



Smoking and Alcohol Consumption Behavior Among Male Senior High School Students

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Abstract

Smoking and alcohol consumption behavior prevailed greater among adolescents' periods. This behavior could cause health risks. About 1 of every 4 adolescents in Indonesia were smokers and 3% of adolescents were drinking alcohol. This study aimed to analyze the association between self-efficacy with smoking and alcohol consumption among adolescents. This was a cross-sectional study carried out in July-September 2022. The study population was high school male students in Yogyakarta. A multistage random sampling technique was employed, involving 163 respondents. The instrument used was a questionnaire that has been tested. Data was analyzed in chi-square. Almost half of males had smoking behavior (39,3%). Males who were smoking started their behavior at the mean age of 15 years old. Most of them had low self-efficacy (70,6%). All male adolescents who had high self-efficacy do not have alcohol drink behavior. There was a relationship between self-efficacy with smoking behavior ($p=0,001$) and alcohol consumption ($p=0,004$). Strengthening self-efficacy is essential for adolescents. The government, family, and peers have an important role in increasing self-efficacy.

Introduction

Adolescence was characterized by significant physical and psychosocial changes. Adolescents were at high risk of the threat of death, illness, and injury. In this phase, adolescents have certain behavior patterns related to diet, physical activity, tobacco use, alcohol use, drug use, and sexual activity that can protect or harm their health now and in the future (World Health Organization, 2021). In 2022, about 24% of Indonesia's total population is adolescents. The population of adolescents in Indonesia is 6.5 million (UNICEF (United Nations Children's Fund), 2021). Male senior high school students are at higher risk for accessing pornography rather than female students (Meilani, Setiyawati, and Barasa, 2020).

Tobacco use and alcohol use are risky behaviors related to reproductive health in adolescence. Tobacco use and alcohol use

behavioral patterns could cause health risks. Tobacco kills more than 8 million people each year. More than 7 million of those deaths are the result of direct smoking while around 1.2 million are the result of non-smokers being exposed to second-hand smoke (World Health Organization, 2022b). On the other hand, about 3 million deaths every year from the harmful use of alcohol. The number represents 5.3% of all deaths (World Health Organization, 2022a).

The analysis study in 2022 stated that Indonesia's Crude Mortality Rate (CDR) decline is slower than the world. Smoking is one of the leading causes of death among adolescents. Most smoking habits are carried out by males and only a small proportion of females (Satriawan, 2022). About 1 of every 4 adolescents in Indonesia were smokers, and the majority of them smoke every day (24%). Adolescent smokers were dominated by males (47.06%) (Statistik, 2022). In identifying

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alcohol use among Indonesian youth was found that 3% of them were drinking alcohol which is the psychoactive substance most used by adolescents. Even though, the use of alcohol causes a high burden of disease and has significant social and economic consequences (Kementerian Kesehatan RI, 2018).

Smoking and drunk behavior of classmates, parents, and siblings were related to smoking and alcohol-drinking behavior among adolescents. Smoking and drinking are contagious habits that are enabled by social norms that are established by family and peer groups. A strong positive association was also found between ever having smoked cigarettes and ever having tried alcohol ($p < 0.001$) (Getachew *et al.*, 2019). The influence of friends was the most significant reason for initiating smoking and drinking behavior. Adolescents who have close friends drinking were more likely to drink in a year. Parents' ambivalent attitudes toward their child's drinking were the risk factor for unhealthy behavior (Hossain *et al.*, 2017; Chi *et al.*, 2022). Mental health variables such as anxiety, stress, loneliness, and depressive symptoms were the most common psychosocial risk factors for tobacco smoking and drinking. Smoking and alcohol drinking cause addiction. Adolescents' smoking behavior was associated with daily smoking in adulthood. Lifestyle factors which include smoking and alcohol drinking had a strong association with lifetime drunkenness (Dutra and Glantz, 2018; Asante and Quarshie, 2022).

Smoking and alcohol drinking are the leading causes of preventable disease, disability, and death among adolescents. Reducing current smoking rates is essential. Smoking is estimated to lead to premature death. A premature death from smoking is defined as a death from a smoking-related disease. Smokers who do not stop smoking lose an average of 10 years of life expectancy compared with never-smokers and they start to suffer diseases of old age around 10 years earlier than non-smokers (West, 2017). Prevention strategies that address the increases in alcohol consumption are also needed. Alcohol use has an impact on health and negative social effects (Miradj, 2020).

Smoking behavior was associated with

hypertension cases with a risk of 2.2 times. The toxic chemicals such as nicotine and carbon monoxide that are inhaled through cigarettes into the bloodstream can damage the endothelial lining of arteries, resulting in atherosclerosis and high blood pressure (Sutriyawan, Apriyani, and Miranda, 2021). Smoking caused various cancers that were reported as follows lung cancer, bladder cancer, mouth cancer, and stomach cancer (Adeniyi *et al.*, 2017). Smoking impairs immune function, resulting in an increased risk of chronic pulmonary disease, pulmonary infections, and rheumatoid arthritis. For maternal, smoke binds to hemoglobin, depriving the fetus of oxygen, ultimately resulting in low birth weight (Onor *et al.*, 2017).

Alcohol use was a major risk factor for communicable and non-communicable diseases, maternal, perinatal, and nutritional diseases, and injury deaths (Shield *et al.*, 2020). Alcohol consumption increases the risk of liver inflammation, cardiovascular disease, memory blackouts, hangovers, and certain cancers (White, 2020). Alcohol drinking is behavior that deviates from the norm. Alcohol abuse results in some forms of social problems such as fighting, juvenile delinquency, immoral acts of adolescents, and an increased risk of spousal divorce (Miradj, 2020).

One way to prevent adolescent smoking and alcohol drinking is by strengthening individual skills to reduce adolescents' likelihood of experimenting. An essential individual factor is self-efficacy. Self-efficacy in this study referred to the self-assessment belief of adolescents in facing the threat of reproductive health problems, which include magnitude, generalizability, and strength of belief (Bandura, 1977). Self-efficacy refers to adolescents' confidence in their ability to stay a non-smoker and refuse cigarettes (Hiemstra *et al.*, 2011). Lower self-efficacy was found in males who smoked and drank alcohol (Karatay and Baş, 2019). High self-efficacy influences adolescents to decrease unhealthy behavior (Mee, 2014). This study goal's was to analyze the association between self-efficacy with smoking and alcohol-drinking behavior among adolescents.

Method

This study was a quantitative descriptive analytic study with a cross-sectional approach. This study was conducted in Yogyakarta in July-September 2022. The population in the study was high school students in Yogyakarta. A multistage random sampling technique was used to identify study subjects. The first stage was to choose the high school that will be used in the study. The second stage was to select respondents from each school. All of these stages use a random technique. The sample was 163 male adolescents from 5 senior high school XI in Yogyakarta.

Smoking behavior and drinking among male adolescents were the dependent variables. The independent variable tested was the male adolescents' self-efficacy. Self-efficacy was measured by 24-item questions consisting of 10-item regarding the magnitude, 7-item regarding generalizability, and 7-item for the strength of belief. The question's item of magnitude form is about adolescents' belief to face difficulties with reproductive health threats. Generalizability is adolescents' belief about the strength or ability to maintain reproductive health and avoid risky behavior. Strength of belief is about self-ability to improve health which includes improving the knowledge about reproductive health. High self-efficacy was categorized with an average score ≥ 80 .

Data were collected by questionnaires that have been tested. Data were analyzed by statistical testing software. The data were analyzed using the frequency distribution and the Chi-square test. Ethical approval for this study was e-KEPK/POLKESYO/0531/VI/2022 from the ethical committee Poltekkes Kemenkes Yogyakarta.

Results and Discussion

This study showed that male adolescents who were smoking with a percentage of 39.3%. A previous study showed that smoking behaviors among males were higher than females (p -value=0.002). In male adolescents, high smoking behavior may occur because there is a belief that smoking makes young men look more attractive. Males were more likely than females to believe that parents found smoking acceptable (Chinwong *et al.*, 2018).

Males who were smoking started their behavior at the mean age of 15 years old. In identifying the number of cigars they used per day, the average number of cigarettes they used was 3 cigarettes. Meanwhile, the high number of cigarettes reached 12 cigarettes per day. A study in The United States by the year of 2019 showed that smoking behavior prevailed greater among 15-year-olds (Creamer *et al.*, 2020). Smoking parents and peers increased the inclination in adolescents aged 11 to 15 to smoke. The social environment can be separated into parents and peers which is the major factor in their taking up smoking. As the social learning theory suggests, young people observe and learn by watching the behaviors, and their consequences, of others with whom they live. The adolescents' decision to embark on a particular behavior depends on the exposure to norms, values, and behavioral attitudes of other humans with whom they interact (Scalici and Schulz, 2017). Table 1 explains smoking behavior among male adolescents.

Table 1. Smoking Behavior Among Male Adolescents

Variables	F	%
Smoking		
Yes	64	39.3
No	99	60.7
Minimum	10 years old	
Maximum	19 years old	
Number of cigarettes per day		
Minimum	1	
Maximum	12	
Mean	3.33	

This study also showed that male adolescents who drank alcohol with a percentage of 9.2%. Males and females experience unique neurobiological paths of development, and although there is debate regarding the specific nature of these differences, literature suggests that these differences in turn influence gender differences in psychiatric comorbidity and risk for binge drinking as a part of alcohol use. Males are more likely to endorse more permissive or pro-drinking norms (injunctive norms) and perceive higher prevalence rates of alcohol use compared to females (Dir *et al.*, 2017).

Males who have alcohol-drinking behavior started their behavior at the mean age of 16 years old. Adolescents start their risky behavior may influenced by the social environment around them. Social bonds with family and peers are the most important predictor of delinquency (Sanchagrin, Heimer, and Paik, 2017). The earlier age of starting drinking behavior may occur by the age of school. Adolescents who reported having more problems at school were more likely to engage in experience drunkenness. Here, school problems (e.g. problems with studying, problematic relationships with friends and/or teachers, bullying, etc.) proved to be the strongest contextual influence, especially for those who do not have a supporting system at home. More frequent meetings with friends, and a preference for going out to clubs, bars, or pubs, proved to be significant predictors to be particularly relevant in the context of adolescent alcohol use (Grevenstein, Nikendei and Nagy, 2020).

Table 2. Alcohol Consumption Among Male Adolescents

Variables	F	%
Alcohol consumption		
Yes	15	9.2
No	148	90.8
Minimum	15 years old	
Maximum	19 years old	
Mean	years old	

Table 3 showed that most male adolescents had low self-efficacy toward adolescents' smoking behavior. About 70.6% of them had low self-efficacy. The percentage of high self-efficacy in males was lower with several 29.4%. Low self-efficacy predicted smoking behavior among adolescents. Whereas, high self-efficacy significantly predicted avoidance of tobacco use behavior (Sabzmakan *et al.*, 2018). A strong association was found between smoking behavior among adolescents and risky dating behavior, and also between smoking behavior and alcohol use. This finding reflects an adolescent's lack of understanding about healthy living and the effects of unhealthy behavior. Self-efficacy

was the individual potential protective factor of doing risky behavior such as smoking and alcohol use. Smoking and drinking are associated with multiple risk behaviors among adolescents (Shaluhayah *et al.*, 2020).

Depression is a common mental health problem in adolescents. The consequences of depression include educational impairments, substance misuse, alcohol drinking, and cigarette smoking. Smoking and alcohol drinking are usually considered as a coping mechanism to alleviate adolescents' condition due to psychosocial problems. Adolescents should have high self-efficacy to avoid unhealthy behavior for all conditions. Self-efficacy helps to cope with stress (Shah *et al.*, 2020). Adolescents with depression who smoke report lower confidence in their ability to resist smoking. Strengthening self-efficacy is essential for adolescents (Weinberger *et al.*, 2017).

Table 3. Male Adolescents' Self-Efficacy

Variables	F	%
Self-efficacy		
Low	115	70.6
High	48	29.4
Total	163	100

The relationship between smoking behavior, alcohol-drinking behavior, and self-efficacy among male adolescents was tested at the bivariate analysis stage. The statistical test of the relationship was carried out with the Chi-square test. The statistical test results can be seen in Table 4 and Table 5. Male adolescents' self-efficacy was related to smoking behavior among males (p-value=0.001). Adolescents who had high self-efficacy have a higher percentage of do not have smoking behavior. A total of 81.3% of adolescents who had high self-efficacy have no smoking behavior. Only 18.8% of those who had high self-efficacy were in smoking behavior. On the other hand, almost half of the male adolescents who had low self-efficacy were in smoking behavior with a percentage of 47.8%.

This study also showed that there was a relationship between male adolescents' self-efficacy and drinking among males (p-value=0.004). All adolescents who had high self-efficacy do not have alcohol-drinking behavior. Most of the male adolescents who

Table 4. Smoking Behavior and Self-Efficacy Among Adolescents

Variables	Smoking				Total		P- value
	No		Yes		F	%	
	F	%	F	%			
Self-efficacy							
Low	60	52.2	55	47.8	115	100	0.001
High	39	81.3	9	18.8	48	100	
Total	99	60.7	64	39.3	163	100	

Table 5. Alcohol Consumption and Self-Efficacy Among Adolescents

Variables	Drunk				Total		P- value
	No		Yes		F	%	
	F	%	F	%			
Self-efficacy							
Low	100	87	15	13	115	100	0.004
High	48	100	0	0	48	100	
Total	148	90.8	64	39.3	163	100	

had low self-efficacy were in alcohol-drinking behavior with a percentage of 87%.

High self-efficacy decreases of initiation of cigarette smoking among adolescents (McKelvey *et al.*, 2015). Self-efficacy was also associated with quitting smoking in adolescents. The higher the self-efficacy, the intention to quit smoking is higher. Self-efficacy determines the amount of effort that is made by individuals to stay a nonsmoker or cessation of smoking even though there is a temptation to smoke (Panjaitan, Astuti, and Widanarti, 2020). Smokers were more likely to believe that it is difficult to quit smoking. Some studies showed that there was a difference between smokers and nonsmokers regarding their beliefs related to the easiness of quitting smoking. Smoker adolescents were three times more likely to hold the belief that it is difficult to quit smoking, compared to non-smokers (Alsubaie, 2020).

Self-efficacy is also established as a predictor of coping and not consuming alcohol. Higher levels of self-efficacy decrease alcohol consumption (Quiroga-Sánchez *et al.*, 2022). Self-efficacy is the individual factor that affects someone’s behavior. Adolescents with high levels of self-efficacy were able to protect themselves from risky and unhealthy behavior. No barrier for adolescents who have a high level of self-efficacy to do healthy behavior every day and avoid alcohol drinking (Koerniawan, 2023).

Smoking causes addiction that can cause illness and premature death among adolescents. Nicotine exposure during adolescence may have long-term adverse consequences for brain development and could lead to nicotine dependence and initiation or sustained use of more harmful tobacco products (McCabe *et al.*, 2017). Most adolescents perceived that cigarette smoking was harmful and that passive smoking was dangerous to their health. Smoking affects the lungs, heart, and chest pain. On the other hand, the smokers’ group brings the opinion that smoking has more beneficial effects compared to harmful effects. Smoking relieves any stressful circumstance or problem that may be passing through. The perception informed their choice to be a smoker (Gana *et al.*, 2018).

Hypertension is one of the non-communicable diseases which is significantly associated with smoking and alcohol drinking. Smoking caused earlier onset of adult hypertension. Cigarette smoking activates the sympathetic nervous system and oxidative stress associated with increased markers of inflammation leading to endothelial dysfunction, vascular injury, plague progression, and increased arterial stiffness leading to the development of hypertension (Pantell *et al.*, 2019; Roba *et al.*, 2019). Chronic Pulmonary Disease (COPD) and other pulmonary dysfunction were also associated with smoking behavior (Wheaton *et al.*, 2019). On the other

hand, alcohol has a similar effect to carbon monoxide which increases blood acidity. The blood becomes thicker, and the heart is forced to pump blood more strongly so that the blood reaches the tissues sufficiently. The process affects the increase in blood pressure (Rahardjo and Samudera, 2021).

Smoking and drinking have a negative impact on digestion. Both of them damage cells in the digestive system. Smoking increases gastric acid secretion which makes smokers suffer from gastritis to peptic ulcer. Nicotine damages bicarbonate acid which has to decrease gastric acid (Wahyudi, Kusuma, and Andinawati, 2018). Ethanol from alcohol damages gastric mucose which allows pepsin acid to diffuse back into the stomach tissue. This process causes inflammation as a cause of gastritis (Yulius Tiranda, 2021).

Tobacco harm reduction from tobacco use such as cigarette smoking is based on similar principles as harm reductive strategies for other drugs. The goals of tobacco harm reduction are to minimize the adverse health, social, and economic consequences of tobacco use without expecting complete abstinence. In the context of tobacco, a form of harm reduction that has become popularized recently is the use of e-cigarettes or 'vaping' devices which are collectively termed Electronic Nicotine Delivery Systems (ENDS) as a substitute for cigarette smoking. In terms of their harm potential, ENDS contain lower levels of harmful chemicals than cigarettes. However, toxicants such as formaldehyde and acrolein are present in some varieties of ENDS, and studies indicate that ENDS can cause inflammation in the lungs which could result in chronic, fatal conditions such as emphysema. ENDS are heavily marketed by the Tobacco Industry (TI) which is problematic for smokers as ENDS adverts can trigger cigarette cravings. Furthermore, marketing and information sources for ENDS are often misleading as they promote ENDS as a safe cessation option. Impartial safety information on ENDS is rarely communicated to smokers. The owners of vaping stores often get the 'facts' from industry sources, and end up promoting ENDS as safe and healthy. Reducing the use of ENDS could be done, for instance, by the government by restricting the supply

of ENDS. It can be done through a doctor or pharmacist, who is then trained to disclose up-to-date and unbiased information. With this approach, access to the most harmful varieties of ENDS such as those containing carcinogenic additives may be restricted (van der Eijk, 2016).

Reducing smoking behavior led to ongoing debates on whether a market for tobacco products should be permitted. Although some argue that the market for tobacco products should be permitted because of the needs of the industry, others maintain that tobacco products should be restricted as they are widespread and their use would have important public health impacts. Liberal theories consider freedom to be the pre-eminent principle of morality that policies should protect. Mill's liberal theory has been particularly influential, also in the public health context. Individual's actions should only be restricted if they are harmful to others. This causes the marketing of tobacco products to have an ethical dilemma (van der Eijk, 2016).

Family and peers have an important role in motivating adolescents in smoking cessation and avoiding risky behavior. The role of parents such as a Directly Observed Treatment (DOT) as a "buddy" or accompanying girls to consume iron tablets to reduce the incidence of anemia (Meilani and Setiyawati, 2023). Adolescents who knew the dangers of smoking from their families had as much as twice the desire to stop smoking behavior (Sari, Ayunin, and Setyowati, 2022). The peer education process about smoking was shown to increase student satisfaction, motivation, and learning to the desire to stop smoking. The strongest risk factor of adolescent smoking was peer influence. Peer education affects the smoking cessation behavior of the students positively (Bilgiç and Günay, 2018). Following the identifying social factors of alcohol use, self-efficacy and having social network support such as family and peers were recognized as protective factors of alcohol drinking. Family plays a key role in motivating people to recognize the need to change, providing support for change, and supporting long-term recovery from risky behavior (Sliedrecht *et al.*, 2019). Relationship to parents was a significant predictor of risky behavior among adolescents. Parental ambivalence of adolescents' smoking and alcohol use predicted

both of them. Parents are still able to modulate adolescent behavior and provide guidance based on a positive parent-child relationship. Peer group influence was also evident. Even though, some researchers have argued that family constitutes the most important influence on adolescent risky behavior and that parental monitoring is critical.

Conclusion

Males who were smoking started their behavior at the mean age of 15 years old. About 39.3% of males had smoking behavior. The majority of them had low self-efficacy with a percentage of 70.6%. All male adolescents who had high self-efficacy do not have alcohol-drink behavior. Self-efficacy was associated with smoking behavior and drinking among adolescents. Self-efficacy refers to adolescents' confidence in their ability to stay a nonsmoker and to refuse cigarettes. Self-efficacy increased male adolescents' confidence in their ability to avoid smoking and alcohol drinking.

Self-efficacy is the individual factor that affects someone's behavior. Strengthening self-efficacy is essential for adolescents. The government, family, and peers have an essential role in increasing self-efficacy that can reduce smoking behavior and drinking. The integration of providing healthy lifestyle information is needed to prevent risky behavior among adolescents. Our findings can become reference material for the development and improvement of future research.

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