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The relationship between anxiety levels and smoking behaviour among high school students

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Abstract

Background: Adolescence is a transition period that is vulnerable to changes in emotions and behavior, including anxiety and smoking behavior. Indonesia is the 5th country with the highest smoking rate in the world, in 2023 the Indonesian health survey states that more than 70 million smoke. In Lampung in 2022 there will be 87.01% smokers.

Purpose: To find out the relationship between anxiety levels and smoking behavior among teenagers.

Method: This type of research uses a quantitative research method with a cross-sectional approach, total sampling technique. The analysis in this study is univariate and bivariate analysis with the chi-square test and Spearman's rho. The population and sample in this study were all male students in grades X-XI at Senior High School Persada Bandar Lampung, totaling 49 students.

Results: The level of anxiety of the majority was in the moderate category, namely 17 respondents (35%) and for smoking behavior, the majority were in the high category, 17 respondents (35%). After the chi-square test was carried out, the p-value was obtained at $0.000 < 0.05$ and the Spearman's rho test obtained a correlation coefficient value of 0.954, meaning that there was a relationship between the level of anxiety and smoking behavior and the correlation between the two variables was very strong.

Conclusion: There is a significant and very strong relationship between anxiety levels and smoking behavior. It is hoped that schools can develop educational programs in the form of anxiety and smoking behavior prevention programs through group counseling, health education about the dangers of smoking and anxiety management training.

Keywords: Adolescents; Anxiety; Smoking Behavior.

INTRODUCTION

During adolescence, emotions are unpredictable and difficult to control. Changes in adolescent behavior and psychology are the cause. Every individual experiences changes during this period, especially psychological changes, making them more emotional and exacerbating psychological symptoms (Tasiabe, 2024). Adolescence is usually considered the beginning of legal adulthood and sexual maturity. Early adolescence and late adolescence are two

distinct phases. Adolescents often start high school at the age of seventeen, which separates early and late adolescence. Parents assume that adolescents in high school are on the cusp of adulthood and will start working or continue on to higher education. As a result, boys often appear less mature than girls. However, due to their older status both at home and at school, boys usually adapt very easily and behave more maturely. Adolescence ranges from 13 to 16/17

years of age, and legal adulthood ranges from 16 to 17/18 years of age (Safitry, Anggraini, & Putri, 2024).

Adolescents experience rapid physical changes, which can be seen in weight gain, height, and changes in sexual function. They also become increasingly thirsty for freedom. They become more abstract, logical, and idealistic. Adolescence is a stage of development that occurs during childhood towards adulthood and is associated with physical, emotional, and psychological changes in a person. Psychologists view adolescence as a confusing period of personal development. Because they are going through puberty, it is called adolescence. A person experiences puberty when they are sexually mature and capable of reproduction (Pratama, 2021). Adolescents experience psychological and physical changes. Changes in weight and height are the most common physical changes, along with hip and breast enlargement in girls and hair growth in the armpits and around the genitals. Adolescents experience mental changes in addition to physical changes. Changes in character, emotions, and behavior are indicators of psychological changes. Adolescents' emotions are more sensitive and include crying, irritability, laughter, and anxiety. The most common mental disorder is anxiety, which occurs during the physical and psychological changes of adolescence and appears to be the first to emerge among all forms of psychopathology.

Anxiety can cause behavioral changes, including withdrawal from one's surroundings, difficulty concentrating, difficulty eating, loss of emotional control, sensitivity, illogicality, and difficulty sleeping. Women are twice as likely to suffer from mental illness and severe depression compared to men. Puberty may be an important time when gender-related vulnerability to stress-induced depression can manifest, as these gender differences only become apparent after puberty (Kustika, 2024). Adolescents are the most vulnerable group in society when it comes to mental health issues, such as anxiety and stress. The level of anxiety experienced by students when they face challenges at school, such as teacher

assignments and college entrance exams, affects their anxiety levels. Previous studies have shown that adolescents with greater anxiety also smoke more frequently. This indicates a relationship between anxiety and smoking behavior; in other words, the more anxious a person is, the more often they smoke (Rumasoreng, Winahyu, & Yoyoh, 2024). Smoking is a need that cannot be fulfilled by anyone who has a smoking habit, and smoking remains a major global health problem (Setyadin & Uyun, 2020). According to statistics compiled by the World Health Organization (WHO) in 2015, the main cause of stress in men is smoking. The following categories have the highest rates of tobacco use. Statistics show that 57% of the population is Asian and Australian, 14% is Soviet and Eastern European, 12% is American, 9% is Western European, and 8% is Middle Eastern and African. Smokers in ASEAN account for 20% of tobacco-related deaths and 10% of global smokers. In 2022, there were approximately 1.25 billion smokers worldwide aged 15 and above, down from 1.36 billion in 2000, according to the World Health Organization (WHO). The 2021 Global Adult Tobacco Survey (GATS) report on Indonesia describes tobacco product use and key tobacco control indicators in Indonesia using internationally accepted protocols and methodologies. The report shows that 70.2 million people, or 34.5% of the population from adolescents to adults, use tobacco. The use of electronic cigarettes has increased tenfold in ten years from 0.3% in 2011 when GATS was first implemented to 3% in 2021. Men use tobacco 65.5% of the time, while women use it 3.3% of the time. According to research, the level of exposure to cigarette smoke in public places continues to increase. In eating places, 74.2% of adolescents and adults are exposed to cigarette smoke, and 44.8% in the workplace. Nearly 78% of smokers are now aware of the health warnings on cigarette packaging. Compared to ten years ago, the number of people who want to quit smoking has increased. However, the number of people advised to quit smoking by health workers has only increased by about 4 points, from 34.6% to 38.9% (Nafisa, 2022).

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RESEARCH METHOD

The analytical cross-sectional approach and data were collected simultaneously once. The sampling techniques used were non-probability and total sampling. The analysis in this study was univariate and bivariate analysis with chi-square and Spearman's rho tests. The population and sample in this study were all male students in grades X-XI at Persada High School in Bandar Lampung, totaling 49 students. The research instruments used were the Anxiety Level questionnaire and the Smoking Behavior questionnaire. This research has been declared ethically sound by the Health Research Ethics Committee of Malahayati University Bandar Lampung on May 8, 2025, with letter number 4735/EC/KEP-UNMAL/V/2025.

Low anxiety levels are characterized by feelings of calmness, the ability to control emotions, and no

disruption to activities. Moderate anxiety is characterized by frequent feelings of worry and restlessness that sometimes interfere with concentration, but the individual is still able to carry out activities. Severe anxiety is characterized by excessive anxiety that is difficult to control, accompanied by sleep disturbances, concentration problems, and physical complaints that interfere with daily activities. Low smoking behavior is characterized by occasional smoking that has not yet become a habit. Moderate smoking behavior is characterized by fairly regular smoking in certain situations with moderate amounts. Heavy smoking behavior is characterized by a daily smoking habit, high frequency and quantity of cigarettes, and dependence.

RESEARCH RESULTS

Table 1. Demographic Characteristics of Respondents (N=49)

Variable	Results	P-Value
Age (Mean±SD)(Range)(Year)(n/%)	(16.4±0.5)(15-17)	
15	2/4.0	
16	24/49.0	
17	23/47.0	
Grades (n/%)		
X	26/53.0	
XI	23/47.0	
Anxiety Level (n/%)		
Poor	16/32.7	0.000
Moderate	17/34.6	
Heavy	16/32.7	
Smoking Behavior (n/%)		
Poor	16/32.7	
Moderate	17/34.6	
Heavy	16/32.7	

Based on the study results, the mean age of the respondents was 16.4±0.5 years, with an age range of 15–17 years. Most respondents were 16 years old (49.0%), followed by those aged 17 years (47.0%) and 15 years (4.0%).

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The majority of participants were in grade X (53.0%), while 47.0% were in grade XI. The levels of anxiety were relatively evenly distributed, with 32.7% experiencing mild anxiety, 34.6% moderate anxiety, and 32.7% severe anxiety. A similar distribution was observed in smoking behavior, where mild, moderate, and severe categories accounted for 32.7%, 34.6%, and 32.7%, respectively. Statistical analysis showed a p-value of 0.000, indicating a significant association between anxiety level and smoking behavior among the respondents.

Table 2. Relationship of Anxiety Level Correlations

Variable	Correlation Coefficient	Sig. (2-tailed)
Anxiety Level	1.000	.954** .000
Smoking Behavior	1.000	.954** .000

This table shows the results of a correlation analysis between anxiety levels and smoking behavior. The correlation coefficient value of 0.954 indicates a very strong relationship between the two variables. The significance value (2-tailed) of 0.000, which is less than 0.05, indicates that the relationship is statistically significant, so it can be concluded that anxiety levels are significantly related to smoking behavior.

DISCUSSION

Adolescence is a transitional period characterized by change, a time full of problems, identity exploration, unrealistic thinking, and standing on the threshold of adulthood. It is a developmental stage in which adolescents experience changes in interests, emotions, roles, and behaviors. This period is considered strategic because it provides adolescents with the opportunity to form lifestyles and determine behavior patterns, values, and attitudes according to their desires (Jambak, 2023). The average age of grade X and XI students who participated as respondents ranged from 15 to 17 years. This stage represents adolescence as a phase of self-discovery or identity formation, during which adolescents begin to experiment with smoking behavior (Pranawati, 2022).

The majority of smokers are male, as in many societies smoking is considered a symbol of masculinity or strength. In addition, males tend to smoke as a way to cope with anxiety and life pressures and are more likely to be exposed to environments that support smoking behavior. Factors influencing smoking

among male adolescents include their living environment, with the closest and most influential being the family. Adolescents often become smokers by imitating their parents, especially if the parents are smokers. Peer influence also plays a significant role, as adolescence is a period of identity seeking; if one peer in a social group smokes, others are likely to follow. Advertising is another contributing factor, as exposure to mass media and electronic advertisements that portray smoking as a symbol of masculinity or glamour often influences adolescents, particularly males, to imitate such behaviors. According to the researcher's perspective, male respondents aged 15–17 years in grades X and XI are experiencing significant changes in physical, emotional, and social aspects of adolescence. The risk of becoming heavy smokers in the future is relatively high if appropriate education and interventions regarding the dangers of smoking are not provided. Therefore, education and interventions on the hazards of smoking need to be implemented intensively and effectively among male adolescents in this age group to prevent smoking habits and reduce risk factors.

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Based on the study results, 16 respondents (33%) had low anxiety levels, 17 respondents (35%) had moderate anxiety levels, and 16 respondents (33%) had high anxiety levels. The causes of anxiety in adolescents can be classified into two factors: biological and psychosocial factors. Biological factors are related to hormonal changes during adolescence, where increasing maturity brings new challenges that previously had not been experienced, leading to anxiety about how to cope with emerging problems (Ferinadia, Husna, Jannah, & Fithria, 2019). Psychosocial factors include stress or pressure from the external environment, which may also arise from previous experiences or trauma that contribute to anxiety. The highest frequency of respondents based on anxiety category was moderate anxiety, involving 28 students (31.8%). Anxiety influences smoking behavior, and adolescents often smoke as a way to reduce the anxiety they experience. This study used a descriptive correlational method with a cross-sectional approach and obtained a p-value of 0.000 (<0.05) (Izzani, Octaria, & Linda, 2024).

According to the researcher, the various challenges faced during adolescence lead to feelings of anxiety and worry. This can occur due to a lack of knowledge and skills among adolescents in dealing with life problems. Anxiety experienced during adolescence strongly influences smoking behavior. In this study, anxiety was categorized into three levels: low, moderate, and high. These categories were used to facilitate data processing. Low anxiety represents relatively normal anxiety that does not interfere with daily life, such as feeling slightly worried about an upcoming exam while still being able to prepare. Moderate anxiety reflects anxiety that still allows individuals to function adequately in daily life, such as worrying about academic performance. High anxiety identifies individuals with very high levels of anxiety that interfere with daily functioning, such as intense anxiety in social situations.

The results also showed that 16 respondents (33%) had low smoking behavior, 16 respondents (33%) had moderate smoking behavior, and 17 respondents (35%) had high smoking behavior. Factors influencing

adolescent smoking behavior include three main aspects: predisposing factors, enabling factors, and reinforcing factors. Predisposing factors include knowledge, which greatly influences adolescents' attitudes and actions toward smoking behavior in their surroundings. Adequate knowledge about the dangers of smoking may prevent adolescents from engaging in smoking. Attitudes also play a role, as they determine whether behavior toward an object is positive or negative. Psychological factors, particularly anxiety, contribute to smoking as individuals use cigarettes as a means to relax, seek pleasure, and relieve anxious feelings (Diagitama, 2020).

Enabling factors include pocket money and the availability of shops or stalls that allow adolescents easy access to cigarettes. Reinforcing factors include parental influence, especially when parents serve as role models who are heavy smokers, increasing the likelihood that children will imitate them. Peer influence is also significant, as smoking behavior often spreads within social groups. Advertising further reinforces smoking behavior among male adolescents, as media portray smoking as masculine or glamorous, encouraging imitation. Psychological factors underlying adolescent smoking behavior indicate that the psychological well-being of adolescent smokers is lower than that of non-smokers (Kurnela, 2024). Smoking is also driven by curiosity, the desire to be perceived as mature or masculine, and the belief that cigarettes can relieve stress, boredom, and fatigue. This study employed a descriptive correlational method with a cross-sectional approach and obtained a p-value of 0.000 (<0.05), leading to the rejection of the null hypothesis and indicating a relationship between anxiety and smoking behavior among adolescents. According to the researcher, beyond lifestyle and appearance, adolescents use cigarettes as a way to cope with existing problems. Unconsciously, smoking can lead to nicotine dependence, where cessation triggers anxiety to smoke again. Adolescents perceive smoking as providing calmness without considering its health effects (Daryanti, 2019).

Based on the output table, among 49 respondents, all respondents with low anxiety exhibited low smoking

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behavior (16 respondents, 33%), respondents with moderate anxiety showed moderate smoking behavior (15 respondents, 31%), and respondents with high anxiety demonstrated high smoking behavior (15 respondents, 31%). The Asymp. Sig. (2-sided) value from the Pearson chi-square correlation test was 0.000. Since this value is less than 0.05, the null hypothesis was rejected and the alternative hypothesis accepted. The Spearman's rho correlation test showed a significance value of 0.000 (<0.05) and a correlation coefficient of 0.954, indicating a very strong relationship. Thus, there is a very strong association between anxiety levels and smoking behavior among adolescents (Ayunin, Sri, & Wahyuni, 2017).

Predisposing factors such as knowledge significantly influence adolescents' attitudes and behaviors toward smoking; adequate knowledge of smoking hazards may prevent smoking. Attitudes determine whether behavior toward smoking is positive or negative, while psychological factors such as anxiety drive individuals to smoke as a means of relaxation and emotional release (Lubis, 2025). Enabling factors include pocket money and easy access to cigarettes, while reinforcing factors involve parental influence, peer pressure, and advertising that portrays smoking as masculine or glamorous, particularly influencing male adolescents (Suwarni, Firdaus, & Yudhianto, 2024). The causes of anxiety in adolescents include biological factors related to hormonal changes and psychosocial factors such as stress, environmental pressure, or previous traumatic experiences (Binarti, 2024). Anxiety levels influence smoking behavior, with studies showing a positive correlation ($r = 0.431$), indicating that higher anxiety levels are associated with higher smoking behavior. This correlation is statistically significant ($P = 0.000$), demonstrating a meaningful relationship between anxiety and smoking behavior. This study used a quantitative descriptive method with a cross-sectional approach (Putri, Hany, & Fujiana, 2024).

According to the researcher, adolescents believe that smoking can eliminate negative feelings such as worry, anxiety, and anger. Anxiety affects smoking behavior due to adolescents' perceptions that

cigarettes provide calmness, supported by substances in cigarettes that induce relaxation. This reflects misconceptions about smoking among adolescents. Anxiety-related smoking behavior is also influenced by perceived pressures from life problems and limited adaptive skills in facing environmental and academic demands, both internal and external. Adolescents with low anxiety tend to have low smoking behavior as they do not rely on cigarettes to manage anxiety. Those with moderate anxiety often exhibit moderate smoking behavior, believing smoking helps them relax and reduce anxiety. Adolescents with high anxiety tend to have high smoking behavior, using cigarettes as a primary coping mechanism to achieve relaxation and calmness despite the associated health risks (Pitaloka, 2023).

CONCLUSION

Most students had moderate levels of anxiety, with 17 respondents (35%), and the majority of smoking behaviors were in the high category, with the same number, namely 17 respondents (35%). Statistical analysis shows a very strong relationship between anxiety levels and smoking behavior in adolescents, as evidenced by a p-value of 0.000, which is less than 0.05, and a correlation coefficient of 0.954. It can therefore be concluded that the higher the anxiety level of adolescents, the higher their tendency to smoke.

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