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Self-concept and smoking behaviour among male junior high school students

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Abstract

Background: Adolescent smoking is a public health concern that may be influenced by psychological and social factors, including self-concept.
Purpose: To examine the association between self-concept and smoking behaviour among male junior high school students.
Method: A quantitative study with a descriptive-correlational design and a cross-sectional approach was conducted involving 57 ninth-grade male students at Junior High School 1 Kartasura, Sukoharjo, Indonesia. Participants were selected using proportionate stratified random sampling. Data were collected using self-concept and smoking behaviour questionnaires and analysed using univariate analysis and Kendall's Tau correlation test.
Results: The findings showed that most respondents had a negative self-concept (39; 68.4%), while light smoking was the most prevalent category of smoking behaviour (27; 47.4%). Statistical analysis revealed a significant positive association between the numerical scores of self-concept and smoking behaviour ($\tau = 0.329$; $p = 0.011$).
Conclusion: These findings indicate an association between the two variables, although the direction of their substantive relationship requires consideration of the scoring procedures used. The study highlights the relevance of psychological and social factors in adolescent smoking prevention.

Keywords: Adolescents; Self-Concept; Smoking Behaviour.

INTRODUCTION

Adolescence is a transitional developmental period characterized by substantial physical, psychological, emotional, and social changes. During this period, adolescents begin to develop their identity, understand social roles, establish relationships with others, and recognize their strengths and limitations (Amira et al., 2023). These developmental changes may influence adolescents' emotional responses, self-perception, interpersonal relationships, and behavioural choices. Therefore, adolescence represents an important period for the development of healthy psychological and behavioural patterns. Unhealthy behaviours that emerge during this period may persist into adulthood and adversely affect individual well-being (Suharti & Marliyana, 2025). Smoking is one of the health-risk behaviours that may emerge during adolescence. According to the World Health Organization (WHO), approximately 1.3 billion people worldwide are adolescents aged 10–19 years. In Indonesia, the number of adolescents aged 15–19 years reached approximately 22.2 million in 2021. In Central Java, the population aged 10–19 years reached approximately 5.54 million in 2023. Adolescents are particularly vulnerable to engaging in risk behaviours, including smoking (Manoppo, 2023). Data from the 2023 Indonesian Health Survey (IHS) indicated that adolescents aged 15–19 years represented the largest proportion of smokers, at 56.5%, followed by those aged 10–14 years at 18.4%. The high prevalence of smoking among adolescents indicates that smoking remains an important public health concern, particularly among school-aged populations.

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Smoking behaviour may negatively affect both individual and community health. Adolescents are susceptible to environmental influences, including peer invitations, family smoking habits, and access to cigarettes, which may contribute to the initiation and continuation of smoking behaviour. Some adolescents may perceive smoking as a symbol of maturity, strength, leadership, or social acceptance, while others may associate smoking with relaxation and improved concentration. However, smoking is associated with various adverse health outcomes, including cardiovascular disease, cancer, and respiratory disorders. Smoking behaviour among students may also interfere with healthy development and academic functioning. Preventive efforts, therefore, require health education, supportive school environments, and the implementation of smoke-free school policies (Yunarman et al., 2025). The persistence of smoking behaviour among adolescents also makes it an important behavioural health issue because smoking may be difficult to discontinue once established and may produce long-term negative consequences (Kristiani & Ricky, 2023).

In addition to environmental and social influences, psychological factors may contribute to adolescents' smoking behaviour. One psychological factor that warrants attention is self-concept. Self-concept is an important component of personality that influences how individuals perceive themselves, respond to life situations, and interact with others (Rahmawati et al., 2025). It refers to an individual's perception of their abilities, characteristics, behaviour, experiences, aspirations, and relationships with the surrounding environment (Azhar & Handayani, 2021). A positive self-concept may support adaptive decision-making and healthy interpersonal relationships, whereas a negative self-concept may be associated with vulnerability to maladaptive behaviours. Previous research has demonstrated a relationship between self-concept and smoking behaviour among adolescents, with poorer self-concept being associated with a greater tendency toward smoking behaviour (Miranda et al., 2020).

The relationship between self-concept and smoking behaviour is particularly relevant in the school environment because adolescence is a critical period for identity formation and the development of behavioural patterns. Students who have difficulties in developing a positive perception of themselves may be more vulnerable to social influences and may use smoking as a means of gaining acceptance, expressing identity, or coping with personal and social pressures. Consequently, understanding the relationship between self-concept and smoking behaviour may contribute to the development of more comprehensive mental health promotion and smoking prevention programs among adolescents. A preliminary study conducted on October 7, 2025, at Junior High School 1 Kartasura, Sukoharjo, found that smoking behaviour was still present among students in the school environment. An interview with the school guidance and counselling teacher indicated that some students were known to smoke. Interviews with 10 students further indicated that two students reported smoking because of smoking habits observed among their parents at home, while five students reported consuming approximately one cigarette per day. Some students also expressed a desire to become better individuals and reported feeling less confident when smoking alone. These preliminary findings suggest that smoking behaviour among students may involve both environmental influences and psychological aspects related to self-perception and confidence.

RESEARCH METHOD

This study employed a quantitative approach with a descriptive-correlational design and a cross-sectional approach. The study was conducted among male ninth-grade students at Junior High School 1 Kartasura, Sukoharjo, Indonesia. The cross-sectional design was used to examine the relationship between self-concept and smoking behaviour by measuring both variables during the same data-collection period. The study population consisted of 135 male ninth-grade students. A total of 57 respondents were selected using the Slovin formula and proportionate stratified random sampling. The number of respondents from each ninth-grade class was determined proportionally according to the number of students in each class. Respondents were selected based on predetermined inclusion criteria and participated voluntarily in the study.

Data were collected using two structured questionnaires: a self-concept questionnaire and a smoking behaviour questionnaire. The self-concept questionnaire had item validity coefficients ranging from 0.361 to 0.387 and a Cronbach's alpha reliability

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coefficient of 0.846. The smoking behaviour questionnaire had item validity coefficients ranging from 0.521 to 0.722 and a Cronbach's alpha reliability coefficient of 0.760. Both questionnaires were administered directly to the selected respondents during the data-collection period. Before completing the questionnaires, the researchers explained the study objectives, procedures, confidentiality of information, and respondents' rights. Participation was voluntary, and respondents were informed that they could decline participation or withdraw from the study without consequences. Completed questionnaires were checked for completeness before statistical analysis.

Data were analysed using univariate and bivariate analyses. Univariate analysis was used to describe respondent characteristics and the distribution of self-concept and smoking behaviour using frequencies and percentages. Bivariate analysis was performed to examine the relationship between self-concept and smoking behaviour using Kendall's Tau correlation test. Statistical significance was determined at an alpha level of 0.05, with a p-value of less than 0.05 considered statistically significant. The study received ethical clearance from the Ethics Committee of the Faculty of Medicine, Universitas Muhammadiyah Surakarta, under ethical clearance number 6172/B.1/KEPK-FKUMS/II/2026.

RESEARCH RESULTS

Table 1. Characteristics of Respondents (N = 57)

Variable	Results	P *Value*	T
Age (n/%)(Mean±SD)(Range)(Year)	**(14.40±0.49)(14-15)**		
14	34/59.6		
15	23/40.4		
Gender (n/%)			
Male	57/100.0		
Female	0/0.0		
Type of Cigarette (n/%)			
Non-Smoker	13/22.8		
Electronic Cigarette	12/21.1		
White Cigarette	32/56.1		
Cigarette Use Characteristics (n/%)			
Non-Smoker	13/22.8		
Electronic Cigarette	12/21.1		
1-10 Cigarette per Day	30/52.6		
11-20 Cigarette per Day	2/3.5		
Family Smoking History (n/%)			
No	24/42.1		
Yes	33/57.9		
Self-Concept (n/%)		0.011	0.329
Positive	18/31.6		
Negative	39/68.4		
Smoking Behaviour (n/%)			
Non-Smoker	13/22.8		

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Light	27/47.4
Moderate	11/19.3
Heavy	5/8.8
Very Heavy	1/1.7

The respondents were predominantly aged 14 years (34; 59.6%), all male (57; 100.0%), and had a family history of smoking (33; 57.9%). White cigarettes were the most commonly reported type (32; 56.1%). Most respondents had a negative self-concept (39; 68.4%), while light smoking was the most prevalent smoking-behaviour category (27; 47.4%). Kendall's Tau analysis showed a significant positive association between self-concept and smoking behaviour ($\tau = 0.329$; $p = 0.011$).

DISCUSSION

The study involved 57 ninth-grade male students at Junior High School 1 Kartasura, Sukoharjo. Most respondents were 14 years old (34; 59.6%), while 23 respondents (40.4%) were 15 years old. All respondents were male (57; 100%). Regarding cigarette type, white cigarettes were the most commonly reported (32; 56.1%), followed by electronic cigarettes (12; 21.1%), while 13 respondents (22.8%) were classified as non-smokers. These findings describe the characteristics of the study population and indicate exposure to both conventional and electronic cigarette products. Adolescents may be exposed to different forms of tobacco and nicotine products through their social environments and perceptions of these products. Previous research has reported that electronic cigarettes may appeal to adolescents because of their flavours and perceptions regarding their safety compared with conventional cigarettes (Listyorini, 2023; Salsabila et al., 2022).

Regarding cigarette consumption, 30 respondents (52.6%) reported consuming 1–10 cigarettes per day, while two respondents (3.5%) reported consuming 11–20 cigarettes per day. In addition, 33 respondents (57.9%) reported having a family history of smoking. These findings highlight the relevance of family and social environments when considering adolescent smoking behaviour. Family members may serve as behavioural models, while peer relationships and social interactions may influence adolescents' perceptions of smoking and their decisions to smoke. Rosiana and Putri (2024) identified peer influence, boredom, emotional pressure, and family-related factors as factors associated with smoking behaviour among adolescent students. These findings support the importance of considering environmental and psychosocial factors when interpreting smoking behaviour among school-aged adolescents.

Based on the smoking behaviour classification presented in Table 1, 27 respondents (47.4%) were categorized as light smokers, 11 (19.3%) as moderate smokers, five (8.8%) as heavy smokers, and one (1.7%) as a very heavy smoker. Meanwhile, 13 respondents (22.8%) were classified as non-smokers. Although light smoking was the largest category, tobacco use during adolescence remains a public health concern. Early exposure to tobacco may increase the likelihood of continued smoking and subsequent health risks. The relatively high proportion of respondents in the light-smoking category should not be interpreted as evidence of low health risk, particularly because the study did not examine the duration or progression of smoking behaviour. Ismawati et al. (2025) examined adolescents' understanding and perceptions of smoking-related risks in the context of health campaigns on social media, highlighting the relevance of health communication in addressing adolescent smoking. Rosiana and Putri (2024) also discussed the relevance of peer influence, emotional pressure, boredom, and family-related factors in adolescent smoking behaviour. Together, these findings underscore the importance of combining health education with attention to the social and psychosocial contexts in which adolescent smoking occurs.

Regarding self-concept, most respondents had a negative self-concept (39; 68.4%), while 18 respondents (31.6%) had a positive self-concept. Self-concept refers to an individual's perceptions, beliefs, and evaluations of themselves, which develop through personal experiences and interactions with the social environment. During adolescence, self-concept continues to develop alongside physical changes, increasing social interactions, and the formation of personal identity. Difficulties in self-

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acceptance and self-evaluation may be relevant to adolescents' psychological well-being and their responses to social situations. Previous studies have discussed the relationship between self-concept, self-confidence, and adolescent behavioural development (Al Hakim & Za'im, 2024; Rahmawati et al., 2025).

The responses to the self-concept questionnaire also indicated tendencies involving dissatisfaction with physical appearance, comparisons with others, disappointment with oneself, sensitivity to criticism, attributing success to luck, and uncertainty regarding future plans. These aspects may reflect challenges in self-acceptance, self-evaluation, and personal development during adolescence. From a mental health perspective, understanding these dimensions is important because adolescents' perceptions of themselves may influence how they respond to personal experiences and social interactions. Previous research has also examined the relationship between self-concept and smoking behaviour among adolescents, suggesting that self-perception is a relevant psychological factor in understanding health-related behaviours (Miranda et al., 2020; Napitupulu, 2020).

The bivariate analysis demonstrated a statistically significant positive association between self-concept and smoking behaviour (Kendall's $\tau = 0.329$; $p = 0.011$). The coefficient indicates a positive relationship between the numerical ranks of the two variables, with a moderate magnitude based on the interpretation used in this study. However, the substantive meaning of this positive association depends on the scoring and coding procedures applied to each questionnaire. If higher self-concept scores indicate a more positive self-concept and higher smoking behaviour scores indicate more severe smoking behaviour, the result would suggest that higher self-concept scores are associated with higher smoking behaviour scores. Therefore, the relationship should not be interpreted as evidence that negative self-concept is associated with more severe smoking behaviour unless the direction of both scoring systems has been verified.

The direction of the present association also requires careful consideration when compared with previous research. Miranda et al. (2020) reported a negative relationship between self-concept and smoking behaviour among adolescents. The difference in correlation direction may be related to variations in respondent characteristics, measurement instruments, and scoring procedures. In addition, Khosravi et al. (2016) examined the relationship between self-esteem and smoking stages in adolescents. Although self-esteem and self-concept are related psychological constructs, they are not interchangeable. Self-esteem primarily concerns an individual's evaluation of personal worth, whereas self-concept encompasses broader perceptions and beliefs about oneself. Therefore, the findings of Khosravi et al. (2016) provide contextual evidence regarding psychological factors in adolescent smoking behaviour rather than direct evidence of the relationship between self-concept and smoking behaviour.

The moderate association observed in this study also indicates that self-concept should not be considered the only factor related to adolescent smoking behaviour. Family smoking patterns, peer relationships, social environments, and access to cigarettes may also contribute to smoking-related decisions. Rosiana and Putri (2024) highlighted peer influence, boredom, emotional pressure, and family-related factors in smoking behaviour among adolescent students. In addition, Ismawati et al. (2025) discussed adolescents' understanding and perceptions of smoking-related health messages, underscoring the continuing relevance of health education. Accordingly, adolescent smoking prevention may benefit from a comprehensive approach that combines accurate health information, supportive family and school environments, and opportunities to develop healthy decision-making skills. School-based health promotion programmes may include activities that encourage self-acceptance, self-confidence, and resistance to negative peer influences. However, because this study measured self-concept and smoking behaviour at a single time point, these recommendations should be considered implications for prevention rather than evidence of intervention effectiveness.

This study has several limitations. First, it was conducted at only one junior high school, which may limit the generalizability of the findings to other adolescent populations and geographical settings. Second, all respondents were male, so the findings may not represent smoking behaviour and self-concept among female adolescents. Third, the study relied on self-reported questionnaires, which may be

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subject to recall and social desirability biases, particularly when reporting smoking behaviour. Finally, the cross-sectional design measured both variables during the same data-collection period and therefore cannot establish temporal relationships or causal effects. Further research involving more diverse populations and longitudinal designs is recommended to examine the relationship between psychological factors and adolescent smoking behaviour.

CONCLUSION

The majority of respondents had a negative self-concept (39; 68.4%), while light smoking was the most prevalent category of smoking behaviour (27; 47.4%). Kendall's Tau analysis demonstrated a statistically significant positive association between self-concept and smoking behaviour ($\tau = 0.329$; $p = 0.011$), indicating a moderate relationship between the numerical scores of the two variables. However, the substantive direction of this association should be interpreted according to the scoring and coding procedures of the instruments used. These findings highlight the importance of considering psychological and social factors in adolescent smoking prevention. School-based health promotion programmes may include efforts to strengthen positive self-concept, support healthy decision-making, and encourage resistance to negative social influences.

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