The Association between Peer Influence and Family Environment and Smoking Behavior among Adolescents

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ABSTRACT/ ABSTRAK

ABSTRACT. *Smoking behavior among adolescents constitutes a serious public health concern due to its adverse health effects and its rapid increase among school-aged populations. Adolescents are particularly susceptible to social environmental influences, especially peer influence and the family environment, which may encourage experimentation with smoking and the development of smoking behavior. This study aimed to examine the association between peer influence and family environment and smoking behavior among adolescents at Public Senior High School 4 Banjarmasin. This study employed a quantitative design with a cross-sectional approach. The population consisted of 308 tenth-grade students, and a sample of 175 respondents was selected using simple random sampling. Data were collected using a questionnaire that had undergone validity and reliability testing. The Chi-square test results indicated a significant association between peer influence and smoking behavior (p = 0.001) as well as between family environment and smoking behavior (p = 0.002). Negative peer influence functioned as a protective factor against adolescent smoking behavior, whereas positive peer influence and a family environment with smoking family members increased the risk of smoking initiation. These findings underscore the importance of education, supervision, and active involvement of families and schools in efforts to prevent smoking behavior among adolescents.*

ABSTRAK. Perilaku merokok pada remaja merupakan permasalahan serius karena berdampak buruk bagi kesehatan dan berkembang pesat di kalangan usia sekolah. Remaja cenderung mudah terpengaruh oleh lingkungan sosial, terutama teman sebaya dan keluarga, yang dapat mendorong mereka mencoba dan membentuk kebiasaan merokok. Penelitian ini bertujuan untuk mengetahui hubungan teman sebaya dan lingkungan keluarga dengan perilaku merokok pada remaja di SMA Negeri 4 Banjarmasin. Desain penelitian ini adalah kuantitatif dengan pendekatan cross-sectional. Populasi berjumlah 308 siswa kelas X, dan sampel sebanyak 175 responden diperoleh melalui teknik simple random sampling. Data dikumpulkan menggunakan kuesioner yang telah melalui uji validitas dan reliabilitas. Hasil uji Chi-Square menunjukkan terdapat hubungan signifikan antara teman sebaya dengan perilaku merokok (p = 0,001) dan antara lingkungan keluarga dengan perilaku merokok (p = 0,002). Teman sebaya negatif berfungsi sebagai faktor protektif terhadap perilaku merokok remaja, sedangkan teman sebaya positif dan lingkungan keluarga dengan anggota yang merokok meningkatkan risiko inisiasi merokok. Temuan ini menekankan pentingnya edukasi, pengawasan, dan keterlibatan aktif keluarga serta sekolah dalam upaya pencegahan merokok pada remaja.

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INTRODUCTION

Smoking behavior among adolescents is a serious public health problem because it has adverse effects on physical health and contributes to high global mortality rates. Smoking at a young age can lead to nicotine dependence; therefore, even when adolescents are aware of the dangers of smoking, they often find it difficult to quit (Yanti et al., 2022). The high prevalence of smoking among adolescents highlights the urgent need for targeted interventions to prevent this behavior from becoming more widespread (Reitsma et al., 2021).

Data from the Indonesian Health Survey (Survei Kesehatan Indonesia, SKI, 2023) indicate that approximately 7.4 percent of adolescents aged 10 to 18 years are active smokers, with the highest proportion observed in the 15 to 19 year age group, accounting for 56.5 percent (Ministry of Health of the Republic of Indonesia, 2024). In South Kalimantan, the proportion of smokers aged 15 years and older showed a fluctuating trend between 2021 and 2023, with a prevalence of around 22 percent (Statistics Indonesia, 2024). These figures suggest that adolescents in local settings, including Banjarmasin City, are at high risk of engaging in smoking behavior.

Adolescents are strongly influenced by their social environment, particularly peer influence and the family environment. Peers may encourage adolescents to experiment with smoking and develop smoking behavior, while the family environment, including parents and relatives who smoke, can further reinforce this behavior (Mohd Fohid & Sarnon, 2023; Anindya Dayfi et al., 2024). Social learning theory emphasizes that adolescents tend to imitate behaviors observed in people around them, making social interaction a key factor in the formation of smoking behavior.

Findings from a preliminary study conducted at Public Senior High School 4 Banjarmasin revealed that most students had direct exposure to peers or family members who smoke. Of the 20 students interviewed, 14 reported smoking behavior, either due to peer encouragement or family influence (Interview Data, December 16, 2024). This condition makes Public Senior High School 4 Banjarmasin a relevant setting for examining the influence of social factors on adolescent smoking behavior.

Environmental factors play an important role in adolescent smoking behavior, including social interactions, cultural norms, and the ease of access to cigarettes. The presence of peers, family members, and cigarette retailers around residential areas or schools increases the likelihood of adolescents smoking, as surrounding social norms tend to normalize this behavior (Maki et al., 2022; Aristi et al., 2024).

Previous studies have demonstrated associations between peer influence, family environment, and smoking behavior. Adolescents living in family environments with active smokers are more likely to imitate such behavior, with 64.1 percent of adolescent smokers reported to have parents who smoke (Anindya Dayfi et al., 2024). However, many previous studies were descriptive in nature or conducted in different locations, leaving a research gap in understanding social factors influencing smoking behavior within local contexts.

This study offers novelty in terms of location, school context, and student characteristics. By employing a quantitative approach, this study is able to measure the strength of associations between variables and provide a more comprehensive understanding compared with previous research (Kurniawan & Ayu, 2023; Aizam, 2022). The study also

emphasizes the importance of family based and school based interventions to reduce smoking behavior among adolescents.

Based on the above considerations, this study aimed to examine the association between peer influence, family environment, and smoking behavior among adolescent students at Public Senior High School 4 Banjarmasin. The findings are expected to serve as a basis for health education interventions, family supervision, and school policies, while also providing opportunities for future research to explore other factors influencing adolescent smoking behavior.

RESEARCH METHOD

This study employed a quantitative design with a cross sectional and correlational approach to analyze the association between peer influence and family environment and smoking behavior among adolescents at Public Senior High School 4 Banjarmasin. The study population consisted of 308 tenth grade students, with a sample of 175 respondents selected using simple random sampling and the Slovin formula. The independent variables were peer influence and family environment, while the dependent variable was smoking behavior, which was measured based on frequency, intensity, motivation, and consequences.

The research instrument was a questionnaire using an ordinal scale, consisting of 16 items for peer influence, 20 items for family environment, and 16 items for smoking behavior, with response scores of "Yes" equal to 2 and "No" equal to 1. Validity testing was conducted on 30 eleventh grade students outside the study sample, and all items were declared valid. Reliability testing using Cronbach's Alpha showed values of 0.802 for peer influence, 0.852 for family environment, and 0.919 for smoking behavior, indicating that the instrument was reliable. Data were collected through face to face administration from April to June 2025, with informed consent procedures applied to ensure voluntary participation.

Data processing included editing, coding, data entry, cleaning, and tabulation. Univariate analysis was used to describe respondent characteristics, while bivariate analysis employed the Chi Square test to assess associations between variables with a significance level of 0.05. Throughout the study, ethical principles such as informed consent, anonymity, confidentiality, beneficence, and justice were applied to protect the rights and well being of the participants.

RESULTS

Respondent Characteristics

Table 1. Distribution of Respondents by Sex

No	Sex	Frequency (n)	Percentage (%)
1	Male	79	45.1
2	Female	96	54.9
	Total	175	100.0

Based on Table 1, the majority of respondents were female, with 96 students (54.9 percent), compared with 79 male students (45.1 percent).

Table 2. Distribution of Respondents by Age

No.	Age (years)	Frequency (n)	Percentage (%)
1	15	23	13.1
2	16	126	72.0
3	17	26	14.9
	Total	175	100.0

Based on Table 2, most respondents were 16 years old, totaling 126 students (72.0 percent), followed by those aged 17 years with 26 students (14.9 percent) and those aged 15 years with 23 students (13.1 percent).

Univariate Analysis

Table 3. Frequency Distribution of Peer Influence

Variable	Category	Frequency (n)	Percentage (%)
Peer Influence	Negative	141	80.6
	Positive	34	19.4
Total		175	100.0

Based on Table 3, most respondents were categorized as having negative peer influence, defined as peers who do not smoke or do not support or encourage smoking behavior, totaling 141 respondents (80.6 percent). Meanwhile, 34 respondents (19.4 percent) were categorized as having positive peer influence, referring to peers who smoke or tend to support or encourage smoking behavior.

Table 4. Frequency Distribution of Family Environment

Variable	Category	Frequency (n)	Percentage (%)
Family Environment	Negative	26	14.9
	Positive	149	85.1
Total		175	100.0

Table 4 shows that most respondents were categorized as having a positive family environment, with 149 respondents (85.1 percent). Respondents with a negative family environment accounted for 26 individuals (14.9 percent).

Table 5. Frequency Distribution of Smoking Behavior

Variable	Category	Frequency (n)	Percentage (%)
Smoking Behavior	Negative	157	89.7
	Positive	18	10.3
Total		175	100.0

Based on Table 5, the majority of respondents exhibited negative smoking behavior, with 157 respondents (89.7 percent). In contrast, 18 respondents (10.3 percent) were categorized as having positive smoking behavior.

Bivariate Analysis

Table 6. Cross Tabulation of Peer Influence and Smoking Behavior

Peer Influence	Smoking Behavior		Total
	Negative	Positive	
Negative	132 (93.6%)	9 (6.4%)	141
Positive	25 (73.5%)	9 (26.5%)	34

Total	157 (89.7%)	18 (10.3%)	175 (100.0%)

Based on Table 6, among 141 respondents with negative peer influence, most respondents, totaling 132 individuals (93.6 percent), exhibited negative smoking behavior, while only 9 respondents (6.4 percent) demonstrated positive smoking behavior. Among the 34 respondents with positive peer influence, 25 respondents (73.5 percent) showed negative smoking behavior; however, the proportion of respondents with positive smoking behavior was considerably higher, totaling 9 respondents (26.5 percent). According to the peer influence questionnaire, items indicating negative peer influence were questions 3, 10, 14, and 15.

Table 7. Chi Square Test Results for Peer Influence and Smoking Behavior

Statistic	Value	df	Asymptotic significance (2-sided)
Pearson Chi-Square	11.979	1	0.001
N of Valid Cases			175

The Pearson Chi Square test showed a chi square value of 11.979 with 1 degree of freedom and an asymptotic significance value of 0.001. Because the p value of 0.001 was less than 0.05, it can be concluded that there was a statistically significant association between peer influence and smoking behavior.

Table 8. Cross Tabulation of Family Environment and Smoking Behavior

Family Environment	Smoking Behavior		Total
	Negative	Positive	
Negative	19 (73.1%)	7 (26.9%)	26
Positive	138 (92.6%)	11 (7.4%)	149
Total	157 (89.7%)	18 (10.3%)	175 (100.0%)

Based on Table 8, among 26 respondents with a negative family environment, 19 respondents (73.1 percent) exhibited negative smoking behavior, while 7 respondents (26.9 percent) showed positive smoking behavior. Among the 149 respondents with a positive family environment, most respondents, totaling 138 individuals (92.6 percent), exhibited negative smoking behavior, while 11 respondents (7.4 percent) demonstrated positive smoking behavior. According to the family environment questionnaire, items indicating a positive family environment were questions 11, 12, 13, and 14.

Table 9. Chi Square Test Results for Family Environment and Smoking Behavior

Statistic	Value	df	Asymptotic significance (2-sided)
Pearson Chi-Square	9.160	1	0.002
N of Valid Cases			175

Based on Table 9, the Pearson Chi Square value was 9.160 with an asymptotic significance value of 0.002. Because the p value of 0.002 was less than 0.05, it can be concluded that there was a statistically significant association between family environment and smoking behavior.

DISCUSSION

The Influence of Peer Influence on Smoking Behavior

The results of this study indicate that the majority of adolescents at Public Senior High School 4 Banjarmasin were exposed to negative peer influence related to smoking, accounting for 80.6 percent, while 19.4 percent were exposed to positive peer influence. Based on the cross tabulation results in Table 6, among 141 respondents with negative peer influence, most respondents, totaling 132 individuals (93.6 percent), exhibited negative smoking behavior, while 9 respondents (6.4 percent) showed positive smoking behavior. In contrast, among 34 respondents with positive peer influence, 25 respondents (73.5 percent) demonstrated negative smoking behavior, whereas a substantially higher proportion, namely 9 respondents (26.5 percent), exhibited positive smoking behavior.

The Chi Square test results revealed a statistically significant association between peer influence and smoking behavior, with a chi square value of 11.979 and a p value of 0.001. These findings indicate that peer influence plays an important role in the formation of adolescent smoking behavior. Negative peer influence functions as a protective factor that reduces the risk of smoking behavior, whereas positive peer influence increases the likelihood of adolescents engaging in smoking behavior. This finding is consistent with peer conformity theory, which suggests that adolescents tend to imitate the behaviors of their peer groups, particularly when their self concept has not yet fully developed (Parawansa and Nasution, 2022).

Other studies also support these findings. Pratama et al. (2021) reported that 93.7 percent of adolescents were influenced by peers in their smoking behavior. Widianingtyas (2023) emphasized that close relationships with peers increase the risk of engaging in risky behaviors, including smoking. Putu Lilik Wahyuningsih et al. (2023) further demonstrated that interactions within peer environments strongly influence adolescents' tendencies to experiment with smoking, particularly during the process of identity formation. Confounding factors such as age, sex, and exposure to social media may also affect this relationship, with male adolescents being more vulnerable to peer pressure than females (Sholihah and Novita, 2021).

Several additional studies further confirm the significant influence of peers. Research conducted in Gang Jembar, Depok City, showed a strong association between peer influence and smoking behavior, with an odds ratio of 209 (Aisyiah et al., 2022). A meta analysis revealed that adolescents with smoking peers were 13.74 times more likely to smoke compared with those without smoking peers (Azzahro et al., 2022). Furthermore, a study conducted at a junior high school found a significant association between peer behavior and smoking behavior among male adolescents, emphasizing the importance of monitoring peer interactions to prevent smoking initiation (Nurlela and Pranoto, 2024).

Although peer influence has a strong impact, other factors such as parental influence, cigarette advertising, and academic stress also contribute to adolescent smoking behavior (Hasanah and Sulastri, 2011; Firmansyah, 2009; Hakim and Azizah, 2025). Therefore, intervention strategies should focus on strengthening adolescents' ability to resist peer pressure, promoting self efficacy in controlling smoking behavior, and integrating the roles of other influential factors such as parents and cigarette advertising (Lee and Tak, 2005; Anggraini et al., 2025; Derniati et al., 2025).

The Influence of Family Environment on Smoking Behavior

Most adolescents in this study were exposed to a positive family environment, defined as families with members who smoke, accounting for 85.1 percent of respondents. Based on the cross tabulation results in Table 8, among 149 respondents with a positive family environment, 138 respondents (92.6 percent) exhibited negative smoking behavior, while 11 respondents (7.4 percent) showed positive smoking behavior. Among the 26 respondents with a negative family environment, 19 respondents (73.1 percent) demonstrated negative smoking behavior, whereas 7 respondents (26.9 percent) exhibited positive smoking behavior.

The Chi Square test results indicated a statistically significant association between family environment and smoking behavior, with a chi square value of 9.160 and a p value of 0.002. This finding is consistent with evidence suggesting that smoking behavior among parents or siblings is a strong predictor of adolescent smoking behavior (Leiner et al., 2008; Gregoire et al., 2016). The family environment may also serve as a protective factor through supportive interactions, open communication, positive parenting practices, active supervision, family cohesion, and the implementation of smoke free home environments (Safitri and Siregar, 2022; Auliarrahma et al., 2024; Fitri et al., 2024).

The quality of parent child relationships, family structure, and parenting styles also influence smoking behavior. Adolescents from single parent households or those living without parents have a higher risk of smoking compared with those from intact families (Razaz Rahmati et al., 2012; Zhao et al., 2021). Dysfunctional parenting, interparental conflict, and exposure to second hand smoke increase the risk of smoking, whereas effective parenting, clear family rules, and strong emotional closeness function as protective factors (Deng et al., 2022; Joung et al., 2016; Kim and Chun, 2018).

These findings are consistent with previous studies emphasizing that adolescents living in families with smoking members are more likely to imitate such behaviors, while supportive parenting and open communication play protective roles (Hidayati and Arianto, 2024; Hasanah et al., 2025; Dewi, 2022; Marita and Yansyah, 2023). Overall, these results support Bronfenbrenner's ecological theory, which highlights the importance of the family microsystem in shaping adolescent behavior.

Adolescent Smoking Behavior

Most adolescents in this study exhibited negative smoking behavior, with 157 respondents (89.7 percent), while 18 respondents (10.3 percent) demonstrated positive smoking behavior. Although the prevalence of positive smoking behavior was relatively low, this finding remains important because adolescence represents an early phase in habit formation with long term consequences (Yunanda et al., 2023; Hendra Setyoko et al., 2024).

Adolescent smoking behavior is influenced by a combination of social, psychological, and demographic factors. Peer influence and family members who smoke increase the risk of smoking behavior, while psychological factors such as emotional stress and involvement in other risk behaviors, including alcohol use, drug use, and sexual risk behavior, also contribute to smoking behavior (Cruz et al., 2020; Escobedo et al., 1997; Gentzke et al., 2022). Demographic factors, including sex, age, educational level, and financial access, further increase the likelihood of adolescent smoking (Moeini et al., 2012; Malcon et al., 2003; Lakshmi et al., 2023). Perceptions of smoking as a symbol of social status, maturity, or

emotional regulation also heighten the risk of repeated smoking behavior (Siburian and Siahaan, 2022; Ade Ismayanti et al., 2024).

Implications

From a theoretical perspective, these findings strengthen Bronfenbrenner's ecological developmental theory by emphasizing the roles of peer influence and family environment in shaping adolescent behavior. This study contributes to the literature on predictors of adolescent smoking behavior by highlighting peer influence and family environment as key variables for future research and intervention.

From a practical perspective, smoking prevention programs should actively involve families through education on the harmful effects of smoking, the promotion of non smoking role models, and the implementation of effective communication strategies. Schools should conduct screening and counseling for students at high risk of smoking. Collaboration among schools, families, and public health institutions is essential to strengthen the creation of smoke free environments and to support sustainable healthy lifestyles among adolescents.

CONCLUSION

The findings of this study indicate that peer influence and family environment have a statistically significant association with smoking behavior among adolescents at Public Senior High School 4 Banjarmasin. Negative peer influence serves as a protective factor against smoking behavior, whereas positive peer influence and family environments with smoking members increase the risk of smoking initiation. Most adolescents exhibited negative smoking behavior; however, the presence of a subgroup with positive smoking behavior highlights the need for sustained and continuous preventive interventions.

Based on these findings, schools are encouraged to implement health education programs that emphasize the harmful effects of smoking, provide counseling services for students at high risk, and create smoke free school environments. Families are expected to model non smoking behavior, enhance open communication regarding the dangers of smoking, and actively monitor adolescents' behavior. Synergistic collaboration between schools and families is expected to strengthen the prevention of adolescent smoking behavior and support the development of healthy lifestyles from an early age.

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