

## THE RELATIONSHIP BETWEEN MENTAL HEALTH AND SMOKING BEHAVIOR OF ADOLESCENT IN SMAN 1 NORTH KOLAKA, SOUTHEAST SULAWESI

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### **KEYWORDS**

mental health,  
smoking behavior,  
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problems.

### **ABSTRACT**

**Background.** Smoking behavior among adolescents is a significant public health issue influenced by various psychosocial factors, including mental health. Adolescent Mental Health Survey (I-NAMS) in 2022 reported that identified adolescents aged 10-17 years who experienced anxiety (26,7%), depression (5,3%), behavioral disorders (2,4%), PTSD (1,8%) dan ADHD or hyperactivity (10,6%). **Aim.** This study aimed to analyse the relationship between mental health and smoking behavior among male students at SMAN 1 Kolaka Utara, Southeast Sulawesi. This type of research is a quantitative study with cross-sectional design involving 200 male students aged 15-18 years who were identified as smokers using a smoking behaviour screening questionnaire. Mental health was assessed using the Strengths and Difficulties Questionnaire (SDQ), which evaluates prosocial behavior, emotional symptoms, conduct problems, hyperactivity, and peer problems. Data analysis was carried out using univariate analysis, bivariate analysis and multivariate analysis. **Results.** The majority of the study sample was aged 15-17 years, with the highest distribution at 17 years old (33.5%), came from grade 3 (34.5%), and had parents who worked as farmers (48.5%). Relationship analysis showed that prosocial behavior, emotional symptoms, conduct problems, hyperactivity and peer influence significantly influenced adolescent smoking behavior, with prosocial behavior and conduct problems being the dominant factors. These variables together contributed 38.8% to the variation in smoking behavior, while prosocial behavior ( $\beta=0.424$ ,  $p=0.000$ ), behavioral problems ( $\beta=0.314$ ,  $p=0.000$ ), and hyperactivity ( $\beta=0.106$ ,  $p=0.013$ ) had a significant influence in increasing smoking risk. **Conclusion.** Adolescent smoking behavior is strongly influenced by mental health, with behavioral issues and prosocial behavior leading the way. The significance of mental health therapies in avoiding teen smoking is underscored by these findings.

## **INTRODUCTION**

Adolescent mental health is an important concern due to the increasing number of mental problems at this age. Research shows that 16.3% of adolescents in Kosovo experience emotional difficulties, 52.7% have low self-esteem, and 19.6% feel hopeless (1). In Indonesia, the results of the I-NAMHS survey on adolescents 10-17 years old

recorded 26.7% experiencing anxiety, 5.3% depression, 2.4% behavioral disorders, 1.8% PTSD, and 10.6% ADHD (2). Another study reported 63.3% of adolescents faced mental health problems, including anxiety (59%), sleep disorders (50%), and thoughts of ending life (9%) (3).

Adolescence is a transitional phase characterised by physical, psychological and intellectual changes that affect the way we think and interact with the environment (4). The desire for independence, environmental acceptance, and increased access to technology is often not achieved optimally, triggering internal-external conflicts (5). If left unchecked, mental health issues can lead to identity formation failure, stress, and adverse behaviors such as smoking, drug use, and criminality.

One of the significant impacts of adolescent mental health problems is smoking behavior. Adolescents believe that smoking makes them look mature, helps release stress, and increases social acceptance (6,7). Data shows the prevalence of adolescent smokers (10-18 years old) increased from 28.8% (2013) to 29.3% (2018) (8). Another study reported the prevalence of smokers aged 13-15 years increased from 18.3% (2016) to 19.2% (2019) (9). Data also recorded that the smoking prevalence of adolescents aged 16-18 years rose from 7.2% (2018) to 8.7% (2021), while the 15-19 years age group had the highest number of smokers (56.5%) (10,11).

The incessant marketing of tobacco through social media is one of the factors accelerating the growth of adolescent smoking. Platforms such as Instagram (68%), Facebook (16%), and X (14%) are utilised to advertise tobacco products (12). In addition, the influence of family, friends, individual characteristics, and easy access to cigarettes also contribute (13). The link between mental health and smoking behavior is further strengthened by various studies. Research found an association between non-daily smoking behavior and adolescents' emotional health, where the more frequent smoking, the more emotional problems were indicated (14). Stress levels were correlated with smoking frequency and intensity (15). Another study showed a positive relationship with a correlation coefficient ( $r$ ) of 0.532, where higher stress increased adolescent male smoking behavior (16).

In North Kolaka District, the prevalence of smoking behavior in the population aged  $\geq 10$  years reached 25.97% (8), placing it third highest in Southeast Sulawesi. The proportion of smokers aged 10-14 years was 10.18% and 15-19 years was 48.42%. The high prevalence of smoking among adolescents in North Kolaka Regency is thought to be related to the mental health condition of adolescents, which became the background of the study to analyse the relationship between mental health and smoking behavior at SMAN 1 North Kolaka. It is known that there is an increase in active smokers among adolescents where smoking behavior in adolescents is associated with mental health. Therefore, the focus of the problem in this study is on how mental health relates to adolescent smoking behavior at SMAN 1 North Kolaka, Southeast Sulawesi.

## METHOD

This study used cross-sectional quantitative method. The study was conducted from September to October 2024 at SMAN 1 Kolaka Utara, located at Jalan Trans Sulawesi, Watuliwu, Lasusua Sub-district, Kolaka Utara Regency. The study population included all students of SMAN 1 North Kolaka, with a total of 768 students in the 2024/2025 academic year. The study sample consisted of students who smoked, who were selected based on the results of the smoking behavior screening and their willingness to participate in the study. Based on calculations using the Slovin formula, the sample size was 182 students.

The research instrument to measure adolescents' mental health used the Strengths and Difficulties Questionnaire (SDQ) in the 11-18 years old format. The questionnaire includes 25 items measuring five categories of behavior: prosocial behavior, hyperactivity,

conduct problems, emotional symptoms, and relationships with peers. Scoring is based on "not true" (score 0), "somewhat true" (score 1), and "true" (score 2) responses. The results were classified into three categories: normal, borderline, and abnormal. Meanwhile, smoking behavior was measured using the smoking behavior instrument from the Ministry of Health.

Data collection was conducted in two stages. First, respondents completed the smoking behavior questionnaire to determine who would proceed to the next stage. Second, respondents who were identified as smokers completed a mental health questionnaire (SDQ).

Data analysis used the SPSS programme with three types of analysis: univariate, bivariate, and multivariate processing and with a significance level ( $p$  value  $<0.05$ ). The results of data analysis were presented in the form of tables and narratives. Univariate analyses were presented in frequency distribution tables, while bivariate and multivariate analyses were presented in cross-tabulation tables between dependent and independent variables.

This study has received ethical approval from the Ethics Commission of the Faculty of Public Health, Hasanuddin University with number 2951/UN4.1/TP.01.02/2024 on 8 October 2024.

## RESULT AND DISCUSSION

### RESULT

The study was conducted in October 2024 at SMAN 1 Kolaka Utara, with a sample size of 200 male students aged 15-18 years. The research process began with initial data collection in the form of smoking behavior screening to find adolescents who smoke and do not smoke through the completion of a smoking behavior questionnaire which had previously been asked for consent to participate in this study and the researcher also explained the procedure for completing the questionnaire. Adolescents who participated in the screening were 305 students. Based on the screening results, it can be seen that 233 students smoke and 72 students do not smoke.

Further data collection was carried out by giving the Mental Health Questionnaire (SDQ) to students who smoke, then the researcher explained the procedure for filling out the questionnaire. The completed questionnaire was then inputted into SPSS for analysis.

The majority of the research sample was 17 years old with 67 students, followed by 16 years old (64 students), 15 years old (60 students), and 18 years old (9 students), with a total of 200 students aged 15-18 years. Based on class, the number of students in class 1 was 64 students, class 2 was 67 students, and class 3 was 69 students. Based on parents' occupation, the majority are farmers (97 students), followed by civil servants/police/NI/national government (45 students), traders (25 students), self-employed (16 students), labourers (12 students), and drivers (5 students) (table 1).

**Table 1. Frequency Distribution of Sample Characteristics Based on Age, Grade, and Occupation of Parents of Adolescents at SMAN 1 Kolaka (n=200)**

| No. | Sample Characteristics | n  | (%)  |
|-----|------------------------|----|------|
| 1.  | Age (years)            |    |      |
|     | 15                     | 60 | 30   |
|     | 16                     | 64 | 32   |
|     | 17                     | 67 | 33,5 |
|     | 18                     | 9  | 4,5  |

|                               |    |      |
|-------------------------------|----|------|
| <b>2. Class</b>               |    |      |
| 1                             | 64 | 32   |
| 2                             | 67 | 33,5 |
| 3                             | 69 | 34,5 |
| <b>3. Parent's Occupation</b> |    |      |
| Farmers                       | 97 | 48,5 |
| Labour                        | 12 | 6    |
| Driver                        | 5  | 2,5  |
| Merchants                     | 25 | 12,5 |
| PNS/POLICE/TNI/BUMN           | 45 | 22,5 |
| Self-employed                 | 16 | 8    |

The percentage distribution of the assessment of psychosocial aspects in children based on normal, borderline, and abnormal categories. Prosocial behavior had the highest proportion in the normal category (82.5%), followed by emotional symptoms (73.5%). In contrast, the aspect of relationships with peers had the highest proportion in the abnormal category (36.5%), and most cases were in the borderline category (45.5%). For the hyperactivity aspect, the percentage of abnormal categories reached 26.0%. The behavioral problems aspect showed a fairly even distribution, with 56.0% normal, 29.0% borderline, and 15.0% abnormal. Overall, this data illustrates the differences in the distribution of psychosocial conditions in children in various aspects (Table 2).

**Table 2. Percentage Distribution of Assessment Results of Psychosocial Aspects in Children**

| Aspects                 | Normal | Borderline | Abnormal | Total |
|-------------------------|--------|------------|----------|-------|
|                         | (%)    | (%)        | (%)      | (%)   |
| Prosocial Behavior      | 82,5   | 10,5       | 7,0      | 100   |
| Emotional Symptoms      | 73,5   | 11,0       | 15,5     | 100   |
| Behavioral Issues       | 56,0   | 29,0       | 15,0     | 100   |
| Hyperactivity           | 55,5   | 18,5       | 26,0     | 100   |
| Relationship with Peers | 18,0   | 45,5       | 36,5     | 100   |

Table 3 shows the relationship between psychosocial variables and smoking behavior categories, where prosocial behavior, emotional symptoms, behavioral problems, hyperactivity, and peer influence have significant relationships with light, moderate, and heavy smoking categories ( $p$ -value  $< 0.05$ ). Respondents with normal prosocial behavior were most commonly found in the light smoking category, while those with behavioral problems and abnormal hyperactivity tended to be in the heavy smoking category. Abnormal peer influence also showed a strong tendency towards heavy smoking behavior. Overall, these results indicate that psychosocial status plays an important role in influencing the level of smoking behavior of individuals

**Table 3. Associations of Psychosocial Variables with Smoking Behavior Categories**

| Independent Variable | Category   | Smoking Behavior |            |        | P-Value *    |
|----------------------|------------|------------------|------------|--------|--------------|
|                      |            | Lightweigh<br>t  | Mediu<br>m | Weight |              |
| Prosocial Behavior   | Normal     | 123              | 37         | 5      | <b>0.000</b> |
|                      | Borderline | 2                | 15         | 4      |              |
|                      | Abnormal   | 5                | 3          | 6      |              |
| Emotional Symptoms   | Normal     | 108              | 30         | 9      | <b>0.000</b> |
|                      | Borderline | 9                | 9          | 4      |              |
|                      | Abnormal   | 13               | 16         | 2      |              |
| Behavioral Issues    | Normal     | 91               | 20         | 1      | <b>0.000</b> |
|                      | Borderline | 31               | 21         | 6      |              |
|                      | Abnormal   | 8                | 14         | 8      |              |
| Hyperactivity        | Normal     | 85               | 21         | 5      | <b>0.003</b> |
|                      | Borderline | 20               | 14         | 3      |              |
|                      | Abnormal   | 25               | 20         | 7      |              |
| Peer Influence       | Normal     | 26               | 9          | 1      | <b>0.048</b> |
|                      | Borderline | 65               | 22         | 4      |              |
|                      | Abnormal   | 39               | 24         | 10     |              |

Multiple linear regression analysis was used to determine which independent variables had a significant relationship with adolescent smoking behavior. The results of the analysis show that the coefficient of determination (Adjusted R Square) is 0.388, which means that the variables of prosocial behavior, emotional symptoms, behavioral problems, hyperactivity, and peer influence jointly influence smoking behavior by 38.8%, while the remaining 61.2% is influenced by other factors. outside the model. The model validity test shows an F value of 26,230 with a p-value of 0.000, so the model is considered good and significant in explaining the relationship between the independent and dependent variables. In the regression coefficient test, prosocial behavior ( $\beta=0.424$ ,  $p=0.000$ ), behavioral problems ( $\beta=0.314$ ,  $p=0.000$ ), and hyperactivity ( $\beta=0.106$ ,  $p=0.013$ ) had a significant influence on smoking behavior with a positive relationship direction. Meanwhile, emotional symptoms ( $\beta=0.074$ ,  $p=0.136$ ) and peer influence ( $\beta=0.011$ ,  $p=0.839$ ) showed no significant influence. These results suggest that prosocial behavior, conduct problems, and hyperactivity have an important role in increasing the risk of adolescent smoking behavior (Table 4).

**Table 4 Multivariate Analysis of Prosocial Behavior, Emotional Symptoms, Behavioral Issue, Hyperactivity and Peer Influence on Smoking Behavior**

| Variables          | Beta  | P (Sig.) |
|--------------------|-------|----------|
| Prosocial Behavior | 0.424 | 0.000    |
| Emotional Symptoms | 0.074 | 0.136    |
| Behavioral Issues  | 0.314 | 0.000    |
| Hyperactivity      | 0.106 | 0.013    |
| Peer influence     | 0.011 | 0.839    |

## DISCUSSION

Based on research conducted on 200 adolescent boys at SMAN 1 Kolaka Utara, it was found that the variables of social behavior and behavioral problems were the most dominant factors influencing adolescent smoking behavior. In addition to these factors, the variables of emotional symptoms, hyperactivity, and peer influence together influence adolescent smoking behavior by 38.8%. Prosocial behavior is a natural attitude that humans have as



social beings who interact with each other (17). Prosocial behavior can be described as a person's ability to consider others without providing benefits for himself and can even pose a risk to himself (18). In this study, the majority of adolescents with normal prosocial behavior were 165 adolescents (82.5%), adolescents with borderline prosocial behavior were 21 adolescents (10.5%), while adolescents with abnormal prosocial behavior were 14 adolescents (7%). Based on the results of the analysis, it was found that adolescents who behaved normally with mild smoking behavior were 123 adolescents, moderate smoking behavior was 37 adolescents, and heavy smoking behavior was 5 adolescents. Adolescents who behave borderline prosocial with light smoking behavior are 2 adolescents, moderate smoking behavior is 15 adolescents, and heavy smoking behavior is 4 adolescents. Adolescents who behave abnormally prosocial with light smoking behavior are 5 adolescents, moderate smoking behavior is 3 adolescents, and heavy smoking behavior is 6 adolescents. It can be concluded that the majority of adolescents with normal prosocial behavior have mild smoking behavior. Bivariate analysis using Chi-Square obtained a p-value of  $0.000 < 0.05 (\alpha)$ , so it can be concluded that there is a significant relationship between prosocial behavior and adolescent smoking behavior. The results of this study are in line with research conducted by Sugeng on 35 students in grades X, XI, and XII in Gunung Malang Village, Suboh Subdistrict, Situbondo Regency, where prosocial behavior measured through the values of cooperation, generosity, altruism, and sharing showed a significant positive correlation with smoking behavior (19). Other research that is also in line with this study is research conducted by Sari et al. which states that someone who has high prosocial behavior will care about other people around him who feel disturbed by cigarette smoke. Solichah (20) also supports this opinion, where in her research states that the higher a person's belief that cigarette smoke disturbs others, the lower the frequency of smoking. Prosocial behavior that a person has tends to make him able to understand the conditions or circumstances of others so that a person becomes tolerant, self-controlled, friendly, and humanistic (21).

Emotional symptoms in SDQ describe the biological and psychological conditions of adolescents that can encourage adolescents to behave in certain ways such as excessive movement, disturbing friends, conflicting behaviour, and being alone (17). In this study, adolescents with normal emotional symptoms were 147 adolescents (73.5%), adolescents with abnormal emotional symptoms were 31 adolescents (15.5%), while adolescents with borderline emotional symptoms were 22 adolescents (11%). From these results, it is known that the majority of adolescents with normal emotional symptoms mean that adolescents have the ability to realise their emotional state. Based on the results of the analysis, it was found that adolescents with normal emotional symptoms with mild smoking behavior were 108 adolescents, moderate emotional symptoms were 30 adolescents, and severe emotional symptoms were 9 adolescents. Adolescents with borderline emotional symptoms with mild smoking behavior were 9 adolescents, moderate emotional symptoms were 9 adolescents, and severe emotional symptoms were 4 adolescents. Adolescents with abnormal emotional symptoms with mild smoking behavior were 13 adolescents, moderate emotional symptoms were 16 adolescents, and severe emotional symptoms were 2 adolescents. The majority of adolescents with normal emotional symptoms have mild smoking behaviour. Bivariate analysis using Chi-Square obtained a p-value of  $0.000 < 0.05 (\alpha)$ , so it can be concluded that there is a significant relationship between emotional symptoms and adolescent smoking behaviour. The results of this study are in line with research conducted by Kurnia (22) which states that the more often an individual smokes, the more they are indicated to experience emotional disturbances. Another study that is also in line is research conducted by Nuraini & Giri (23), that there is a relationship between smoking behaviour and emotional disorders in adolescents at MAN 2 Bogor. Adolescence is a period of instability where at this time it is easy to experience emotional changes that can affect their behavior. In research conducted by

Riyanda et al. (24) stated that emotional intelligence is very important for adolescents to avoid negativity, both towards themselves and others. Teenagers with high emotional intelligence are able to understand and manage emotions, can motivate themselves, recognise other people's emotions, and build good relationships with others. Meanwhile, adolescents with low emotional intelligence lead to negative emotions and are easily influenced by negative things.

Behavioral problems in SDQ include negative patterns such as hostility, conflicting, and disruptive behaviors that do not violate social norms or the rights of others such as hitting, fighting, mocking, emotional outbursts, lying, or stealing (17). In this study, adolescents with normal behavior problems were 112 adolescents (56%), adolescents with borderline behavior problems were 58 adolescents (29%), while adolescents with abnormal behavior problems were 30 adolescents (15%). From these results, it is known that the majority of adolescents with normal behavior problems. Based on the results of the analysis, it was found that adolescents with normal behavioral problems with mild smoking behavior were 91 adolescents, moderate smoking behavior was 20 adolescents, and heavy smoking behavior was 1 adolescent. Adolescents with borderline behavioral problems with mild smoking behavior are 31 adolescents, moderate smoking behavior is 21 adolescents, and heavy smoking behavior is 6 adolescents. Adolescents with abnormal behavioral problems with light smoking behavior were 8 adolescents, moderate smoking behavior were 14 adolescents, and heavy smoking behavior were 8 adolescents. The majority of adolescents with normal behavioral problems have mild smoking behavior. Bivariate analysis using Chi-Square obtained a p-value of  $0.000 < 0.05 (\alpha)$ , so it can be concluded that there is a significant relationship between behavioral problems and adolescent smoking behavior. Adolescents who have abnormal behavioral problems tend to have poor smoking behavior. This can be caused because adolescents are still unstable in their mindset and decision making, allowing behavioral problems to occur (25-27). Behavioral problems that occur in adolescents as a result of failure to develop self-control in terms of behavior that causes adolescents to smoke (28).

## CONCLUSIONS

Based on the results of research on the analysis of the relationship between mental health and adolescent smoking behaviour at SMAN 1 Kolaka Utara, Southeast Sulawesi, it can be concluded that there is a significant relationship between prosocial behavior, emotional symptoms, behavioral problems, hyperactivity, and peer influence on adolescent smoking behavior. Of the five variables, prosocial behavior and behavioral problems were the most dominant factors influencing adolescent smoking behavior. These findings indicate the importance of paying attention to adolescents' mental health as an effort to prevent smoking behavior and support the development of a healthier and more qualified younger generation.

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