



ANALYSIS OF DETERMINANT FACTORS OF SMOKING BEHAVIOR IN ADOLESCENTS

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ABSTRACT

Smoking behavior is a serious health problem among adolescents in Semarang City, with initiation at an early age influenced by various individual and environmental factors. To analyze the determinants that influence smoking behavior among junior high school and vocational high school students in Tembalang District, Semarang City. This was an analytical observational study with a cross-sectional design. The population comprised 248 junior and vocational high school students in Tembalang, selected via saturated sampling. Primary data were collected using a questionnaire tested for validity ($r > 0.312$) and reliability (Cronbach's Alpha > 0.6). The research results showed that the majority of respondents were in the early adolescent category (15-19 years) at 85.9%, the majority of respondents had a positive attitude at 55.2%, respondents who received easy access were 76.6%, while respondents who did not receive smoking support were 54.8%. Bivariate analysis showed a significant relationship between smoking behavior and age, attitudes, and ease of access ($p < 0.05$), while social variables showed no significant relationship ($p > 0.05$). All variables examined in this study were shown to have a significant relationship with smoking behavior, apart from social variables which did not show any significant relationship.

Keywords: adolescents; attitude; determinants; ease of access; smoking behavior

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INTRODUCTION

The World Health Organization (WHO) projects that by 2025, there will be 1.3 billion smokers worldwide using tobacco as the main ingredient (WHO, 2005). This figure is highly concerning, especially in low- and middle-income countries, where 80% of tobacco users reside and bear the greatest burden of disease and death from smoking (WHO, 2025). Indonesia ranks as the country with the highest number of smokers in the ASEAN region, reaching 65.7 million people (Lian & Dorotheo, 2021), equivalent to 34% of the national population—double the global percentage of smokers.

The most concerning phenomenon in Indonesia is the high prevalence of smoking among adolescents. The 2023 Indonesian Health Survey (SKI) data shows that the largest group of smokers is in the 15-19 age range (56.5%), with initiation starting as early as 10-14 years old (18.4%) (BKPK, 2023). This trend is also reflected in Semarang City, where the onset of smoking is dominated by junior and senior/vocational high school students. Early initiation of smoking is particularly dangerous, as habits formed during adolescence tend to persist into adulthood.

The health risks are further increased by the prevalence of "dual use" (the use of both conventional and electronic cigarettes) among adolescents. This is evidenced by the fact that over 95% of electronic cigarette users are also conventional cigarette users (dual users) (Moeis et al., 2019).

Smoking behavior among adolescents is a concerning phenomenon, considering that adolescence is a formative period marked by significant psychological and physical changes. This phase is a time of identity-seeking, where individuals are highly susceptible to environmental influences. Smoking behavior in adolescents is closely linked to their ease of access to cigarettes. Teenagers can purchase cigarettes from street vendors, small stalls (warung), convenience stores, and wholesalers (Muslim et al., 2023).

To comprehensively understand this phenomenon, this study utilizes two primary theoretical frameworks: Lawrence Green's Theory and the Theory of Planned Behavior (TPB). Lawrence Green's Theory analyzes behavior through three factors: Predisposing Factors, Enabling Factors, and Reinforcing Factors (Irwan, 2017). Meanwhile, the TPB explains that behavior is influenced by Attitude, Subjective Norms, and Perceived Behavioral Control (Fathoni et al., 2024).

Previous research has tended to focus on more specific variables, such as the influence of advertising or economic factors. Therefore, this study aims to more comprehensively analyze the factors influencing smoking behavior among adolescents by integrating both theories. This study will focus on junior high and vocational high school students in the Tembalang District, Semarang City.

METHOD

This study is an analytical observational study with a cross-sectional design, aimed at identifying factors associated with smoking behavior. The research population consisted of 248 junior and senior high school students in Tembalang District, Semarang, where the entire population was used as the sample through a saturated sampling technique. The dependent variable under investigation was Smoking Behavior, while the independent variables included Age, Attitude, Social factors, and Ease of Access to Cigarettes. Primary data were collected using a questionnaire tested for validity ($r > 0.312$) and reliability (Cronbach's Alpha > 0.6).

The collected data were analyzed in three stages. First, descriptive analysis was used to present the data distribution in the form of frequency tables or graphs. Second, bivariate analysis was conducted using the chi-square test to evaluate the relationship between variables, with statistical significance set at a p-value < 0.05 . Finally, logistic regression analysis was used to determine which independent variable had the most dominant influence on smoking behavior among the respondents.

RESULT

Tabel 1.
Frequency Distribution of Respondents Based on the Variable Category of Smoking Behavior Factors in Adolescents in Tembalang District, Semarang

No	Variabel	f	%
1	Age		
	15 - 19 years	213	85,9
	12 - 14 years	35	14,11
2	Attitude		
	Negative Attitude	111	44,75
	Positive Attitude	137	55,24
3	Social		
	Absence of social support	136	54,8
	Presence of social support	112	45,16
4	Ease of Access		
	Not accessible	58	23,38
	Accessible	190	76,61

The majority of respondents were in the 15-19 age group, totaling 213 people (85.9%). Meanwhile, respondents aged 12-14 years numbered 35 people (14.11%). This indicates that the majority of participants in this study are in their late adolescence. More than half of the respondents had a Positive Attitude, amounting to 137 people (55.24%). The remainder, 111 respondents (44.75%), showed a Negative Attitude. This suggests that the majority of respondents have a positive

attitudinal tendency towards the researched topic. A majority of respondents, 136 people (54.8%), reported an absence of social support. Meanwhile, the other 112 respondents (45.16%) stated the presence of social support. A significant majority of respondents reported ease of access (Accessible), totaling 190 people (76.61%). Only a small portion of respondents, 58 people (23.38%), stated that access was not easy.

Table 2.

The Relationship Between Respondents' Age and Smoking Behavior Among Adolescents

Age	Non-Smoker		Smoker		p-value ^{a)}
	f(n)	%	f(n)	%	
Late Adolescence	36	65,5	177	91,7	0,000 ^{*)}
Early Adolescence	19	34,5	16	8,3	

a) Uji Chi Square

*) p – value < 0,05

Data analysis shows that the proportion of late adolescents who engage in smoking behavior was recorded at 91.7%, compared to early adolescents at only 8.3%. This difference indicates that late adolescents in the study population are more likely to be involved in smoking behavior than early adolescents. Based on the results of the Chi-Square statistical test, a p-value of 0.000 ($p < 0.05$) was obtained, which indicates a statistically significant relationship between age and smoking behavior.

Tabel 3.

The Relationship between Respondents' Attitudes and Smoking Behavior in Adolescents in Tembalang District, Semarang

Attitude	Non-Smoker		Smoker		p-value ^{a)}
	f(n)	%	f(n)	%	
Negative Attitude	50	90,0	67	34,7	0,000 ^{*)}
Positive Attitude	5	9,1	126	65,3	

a) Uji Chi Square

*) p – value < 0,05

Data analysis showed that the proportion of adolescents with positive attitudes toward smoking who smoked was 65.3%, compared to only 34.7% of adolescents with negative attitudes. This difference indicates that adolescents with positive attitudes toward smoking in the study population were more likely to engage in smoking. The chi-square test yielded a p-value of 0.000 ($p < 0.05$), indicating a statistically significant relationship between attitudes and smoking behavior.

Tabel 4.

Social Relationship of Respondents with Smoking Behavior in Adolescents

Social	Non-Smoker		Smoker		p-value ^{a)}
	f(n)	%	f(n)	%	
Absence of social support	36	65,5	100	51,8	0.101 ^{*)}
Presence of social support	19	34,5	93	48,2	
Total	55	100	193	100	

a) Uji Chi Square

*) p – value < 0,05

Data analysis showed that the proportion of adolescents who lacked social support and smoked was 51.8%, compared to 48.2% of adolescents with social support. The chi-square test yielded a p-value of 0.101 ($p > 0.05$), indicating no statistically significant relationship between social support and smoking behavior.

Tabel 5.

The Relationship between Ease of Access of Respondents and Smoking Behavior in Adolescents

Ease of Access	Non-Smoker		Smoker		p-value ^{a)}
	f(n)	%	f(n)	%	
Not accessible	20	36,4	38	19,7	0.017 ^{*)}
Accessible	35	63,6	155	80,3	

a) Uji Chi Square

*) p – value < 0,05

Data analysis showed that the proportion of adolescents who felt they had access to smoking information and who engaged in smoking behavior was 80.3%, compared to only 19.7% who felt they did not have access. This difference indicates that adolescents who perceived easy access to smoking information were more likely to engage in smoking behavior. The chi-square test yielded a p-value of 0.017 ($p < 0.05$), indicating a statistically significant relationship between ease of access and smoking behavior.

DISCUSSION

Age has been proven to be one of the critical factors influencing smoking behavior in adolescents. As age increases, particularly in late adolescence (15–19 years), the tendency to smoke increases significantly. This is consistent with the Riskesdas report, which shows a rising trend in smoking prevalence among the late adolescent age group (Ministry of Health RI, 2019). Research on high school students in Yogyakarta also shows that increasing age is positively correlated with smoking initiation, influenced by psychosocial factors such as the search for self-identity (Suryani et al., 2021). Further analysis of national data confirms that age is a strong predictor of smoking behavior among adolescents in Indonesia (Lestari et al., 2019).

Besides age, the attitude of adolescents towards cigarettes is the most dominant variable influencing smoking behavior. Adolescents with a positive attitude for instance, viewing smoking as cool, a symbol of social belonging, or a way to cope with stress have a greater chance of smoking compared to those with a negative attitude. Conversely, a negative attitude serves as a psychological barrier that prevents the intention to try. Research has found that a good level of knowledge can form a negative attitude towards smoking (Alya et al., 2022). However, media exposure (Lubis & Siregar, 2021), peer influence (Jannah et al., 2022), and the family environment (Astuti, 2022) also play a role in shaping permissive attitudes. A study in Medan even asserts that attitude has a stronger influence than knowledge alone in explaining adolescent smoking behavior (Syahputra et al., 2022).

The social environment, especially peers and family, is also highly decisive. Social pressure from peer groups often leads adolescents to smoke despite personally holding a negative attitude, due to the need for acceptance within the group (Hidayat & Putri, 2023; Jannah et al., 2022). On the other hand, family influence, particularly from smoking parents, is proven to increase the risk of their children smoking (Astuti, 2022). This social factor becomes more complex when linked to school policies; research indicates that schools that consistently implement Smoke-Free Area (KTR) policies can suppress the prevalence of adolescent smokers (Pratama et al., 2024).

In addition to age, attitude, and social factors, the ease of access to cigarettes also plays a major role in encouraging smoking behavior in adolescents. The accessibility of purchasing single stick cigarettes at stalls near schools and in canteens makes it easier for adolescents to start this habit. The access factor is reinforced by exposure to cigarette advertising, both through conventional and digital media, which normalizes smoking behavior by associating it with images of courage, freedom, and popularity (Rahman et al., 2021). Advertising exposure affects not only attitudes but also the intention to smoke (Alya et al., 2022; Astuti et al., 2023). Nevertheless, research also emphasizes the importance of health promotion efforts that can function as a counter-narrative to the influence of advertising, thereby shaping negative attitudes and reducing the tendency to smoke (Anwar et al., 2022; Pratama et al., 2024).

CONCLUSION

Adolescence, particularly late adolescence (ages 15 - 19), has been identified as a significant risk factor associated with smoking behavior among junior and vocational high school students in Tembalang District, Semarang. In addition, a positive attitude toward smoking is also significantly correlated with the likelihood of engaging in smoking behavior. Conversely, social pressure was not found to be a significant risk factor in this context. However, the ease of access to cigarettes, such

as the availability of single-stick purchases around schools, emerged as another critical factor that significantly contributes to the smoking behavior of adolescents.

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