74 (100%)	

Source: Primary Data, 2024

The results of the data analysis using the Chi-Square test indicate that the number of respondents with a good attitude who smoke on campus is 10 (45.5%), while those who do not smoke on campus are 44 (84.6%). Then, respondents with a poor attitude who smoke on campus amount to 12 (54.5%), while those who do not smoke on campus are 8 (15.4%). Based on the table above, shows that non-smoking behavior on campus tends to be more prevalent among respondents with a good attitude compared to respondents with a poor attitude who do not smoke on campus.

From the Chi-Square test result, a p-value of 0.001 is obtained, which means that the null hypothesis ( $H_0$ ) is rejected, thus it can be concluded that "There is an Effect Between Attitude and Non-Smoking Behavior of Smokers in Smoke-Free Campus Areas".

Based on other studies, similar findings were also observed, indicating the effect of attitude on an individual's compliance with smoke-free area implementation. However, the location studied differed, being situated at a Community Health Center<sup>5</sup>. This aligns with a study reported by Bartington which explains that respondents enrolled at Birmingham University, where there are smoke-free campus area regulations, strongly support these regulations with a support percentage of 68.5%. Thus, the researchers concluded that individuals with positive attitudes towards smoke-free campus areas and a firm belief in the dangers of smoking, who support the enforcement of no-smoking rules on campus, contribute to a comfortable and conducive atmosphere for learning to commence<sup>24</sup>.

## CONCLUSION

This study concludes that there is an effect between knowledge and attitude on the non-smoking behavior of smokers in smoke-free campus areas. Based on these conclusion results, it can be explained that knowledge and attitude are factors that affect behavior to refrain from smoking in areas where smoking is prohibited, especially in campus environments. While the research was ongoing and had been carried out, the

researcher suggested that the campus to carry out efforts to socialize the smoke-free campus area regulations to students for do not smoke on campus.

## THANK YOU

1. University of Prima Indonesia has allowed the research to be completed.

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