

## The Correlation Between Coping Mechanisms and Stress Levels with Smoking Habits Among Medical Students at Muhammadiyah University Semarang

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### **Abstract**

College students are particularly vulnerable to psychological stress or anxiety due to various factors such as academic demands, personality traits, environment, socio-cultural influences, and more. Smoking is a mental state influenced by one's surroundings, leading to changes in behavior and emotions. Stress has become an inherent part of student life, driven by both internal and external pressures. Students employ different stress-coping strategies, namely problem-focused coping and emotion-focused coping. This study aims to examine the correlation between coping strategies, stress levels, and smoking behavior among medical students at Muhammadiyah University of Semarang. Using a quantitative observational analytic approach, the research was conducted in 2024 with 59 respondents selected through purposive sampling. The p-value for coping strategies was 0.411, while for stress levels, it was 0.043. These results indicate that H1 is accepted, showing a significant correlation between stress levels and smoking behavior. Stress levels can be a driving factor for smoking, highlighting a significant correlation between stress and smoking behavior.

**Keywords:** Coping strategies, Stress, Smoking behavior

## INTRODUCTION

College students are highly susceptible to psychological stress and anxiety due to academic demands, personality traits, environmental factors, and socio-cultural influences. Many students turn to smoking as a coping mechanism to relieve stress, while others adopt healthier strategies.<sup>1</sup> According to the Global Adult Tobacco Survey (GATS), the number of adult smokers in Indonesia increased significantly from 60.3 million in 2011 to 69.1 million in 2021.<sup>2</sup> Data from Riskesdas 2018 shows that 32.8% of individuals aged 15-24, including students, smoke.<sup>3</sup> In Central Java, smoking prevalence in this age group fluctuated, rising from 19.72% in 2022 to 21.11% in 2024.<sup>4</sup> Stress is a significant factor driving smoking behavior, with studies showing that higher stress levels correlate with increased cigarette consumption and difficulty quitting.<sup>5</sup>

Stress affects 38-71% of students globally, with prevalence in Asia ranging from 39.6% to 61.3%, and in Indonesia, it is 36.7-71.6%.<sup>6</sup> Students often face academic stress due to internal and external pressures, making them vulnerable to stress-related issues.<sup>7</sup> Smoking is sometimes seen as a way to reduce tension,<sup>8</sup> but individuals employ various coping strategies, such as problem-focused coping (addressing the source of stress) and emotion-focused coping (managing emotional responses).<sup>9,10</sup> Effective stress management depends on individual abilities and conditions, helping to resolve psychological issues positively.<sup>10</sup>

## METHODS

The research design that will be employed is quantitative observational analytic and case control. The research population is male students of the Faculty of Medicine, Muhammadiyah University of Semarang class of 2021, 2022, and 2023. Samples were obtained by purposive sampling, with the following inclusion criteria: Active students of the Faculty of Medicine at Universitas Muhammadiyah Semarang in the 2021, 2022, and 2023 classes. Male students. Active smokers who smoke conventionally or electrically. Willing to participate as respondents. The independent variables in this study were coping strategies and stress levels, and the dependent variable was smoking behavior.

The data collection instruments employed included the PSS (Perceived Stress Scale) questionnaire, the FTND (Fagerstrom Test for Nicotine Dependence) questionnaire, and the Brief COPE (Coping Orientation to Problems Experienced) questionnaire. The PSS questionnaire

was utilized to assess the stress levels experienced by each individual, while the FTND questionnaire was employed to measure smoking behavior. The Brief COPE questionnaire was used to examine how individuals cope with problems faced and to assess important and potential coping responses. The data collection is scheduled to take place at the Faculty of Medicine, Muhammadiyah University Semarang in November 2024.

The central hypothesis of this study is that there is a correlation between high stress levels and maladaptive coping strategies, or short-term coping methods (emotion-focused coping), with smoking behavior in students of the Faculty of Medicine, Universitas Muhammadiyah Semarang. The statistical analysis of the collected data will employ a range of analytical methods, including descriptive statistics, frequency and crosstab analysis, as well as non-parametric correlation tests. The statistical analysis will be conducted using the spearman rank test and chi-square test, with a significance level of <0.05, to ensure the reliability and validity of the results.

## RESULTS

**Table 1. Respondent Characteristics**

Variable	Variable	N	%
<b>Ages</b>	19	9	15,3
	20	16	27,1
	21	26	44,1
	22	8	13,6
<b>Parents' Occupation</b>	Doctor	9	15,3
	Civil Servant	18	30,5
	Private	16	27,1
<b>Cigarette Type</b>	Entrepreneur	16	27,1
	Conventional	27	45,8
	Electric	19	32,2
<b>Coping Strategy</b>	Both	13	22,0
	Problem Focused	8	13,6
	Emotion Focused	51	86,4
<b>Stress Levels</b>	Low	2	3,4
	Medium	9	15,3
	High	48	81,4
<b>Smoking Behavior</b>	Very Low	0	0
	Low	11	18,6
	Medium	10	16,9
	High	20	33,9
	Very High	18	30,5

The study involved 59 male students from the 2021, 2022, and 2023 cohorts at the Faculty of Medicine, Muhammadiyah University of Semarang. Most respondents were 21 years old (44.1%), followed by 20 years (27.1%), 19 years (15.3%), and 22 years (13.6%). Regarding parental occupations, (30.5%) were civil servants, (27.1%) were private sector employees, (27.1%) were entrepreneurs, and (15.3%) were doctors. Most respondents smoked conventional cigarettes (45.8%), while (32.2%) used e-cigarettes, and (22%) used both. For coping strategies, (86.4%) used emotion-focused coping, and (13.6%) used problem-focused coping. The majority had high stress levels (81.4%), with (15.3%) experiencing moderate stress and (3.4%) reporting low stress. Regarding smoking behavior, (33.9%) had high levels, (30.5%) had very high levels, (16.9%) had moderate levels, and (18.6%) had low levels. No respondents reported very low smoking behavior (0%).

**Table 2. Correlation between Coping Strategies and Smoking Behavior**

Variable		Smoking Behavior				P Value
		Low	Medium	High	Very High	
Coping Strategy	Problem Focused	0	2	4	2	0.441
	Emotion Focused	11	8	16	16	
N		11	10	20	18	

The results of the Chi-Square test revealed no statistically significant correlation between coping strategies and smoking behavior ( $p = 0.411$ ). This indicates that the observed differences in the data are not substantial enough to be considered statistically significant.

**Table 3. Correlation between Stress Level and Smoking Behavior**

Variable		Smoking Behavior				r	P Value
		Low	Medium	High	Very High		
Stress Levels	Low	1	0	1	0	0.265	0.043
	Medium	0	6	3	0		
	High	10	4	1	1		
	Very High			6	8		
N		11	1	2	1		
			0	0	8		

Spearman's correlation coefficient revealed a statistically significant positive correlation between stress levels and smoking behavior. The correlation coefficient was 0.265, and the significance value was 0.043. This indicated that as stress levels increased, there was a concomitant increase in smoking behavior.

**DISCUSSION**

**Correlation between Coping Strategies and Smoking Behavior**

Coping strategies refer to the manner in which individuals manage stress, a concept that is particularly salient for students of the Faculty of Medicine at Universitas Muhammadiyah Semarang, who encounter elevated academic and emotional pressures. Research findings indicate an absence of a significant correlation between coping strategies and smoking behavior, although a considerable number of students exhibit a propensity to employ emotion-focused coping mechanisms.<sup>11</sup>

Coping strategies can be categorized into two distinct groups: adaptive strategies, which include social support and exercise, and have been shown to reduce smoking tendencies, and maladaptive strategies, which encompass smoking and other behaviors that are known to increase smoking behavior.<sup>12</sup> Research indicates that college students who use maladaptive strategies are more prone to smoking in response to academic stress.<sup>11</sup>

Social support has been identified as a crucial factor in the adoption of adaptive coping strategies, which have been shown to reduce the risk of smoking.<sup>13</sup> Educational institutions are therefore charged with the responsibility of fostering a supportive environment, providing counseling services, and implementing mental health programs.<sup>14</sup> The integration of education on healthy

coping strategies, such as mindfulness and relaxation, into the curriculum is recommended.<sup>13</sup> Further research is necessary to elucidate the influence of other factors, including personality and the social environment, on coping strategies.<sup>15</sup>

Collaborations between faculty, students, and relevant parties are essential to cultivate a campus environment conducive to student well-being. With a meticulously designed approach and adequate support, students can acquire the skills to cope with stress in a healthy manner, curtail smoking behavior, and enhance long-term health.<sup>12</sup> These endeavors not only benefit the individual but also society at large, leading to healthier and more prosperous professionals in the future.<sup>13</sup>

### Correlation between Stress Level and Smoking Behavior

College students frequently report elevated levels of stress, which, in some cases, may lead to smoking as a short-term coping mechanism.<sup>11</sup> While smoking may offer a temporary sense of calm, its long-term effects are well-documented and detrimental to health. Prolonged exposure to stress, which is common among college students, can also trigger anxiety and depression, further exacerbating this behavior. Research indicates that college students experiencing high stress are more likely to smoke,<sup>1</sup> particularly in situations involving academic failure or the inability to manage pressure. However, not all college students resort to smoking; some utilize alternative coping mechanisms such as exercise or meditation.<sup>11</sup> Educational institutions play a pivotal role in curbing smoking behavior through health education programs, stress counseling, and mental health support.<sup>13</sup> Governments and institutions must also support awareness campaigns and enhance access to mental health services, helping students manage stress without resorting to detrimental habits.<sup>16</sup>

A multifaceted strategy is imperative to cultivate an environment conducive to students' well-being and resilience. By equipping students with effective stress management tools and alternative coping mechanisms,<sup>16</sup> we can foster a healthier mental atmosphere and diminish the prevalence of smoking. These initiatives are designed to nurture a generation of individuals who possess the fortitude to overcome life's challenges in a constructive manner.

### CONCLUSION

The present study indicated that the majority of medical students at Universitas Muhamadiyah Semarang exhibited elevated levels of stress, significant cigarette dependence, and a propensity to employ emotion-focused coping strategies. While no direct correlation was observed between coping strategies and smoking behavior, a notable yet modest association was identified between stress levels and smoking behavior within this student population.

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