Factors Influencing Smoking Habits Among Adolescents in Tegal Rejo Village, Medan Perjuangan District

Talitha Syafira Nurhayati[1], Zuhrina Aidha[1], Wasiyem[1]

[1]*Public Health, Faculty of Public Health, State Islamic University of North Sumatra, Medan*

*Corresponding Author: Talitha Syafira Nurhayati
E-mail: talithasyaf04@gmail.com

Abstract

Smoking behavior among adolescents is a particular issue that requires serious attention. Adolescents tend to be more vulnerable to the influence of their surroundings, including peers and social media, which can affect their decisions regarding smoking. This study aims to explore the factors related to smoking behavior among adolescents in Indonesia. Using quantitative methods, univariate and bivariate analyses were conducted on data from 271 respondents. The findings indicate a significant relationship between individual knowledge about the dangers of smoking, individual attitudes toward smoking, social media exposure to content about the dangers of smoking, and the level of self-efficacy with smoking behavior among adolescents. These results support the importance of understanding and managing these factors in efforts to prevent and control smoking among adolescents. Strategies that include enhancing knowledge, supportive attitudes, managing social media exposure, and strengthening self-efficacy can be effective steps in reducing the prevalence of smoking behavior in the adolescent population. In this context, evidence-based approaches, such as those proposed by Lawrence Green's Theory of Behavior Change, can serve as a foundation for designing more effective interventions. Collaboration among various parties, including the government, educational institutions, and the general community, is necessary to create a supportive environment to change smoking behavior and improve adolescent health overall.

Introduction

Social media is an online platform that facilitates user participation, sharing, and content creation such as blogs and social networks. However, another opinion suggests that social media is an online medium that supports social interaction and uses web-based technology to transform communication into interactive dialogue. Social media users can freely add writings, images, videos, and various other content. According to Leli et al. (2023), social media is a tool, service, and communication that facilitates relationships between individuals with similar interests or concerns.

Social media is accessible to various segments of society, including adolescents, who are the highest users of social media, with a percentage of 75.50%. Adolescence is a transitional period from childhood to adulthood, characterized by various biological, cognitive, and socioemotional changes. From the perspective of socioemotional changes experienced by adolescents, they tend to prioritize their peers and may encounter conflicts with their parents. This makes adolescence a relatively turbulent period compared to other developmental stages. Therefore, adolescence is a crucial period that requires attention. Many adolescents believe that

the more active they are on social media, the cooler and more sociable they will be perceived, whereas those without social media are often considered less sociable or outdated (Suryani & Suwarti, 2014).

The use of social media has become a personal necessity for its users, including adolescents in Indonesia. According to the World Health Organization (WHO), adolescence is the transitional phase from childhood to adulthood, ranging from ages 12 to 24, while the Child Protection Act defines adolescence as ages 10 to 18. The Minister of Health describes adolescence as a critical period of rapid growth or puberty, involving not only physical changes but also mental, cognitive, and psychological development.

Adolescents, as one of the users of social media, are often unable to discern beneficial activities. They also tend to be easily influenced by the social life depicted on social media without considering the positive and negative impacts of their activities (Ekasari & Dharmawan, 2012). The harmful effects of social media usage (e.g., Facebook) from gadgets as an information medium for students must be properly supervised by parents (Kartika Mariskhana, 2018). According to Oetomo et al. (2007), social media facilitates adolescents in learning business and earning money through e-commerce. Research by Astuti et al. (2019) states that internet channels and social media are key marketing strategies for one of Indonesia's largest tobacco companies. Internet-based marketing runs alongside conventional advertising, potentially increasing Indonesian adolescents' exposure to tobacco marketing. Melda (2017) found that one of the factors influencing adolescents to smoke is media influence, including advertisements and mass media such as print, electronic media, and social media, which can provide insights into cigarette advertisements. These advertisements can trigger adolescents to smoke.

Data from BPS (2018) explains the prevalence of beginner smokers aged 5-9 years. Moreover, several studies show a shift in the age of first-time smokers from 13 years old to 5-9 years old. Early smoking initiation is influenced by factors such as smoking family environments that neglect children's health and the lack of strict regulations at the national level (Indonesian Child Protection Commission, 2013). Ranaei et al. (2022) found that factors influencing adolescent smoking behavior include smoking regulations, easy access to cigarettes, and peer and family influence. Fithria et al. (2021) state that adolescent knowledge about smoking influences their attitudes toward smoking behavior due to differing views on smoking.

The Higeia Journal of Public Health Research and Development (2018) reports that smoking behavior remains a health issue among adolescents. Of the estimated 70 million Indonesian children, 37% are smokers. Some start smoking as early as age 10, influenced by peers and curiosity. Other studies in Indonesia found that the youngest respondents who started smoking were aged 5-10 years (10%). Thus, children trying smoking at age 10 is a serious issue requiring more attention for prevention and education. All stakeholders must collaborate to reduce early-age smoking prevalence.

The Global Adult Tobacco Survey (GATS) reports that Indonesia has the highest adolescent smoking rate globally, with 34.8% of smokers aged ≥15 years, including 67% males and 2.7% females. According to the Basic Health Research report, the smoking age trend is increasing among adolescents, particularly in the 10-14 and 15-19 age groups. Data from 2007, 2010, and 2013 show the highest first-time smoking age group is 15-19 years. The 2018 Basic Health Research data also show that the prevalence of smoking in Indonesia among 15-19-year-olds is 48.2%, higher than other age groups (Basic Health Research, 2018). The prevalence of smoking among 15-19-year-olds in Indonesia has increased yearly from 34.7% in 2010 to 36.3% in 2013 and 48.2% in 2018.

The impact of smoking on individual and public health has long been recognized by the medical and scientific communities. Smoking is a major risk factor for various serious diseases,

including heart disease, cancer, and respiratory disorders (Benowitz, 2010). Caliri et al. (2021) showed that tobacco smoking significantly increases lung cancer risk. Chemicals in cigarettes can damage lung cell DNA and trigger cancer cell growth. Therefore, reducing smoking prevalence is crucial for improving the health and well-being of the Indonesian population. Smoking behavior can also be categorized as zulm, or injustice towards others. As mentioned in Surah An-Nahl Ayat 90, Allah commands justice and benevolence. This guideline teaches that smoking behavior can be seen as a form of hostility because it can cause animosity between smokers and non-smokers, especially if smokers do not respect non-smokers' rights and health (Surah An-Nahl: 90).

Several studies have examined the influence of social media on adolescent smoking behavior in Indonesia and other countries. These studies provide diverse insights into the relationship between social media use and adolescent smoking behavior. Most studies show a positive and significant relationship, indicating that the more frequently adolescents use social media, the more likely they are to smoke (Utari et al., 2020; Seo & Huang, 2012; Desmon et al., 2021). However, some studies also show no significant relationship between social media use and adolescent smoking behavior (Hasugian, 2018; Suryadiningrat et al., 2022; Yulianti & Agustang, 2022). These differences may be due to various factors such as sample characteristics, types of social media, and the extent and duration of social media use.

Adolescent smoking behavior is a specific issue requiring serious attention. Adolescents are more vulnerable to environmental influences, including peers and social media, which can affect their smoking decisions. Adolescence is a critical period for forming habits and daily behaviors, making prevention and intervention efforts at this stage crucial. One approach to understanding adolescent smoking behavior is through Lawrence Green's Behavior Change Theory. This theory emphasizes that health behavior is influenced by various factors, including individual, environmental, and social factors (Asmarasari & Astuti, 2019). In this context, self-efficacy, or an individual's belief in their ability, is an important factor influencing adolescents' smoking decisions.

Green's theory identifies three key factors influencing health behavior: predisposing factors, enabling factors, and reinforcing factors. Predisposing factors include knowledge, attitudes, and self-efficacy. Knowledge about the dangers of smoking and its negative health impacts, and attitudes toward smoking, can encourage or hinder someone from starting or quitting smoking. Additionally, self-efficacy, or an individual's belief in their ability to change behavior, plays a crucial role in changing smoking habits.

Enabling factors include the resources and conditions that facilitate health behavior. In the context of smoking, these factors can include access to cigarettes, peers who smoke, and an environment that facilitates smoking behavior. Finally, reinforcing factors involve behaviors and support from health workers, family, and other reference groups. In this case, support from the social environment, such as peers and community leaders who smoke, can reinforce adolescents' smoking habits. Initial survey interviews with 15 adolescent smokers in Medan revealed that most were male. Adolescents smoked due to peer influence, exposure to cigarette advertisements, and influence from smoking parents. Observations showed adolescents smoking in cafes with peers, and cigarettes were a popular item sold daily, mostly to school-uniformed adolescents.

In this study, the researcher focuses on predisposing factors: knowledge, attitudes, and self-efficacy in analyzing adolescent smoking behavior. These factors are considered to have a significant impact on adolescents' smoking decisions. Understanding these predisposing factors better can provide insights into developing effective interventions or prevention programs to reduce smoking prevalence among adolescents.

Methods

The research method used in this study is a quantitative method, aiming to identify the relationships between variables, utilizing a cross-sectional research design. This type of research design employs descriptive analytic research. The time and location of this study are from January to March 2024 in Tegal Rejo Village, Medan Perjuangan District. The sample for this study was obtained using the Lemeshow formula (Levy & Lemeshow, 2013). In this study, a confidence level of 90% or 1.645 with a margin of error of 5% was used. This formula resulted in a sample size of 271 respondents. The sampling technique used in this study is purposive sampling. The criteria for determining respondents included: residents of Tegal Rejo Village, male, aged 10-18 years, having social media and being active users of social media, and willing to participate in the study. Data were collected using a questionnaire. The data analysis to be conducted in this study includes univariate and bivariate analyses using the chi-square test on the independent and dependent variables (Norfai, 2022).

Result and Discussion

Validity Test

Table 1. Validity Test

Questionnaire	r Count	r Table	Description
X2_1	0,813**	0,196	Valid
X2_2	0,818**	0,196	Valid
X2_3	0,845**	0,196	Valid
X2_4	0,790**	0,196	Valid
X2_5	0,788**	0,196	Valid
X3_1	0,852**	0,196	Valid
X3_2	0,841**	0,196	Valid
X3_3	0,857**	0,196	Valid
X3_1	0,852**	0,196	Valid
X3_2	0,841**	0,196	Valid
X3_3	0,857**	0,196	Valid
X5_1	0,901**	0,196	Valid
X5_2	0,872**	0,196	Valid
X5_3	0,901**	0,196	Valid

The validity test results indicate that all independent variables, namely Individual Knowledge (X2), Individual Attitude (X3), Social Media Exposure (X4), and Self-Efficacy in Using Social Media (X5), have significant correlations at a 95% confidence level. The calculated r-values for all questionnaires are statistically significant, ranging from 0.788 to 0.901, while the r-table value for df = 269 is 0.196. This indicates that these variables effectively measure the intended constructs, and the results are reliable for representing these variables in the study. These findings support the use of the questionnaire to evaluate individual knowledge, individual attitude, social media exposure, and self-efficacy in using social media related to smoking behavior in the studied population. Thus, these results provide a strong foundation for further analysis of the relationship between these factors and adolescent smoking behavior in the studied area.

Univariate Analysis

Table 2. Univariate Analysis

No.	Variables	Category	f	%
1	Smoking Behavior	No Smoking	149	55,0
		Smoking	122	45,0
2	Age	10	29	10,7

		11	26	9,6
		12	33	12,2
		13	30	11,1
		14	30	11,1
		15	33	12,2
		16	27	10,0
		17	32	11,8
		18	31	11,4
3	Individual Knowledge	Bad	133	49,1
		Good	138	50,9
4	Individual Attitude	Bad	107	39,5
		Good	164	60,5
5	Social Media Exposure	Rare	107	39,5
		Often	164	60,5
6	*Self-efficacy*	Bad	103	38,0
		Good	168	62,0

The table provides an overview of the characteristics of respondents in this study through univariate analysis. First, there were 271 respondents divided between those who did not smoke and those who smoked. Of the total number, 149 respondents (54.98%) stated that they did not smoke, while 122 respondents (45.02%) admitted that they smoked.

Furthermore, data on the age of the respondents showed an even distribution across various age groups from 10 to 18 years. The most represented age groups were 12 and 15 years old, each with 33 respondents (12.18%). Among the other age groups, there was a relatively uniform variation, with the number of respondents ranging from 26 to 33 in each age group. More specifically, the number of respondents for each age group is as follows: 10 years (29 respondents or 10.70%), 11 years (26 respondents or 9.59%), 13 years (30 respondents or 11.07%), 14 years (30 respondents or 11.07%), 16 years (27 respondents or 9.96%), 17 years (32 respondents or 11.81%), and 18 years (31 respondents or 11.44%).

Individual attitudes towards smoking were also studied in this study. The majority of respondents (164 or 60.52%) had a favorable attitude towards smoking, while 107 respondents (39.48%) showed a less favorable attitude towards the behavior.

In addition, social media exposure to content about smoking was also examined. It was found that the majority of respondents (164 or 60.52%) claimed to be frequently exposed to content about the dangers of smoking on social media.

Finally, *self-efficacy* in using social media to reduce/prevent smoking was also assessed. Most respondents (168 or 61.99%) stated that they have good *self-efficacy* in using social media for this purpose.

Bivariate Analysis

Relationship between Age and Smoking Behavior

Table 3. Relationship between Age and Smoking Behavior

Age	Smoking Behavior		*p-value*
	No Smoking	Smoking	
10	13	16	0,388
11	16	10	

509

12	17	16	
13	14	16	
14	20	10	
15	22	11	
16	16	11	
17	18	14	
18	13	18	
Total	149	122	

The table shows the frequency distribution between age and smoking behavior, as well as the *p-value* which reflects the statistical significance of the relationship between the two variables.

From the results of the analysis, it is apparent that the frequency distribution of smoking behavior varies among age groups. For example, in the 14-year age group, there were 20 respondents who did not smoke and 10 respondents who smoked. Meanwhile in the 15-year age group, there were 22 respondents who did not smoke and 11 respondents who smoked. This pattern continued across age groups, indicating variations in smoking behavior among different age groups.

Furthermore, the statistical test results (chi-square) were obtained with a *p-value of* 0.388. This means that H0 is accepted and Ha is rejected. So it can be concluded that there is no significant relationship between age and smoking behavior at the 0.05 level of significance. This suggests that possible variations in smoking behavior are not significantly associated with age differences among respondents.

The results of interviews in the field showed that some respondents, including 10-year-old children, said that the reason for using cigarettes was modeling from other people, including peers who smoke. This is in line with Ramadhani et al. research (2021) which highlights the factors that influence the tendency of children to try smoking, including 10-year-old children, are social factors, environmental influences, and parental behavior models are the main factors that influence the tendency of children to try smoking.

This is different from the research conducted by Putri & Adiwiryono (2020) which showed that age correlated with smoking behavior, while in the research the researchers did there was no correlation. Factors such as culture, social environment, and economic factors can play a significant role in shaping smoking behavior among adolescents. Therefore, it is important to consider the broader context in interpreting these findings.

Although there was no significant relationship between age and smoking behavior in this study, this does not reduce the urgency to continue to make prevention and intervention efforts against smoking among adolescents.

This is in line with Lawrence Green's theory which states that age (which is included in a person's demographic characteristics) is a predisposing/enabling factor, which can enable or facilitate behavior or action.

Relationship between Individual Knowledge and Smoking Behavior

Table 4. The Relationship between Individual Knowledge and Smoking Behavior

Individual Knowledge	Smoking Behavior		*p-value*
	No Smoking	**Smoking**	
Bad	39	94	
Good	110	28	0,001
Total	**149**	**122**	

Bivariate analysis was also conducted to explore the relationship between the variables of individual knowledge and smoking behavior in respondents. The table presented shows the frequency distribution between individual knowledge (divided into two categories: Poor and Good) and smoking behavior (divided into two categories: No Smoking and Smoking), as well as the *p-value* reflecting the statistical significance of the relationship between the two variables.

From the results of the analysis, it appears that the frequency distribution of smoking behavior differs significantly between groups with poor and good individual knowledge. For example, in the group with poor individual knowledge, there were 39 respondents who did not smoke and 94 respondents who smoked. Meanwhile, in the group with good individual knowledge, there were 110 respondents who did not smoke and only 28 respondents who smoked.

The statistical test results show a *p-value of* 0.001. This means that H0 is rejected and Ha is accepted. This value indicates that there is a significant relationship between individual knowledge about the dangers of smoking and smoking behavior at the 0.05 level of significance. This confirms that respondents with good individual knowledge tend to have lower smoking behavior compared to respondents who have poor individual knowledge.

This is in line with the research of Umari et al. (2020) which shows that individual knowledge is related to smoking behavior. This emphasizes the importance of increasing public understanding of the dangers of smoking as one of the main strategies in efforts to prevent and control smoking among adolescents.

The Relationship between Individual Attitudes and Smoking Behavior

Table 5. The Relationship between Individual Attitudes and Smoking Behavior

Individual Attitude	Smoking Behavior		p-value
	No Smoking	Smoking	
Bad	36	71	
Good	113	51	0,001
Total	**149**	**122**	

Bivariate analysis was conducted to explore the relationship between individual attitude variables and smoking behavior in respondents. The table presented shows the frequency distribution between individual attitude (divided into two categories: Poor and Good) and smoking behavior (divided into two categories: No Smoking and Smoking), as well as the *p-value* reflecting the statistical significance of the relationship between the two variables.

From the results of the analysis, it appears that the frequency distribution of smoking behavior differs significantly between groups with poor and good individual attitudes. For example, in the group with poor individual attitudes, there were 36 respondents who did not smoke and 71 respondents who smoked. Meanwhile, in the group with good individual attitudes, there were 113 respondents who did not smoke and 51 respondents who smoked.

The statistical test results show a *p-value of* 0.001. This value indicates that there is a significant relationship between individual attitudes towards smoking and smoking behavior at the 0.05 level of significance. This means that respondents with good individual attitudes tend to have lower smoking behavior compared to respondents who have poor individual attitudes towards smoking.

The results of interviews with respondents in the field show that many factors that explain why adolescents tend not to try to quit smoking are *peer attachment*, stress, and parenting. This is in line with Safitri et al. (2013) research using social theory which emphasizes the influence of the social environment, peers, family and media.

This finding is consistent with the research of Utari et al. (2020) which shows that individual attitudes towards smoking play an important role in determining smoking behavior. This confirms that the formation of a positive attitude towards smoking behavior can be an effective strategy in reducing the prevalence of smoking among adolescents.

Relationship between Social Media Exposure and Smoking Behavior

Table 6. Relationship between Social Media Exposure and Smoking Behavior

Social Media Exposure	Smoking Behavior		p-value
	No Smoking	Smoking	
Rare	41	66	
Often	108	56	0,001
Total	**149**	**122**	

The table shows the frequency distribution between social media exposure (divided into two categories: Rarely and Often) and smoking behavior (divided into two categories: Not Smoking and Smoking), as well as the *p-value* which reflects the statistical significance of the relationship between the two variables.

From the results of the analysis, it can be seen that the frequency distribution of smoking behavior differs significantly between groups with infrequent and frequent exposure to social media content on the dangers of smoking. For example, in the group with infrequent social media exposure to the content of the dangers of smoking, there were 41 respondents who did not smoke and 66 respondents who smoked. Meanwhile, in the group with frequent social media exposure to such content, there were 108 respondents who did not smoke and 56 respondents who smoked.

The statistical test results showed a *p-value of* 0.001, confirming a significant relationship between social media exposure to smoking hazard content and smoking behavior at the 95% confidence level. This is in line with Lawrence Green's Behavior Change Theory which emphasizes the role of environmental factors, including social media, in shaping health behavior. This study shows that frequent exposure to hazardous smoking content on social media can reduce the risk of smoking behavior in adolescents, while infrequent exposure tends to increase smoking behavior in adolescents.

This research is in line with the research of Utari et al. (2020) which showed a correlation between social media exposure and smoking behavior. Therefore, in an effort to change smoking behavior, there is a need for intervention strategies that pay attention to the influence of social media exposure as one of the environmental factors that can affect adolescent health behavior.

The results of research in the field show that exposure to smoking-related social media content is very large, with 152 respondents (56.08%) stating that they often see content that shows the negative effects of smoking on social media. Most respondents (56.08%) stated that they often found content containing prohibitions about smoking on social media. And 53.13% of respondents stated that they often found content depicting unhealthy lifestyles due to smoking on social media.

Relationship between Self-efficacy and Smoking Behavior

Table 7. Relationship between Self-efficacy and Smoking Behavior

Self-efficacy	Smoking Behavior		p-value
	No Smoking	Smoking	
Bad	24	79	
Good	125	43	0,001

512

Total	**149**	**122**	

Bivariate analysis was conducted to explore the relationship between the variables of *self-efficacy* and smoking behavior in respondents. The table presented shows the frequency distribution between *self-efficacy* (divided into two categories: Poor and Good) and smoking behavior (divided into two categories: No Smoking and Smoking), as well as the *p-value* which reflects the statistical significance of the relationship between the two variables.

From the results of the analysis, it appears that the frequency distribution of smoking behavior differs significantly between groups with poor and good *self-efficacy*. For example, in the group with poor self-efficacy, there were 24 respondents who did not smoke and 79 respondents who smoked. Meanwhile, in the group with good self-efficacy, there were 125 respondents who did not smoke and 43 respondents who smoked.

The statistical test results show a *p-value of* 0.001. This value indicates that there is a significant relationship between *self-efficacy* and smoking behavior at the 0.05 significance level. This means that respondents with good self-efficacy tend to have lower smoking behavior compared to respondents who have poor *self-efficacy*.

This research is in line with the research of Al Thani et al. (2022) which shows a correlation between *self-efficacy* and smoking behavior. This suggests that the level of individual self-efficacy in overcoming the challenges and barriers associated with smoking cessation has a significant impact on smoking behavior. Thus, the development of intervention programs that increase *self-efficacy is* expected to help reduce the prevalence of smoking behavior in the population concerned.

Conclusion

In this study, the bivariate analysis results reveal a significant relationship between several factors and smoking behavior among adolescents. The findings indicate that individual knowledge of the dangers of smoking, individual attitudes toward smoking, social media exposure to content about the dangers of smoking, and levels of self-efficacy, all have significant correlations with smoking behavior at a 95% confidence level. These findings support the importance of understanding and managing these factors in efforts to prevent and control smoking among adolescents.

In conclusion, increasing knowledge, fostering supportive attitudes, managing social media exposure, and enhancing self-efficacy can be effective strategies in reducing the prevalence of smoking behavior among adolescent populations. In this regard, a sound and evidence-based approach such as that proposed by Lawrence Green's Behavior Change Theory can aid in designing more effective interventions to address the issue of smoking behavior among adolescents. Therefore, collective efforts from various stakeholders, including government, educational institutions, and the general public, are needed to create an environment supportive of changing smoking behavior and improving adolescent health overall.

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