



## ASSOCIATION BETWEEN SUBSTANCE USE INVOLVEMENT AND EMOTIONAL MENTAL DISORDER AMONG ADOLESCENTS

Ari Budi Himawan<sup>1\*</sup>, Bambang Hariyana<sup>2</sup>, Fitrin Miadianti<sup>3</sup>

<sup>1,2</sup> Department of Public Health-Preventive Medicine, Faculty of Medicine, Universitas Diponegoro, Semarang, Indonesia

<sup>3</sup>Bangsri Community Health Center

### Keywords:

*Adolescents,  
Emotional and Mental Disorders,  
Frequency of Substance Use,  
Students.*

**Received:** 09 January 2026

**Revised:** 17 February 2026

**Accepted:** 18 February 2026

**Available online:** 01 March 2026

### Corresponding Author:

**E-mail:** [aribudihimawan@fk.undip.ac.id](mailto:aribudihimawan@fk.undip.ac.id)

### ABSTRACT

**Background:** Emotional and mental disorders among adolescents show an increasing trend, especially when associated with substance use including narcotics, psychotropics, and other addictive substances. Adolescents are vulnerable to emotional and social changes, prone to the exposure of substance use which may negatively affect their mental health. National Basic Health Research (Riskesmas) shows 6.1% of Indonesian population experiences it.

**Objective:** This study aims to analyze the relationship between substance use and the severity of emotional and mental disorders in adolescents **Methods:** This is an observational study with a cross-sectional design. Purposive sampling technique was used to include 102 high school students in 10<sup>th</sup> grade in this study. Substance use was assessed using the ASSIST and levels of emotional and mental disorders were assessed using the Strengths and Difficulties Questionnaire (SDQ). Data analysis was performed using Chi-Square test to evaluate the relationship between the two variables. **Results:** Of the 102 respondents, 18 (17.6%) were involved in moderate risk substance use while 11 respondents (10.89%) were classified as high-risk. 29 respondents were exposed to tobacco, six to alcohol, and one student to sedatives. SDQ score shows 24 respondents (23.5%) were categorized as borderline, whereas 17 (16.7%) had abnormal. The relationship between substance use involvement and emotional mental disorders was evaluated with chi square yielding  $p = 0.008$ . **Conclusion:** These findings indicate a significant relationship between involvement in substance use and severity of emotional mental disorders among adolescents.

Copyright ©2025 by Authors. Published by Faculty of Medicine, Universitas Diponegoro Semarang Indonesia. This is an open access article under the CC-BY-NC-SA (<https://creativecommons.org/licenses/by-nc-sa/4.0/>).

### INTRODUCTION

Adolescence is a crucial developmental phase, characterized by significant changes in physical appearance, emotional, and social life.<sup>1,2</sup> At this stage, adolescents face various challenges, including adapting to body changes, identity search, and forming increasingly complex social relationships. Environmental pressure such as academic demands, peer influence, and often unrealistic social expectations may create psychological burden for adolescents. This makes them vulnerable to mental health disorders including stress, anxiety, and depression.<sup>1-3</sup> This period is also a crucial time for the formation of habits and behavioral patterns that

influence their adulthood lives, therefore it is important to prioritize mental health in adolescents.<sup>1,2</sup>

Emotional mental health is observed through satisfaction in interpersonal relationships, effective behavior, positive self-concept, and emotional stability. It has many components and influences various factors, including substance use.<sup>4</sup> Substance use including the use of narcotics, alcohol, psychotropics and other addictive substances with any chemical agents which may affect the central nervous system, which result in physical and psychological symptoms.<sup>5,6</sup> Substance-related disorders are categorized into 10 groups, namely alcohol, caffeine, cannabis, hallucinogens, inhalants, opioids, sedatives/hypnotics/anxiolytics, stimulants,



nicotine/cigarettes, and others.<sup>6</sup> Substance use may also impact physical health, financial condition, and their environment.<sup>5,6</sup>

Studies showed that global estimation of 200 million people or 5% of the world population is affected by drug abuse.<sup>5</sup> In Indonesia, substance use affected 0.06% of the nationwide population.<sup>2,5</sup> Drug abuse-related cases increased from 3,478 cases in 2000 to 8,401 in 2004, showing an average growth of 28.9% per year. The prevalence of emotional mental disorders among individuals aged 15 years and older is 6.1%. This statistic suggests that approximately 11 million Indonesians are affected by emotional mental disorders, including conditions such as depression and anxiety.<sup>7</sup>

Substance use in adolescents has long been associated with a variety of negative impacts on mental health, including emotional mental disorders. These substances can directly affect brain function, particularly in areas responsible in regulating emotions, decision-making, and impulse control.<sup>2,8</sup> Adolescent brains are still developing, therefore the negative effects of substance use may be more severe, with long-term consequences. Research suggests that substance use is often associated with an increased risk of disorders such as anxiety, depression, and chronic stress.<sup>9</sup> Addictive substances may also trigger dramatic mood swings, feelings of hopelessness, and even a tendency to engage in aggressive behavior and self-harm.<sup>9,10</sup>

Despite being an important concern in public health, there is a scarcity of studies examining the relationship between the frequency of substance use and the severity of emotional mental disorders among Indonesian adolescents. Existing studies mostly focus on the prevalence of substance use or the general impact on physical health, without further exploring how the intensity of drug use affects adolescent mental health. This study was therefore conducted to investigate the relationship between substance use and emotional mental disorders in adolescents.

## METHODS

This was a comparative analytical research study with a cross-sectional design. Students in the 10<sup>th</sup> grade of 1 Senior High School in Bangsri, Jepara, Central Java, were included as the study sample, obtained through purposive sampling. A sample size

of 102 subjects was determined using standard sample size calculation. Respondents who were undergoing psychiatric treatment were excluded. The independent variable was substance use involvement, whereas the dependent variable was the severity of emotional mental disorders in adolescents.

The variables were assessed using questionnaires with established validity and reliability. Substance use was assessed using the Alcohol, Smoking, and Substance Involvement Screening Test (ASSIST) questionnaire to screen for substance, cigarette, and alcohol use. This test provides a thorough evaluation of an individual's historical substance use, examining their consumption patterns over the preceding three months, associated problems, current or potential risks of harm, degree of dependency, and drug injection practices. The results are categorized into low, moderate, and high-risk levels. Emotional mental health status was assessed using the SDQ (Strength and Difficulties Questionnaire (SDQ)). It consists of 25 statements that assess difficulties and strengths across five domains: emotional problems, conduct issues, hyperactivity/inattention, challenges in peer relationships, and supportive prosocial behavior. Scores are classified into three categories: normal, borderline, and abnormal. The relationship between substance use and the degree of emotional mental disorders was evaluated using Chi-Square test. A p-value of <0.05 was considered significant. Statistical analysis was performed using SPSS software

## RESULTS

This study was conducted in Bangsri Senior High School 1 on February 2025. Data was collected from 102 subjects who met both inclusion and exclusion criteria.

### Characteristics of Respondents

**Table 1.** Characteristics of Respondents

Characteristic	Number	Percentage
Gender		
Male	47	46.1%
Female	55	53.9%
Total	102	100%
Age		
14	1	1%
15	60	58.8%
16	40	39.2%
17	1	1%
Total	102	100%



Ari Budi Himawan, Bambang Hariyana, Fitri Miadanti

A total of 102 respondents were included in the study, consisting of 55 female students and 47 male students, all in 10<sup>th</sup> grade. The largest age group was 15 years old (58.8%)

### Substance use in Respondent

Substance use involvement was assessed using ASSIST questionnaire with the following outcomes.

**Table 2.** Involvement in substance use

Substance	No history of Substance Use		History of Substance Use		Total
	n	%	N	%	
Tobacco	73	73%	29	27%	102
Alcohol	96	94%	6	6%	102
Sedatives	101	99%	1	1%	102
Other substance	102	100%	0	0%	102

A total of 29 subjects reported a history of tobacco use. All subjects were male. The most commonly reported reason for tobacco use was curiosity. Six subjects reported a history of both tobacco and alcohol use, while one subject had used all three substances including tobacco, alcohol, and sedatives.

### Score of Substance Use Involvement Based on ASSIST

Score of substance use in all 102 respondents using ASSIST questionnaire are showed below.

**Table 3.** ASSSIST's score of Respondents

No	Score	Category	Number	Percentage
1	0-3	Low Risk	73	71.6%
2	4-26	Moderate Risk	18	17.6%
3	≥27	High Risk	11	10.8%
<b>Total</b>			102	100%

### Overview of Substance Use in the Last 3 Months

**Table 4.** Overview of Substance Use in the Last 3 Months

Substance	No History		1-2 times		Monthly		Weekly		Daily		Total
	n	%	n	%	n	%	n	%	n	%	
Tobacco	6	19%	1	3%	1	4%	5	14%	1	25%	29
Alcohol	0	0%	1	20%	1	20%	2	40%	1	20%	6
Sedative	0	0%	0	0%	1	100%	0	0%	0	0%	1

A total of 29 respondents who reported being involved in substance use were re-interviewed to obtain additional information on the frequency of alcohol, tobacco, and other addictive substances use over the last 3 months, as indicated in question no. 2 of ASSIST. The data show that several 10<sup>th</sup> grade students have experienced tobacco addiction in the last 3 months. Alcohol use was reported at 1-4 times consumption per week in the last 3 months, whereas sedative drug addiction was reflected in monthly consumption in the last 3 months.

### Emotional Mental Disorders in Adolescents

Based on data regarding emotional mental disorders, 61 (59.8%) were classified as normal, indicating their ability to manage their emotions well. A total of 24 (23.5%) were classified as borderline, indicating early symptoms of emotional mental disorders requiring further attention, while 17 adolescents (16.7%) were classified as abnormal, indicating serious emotional mental disorders requiring professional intervention. Summary of classifications of emotional mental disorders in adolescents is listed below.

**Table 5.** Frequency Distribution of Mental Disorders in Adolescents

No	Score	Category	Number	Percentage
1	0-3	Normal	61	59.8%
2	4-7	Borderline	24	23.5%
3	8-10	Abnormal	17	16.7%
<b>Total</b>			102	100%

### Relationship Between Substance Use Involvement and Emotional Mental Disorders

To understand the relationship between the frequency of drug involvement and emotional mental disorders in adolescents, a crosstabulation analysis was conducted. This analysis provides an overview of the distribution of respondents based on the frequency of substance use (low, medium, and high risk) and severity of emotional mental disorders (normal, borderline, and abnormal). These results aim to reach a deeper understanding of the relationship pattern between the two variables. Crosstabulation analysis of the relationship between the frequency of drug involvement and emotional mental disorders in adolescents are as follows.



Ari Budi Himawan, Bambang Hariyana, Fitrin Miadianti

**Table 6.** Relationship Between Substance use and Emotional Mental Disorders

Substance Use (ASSIST)	Severity of Emotional Mental Disorder			p
	Normal	Borderline	Abnormal	
Low risk	48 (78.6)	15 (62.5)	10 (58.8)	0.008
Moderate risk	13 (21.3)	5 (20.8)	0 (0)	
High risk	0 (0)	4 (16.7)	7 (41.2)	

Chi square test was conducted to evaluate both variables. The results show that substance use is related to emotional mental disorders in respondents.

## DISCUSSION

This study indicates a significant relationship between drug use involvement and emotional mental disorders in adolescents, as shown in the crosstabulation analysis and Chi-Square test. Based on crosstabulation, adolescents with higher involvement of substance use (high risk) tend to have more severe emotional mental disorders (abnormal), which is 41.2%. In contrast, most respondents with low substance use are classified as normal (78.6%). Chi square test supports this result with a p-value of 0.008, indicating a significant relationship between the two variables.

The results of this study are consistent with similar research in Tangerang, suggesting a positive correlation between smoking behavior and the severity of anxiety among adolescents. Higher anxiety levels in adolescents corresponds to an increase in smoking behavior.<sup>11</sup> A similar research among students in Bandung also suggested that smoking behavior is closely related to stress and lack of self-confidence.<sup>12</sup> This relationship can be explained through various mechanisms involving the biological and psychological effects of substances on adolescent brain development.<sup>1,2</sup> Adolescence is a very important stage of brain development, especially in the prefrontal cortex, which is responsible for decision-making, impulse control, and emotional regulation.<sup>1</sup> Substance use, especially in high frequency, may disrupt the normal development of this area, which later triggers emotional disorders such as anxiety, depression, and extreme mood swings.<sup>5,8</sup> Chemical effects of drugs on neurotransmitters such as dopamine and serotonin may lead to an imbalance state that worsen symptoms of emotional mental disorders. The accumulation of

these effects explains why adolescents with high drug involvement are more susceptible to serious emotional disorders.<sup>13,14</sup>

This study is also consistent with previous study among adolescents in Bali which suggested that use of psychoactive substances is related to emotional mental disorders. In addition to biological impacts, social and psychological factors also play an important role in explaining this relationship. Adolescents with substance use often face social stigma, family conflict, and isolation from healthy peer environment.<sup>3,15,16</sup> These conditions may worsen the underlying psychological stress, leading to a vicious cycle between substance use and emotional mental disorders. For example, adolescents who feel anxious or unhappy may use drugs as an escape mechanism, however the long-term effects of these substances actually worsen their mental condition.<sup>17-19</sup> This explains why substance use involvement is directly proportional to the severity of emotional mental disorders.<sup>10,18,20</sup>

These findings have important implications for prevention and intervention efforts needed for adolescents. Given this significant and positive association, substance use prevention programs should be integrated with comprehensive mental health services. Schools, families, and communities need to educate adolescents about the dangers of substance while also supporting their mental health through counseling, psychological therapy, and supportive environments.<sup>15,19</sup> Additionally, policies supporting adolescent access to mental health services need to be improved, given the importance of early intervention to break the vicious cycle between drug use and emotional mental disorders.<sup>17</sup> This study highlights the need for a holistic approach that integrates biological, psychological, and social aspects to protect adolescents from greater risk.

The Cross-sectional studies are limited in their capacity to determine whether emotional mental disorders are a result of drug use or if they precede it. This research was conducted in a rural school area, indicating that divergent outcomes may emerge if the study is replicated in an urban school setting. The potential for sampling bias is present due to the study's confinement to a single school; however, this limitation could be mitigated by implementing a total sampling strategy at the same educational level. To



reduce information bias, face-to-face interviews were employed.

## CONCLUSION

This study indicates a significant relationship between substance use and severity of emotional mental disorders in adolescents. This suggest that adolescents with increased substance use involvement are more likely to experience serious emotional disorders, driven by the biological and psychological effects of substances, as well as social factors such as stigma and isolation. The data presented herein serves as a potential early warning system for teachers and parents, enabling them to monitor the likelihood of mental and emotional issues in adolescents who consume substances such as cigarettes or alcohol. These findings provide a basis for stakeholders to implement early intervention strategies for young adolescences who may be experiencing mental and emotional challenges, as indicated by their SDQ results.

## ETHICAL APPROVAL

The research was conducted with ethical clearance from the Health Research Ethics Commission (KEPK) of the Faculty of Medicine, Universitas Diponegoro, number 006/EC/KEPK/FK-UNDIP/I/2025

## CONFLICTS OF INTEREST

The author declares that there is no conflict of interest in this research

## FUNDING

No specific funding was provided for this article

## AUTHOR CONTRIBUTIONS

ABH conceptualized the study, collected data, and validated the data. BH analyzed and interpreted the data. FM assisted in collecting data and interpreted data. All authors have read and approved the final version of the manuscript,

## ACKNOWLEDGMENTS

The authors sincerely thank to Senior High School Bangsri 1 for their contribution to this study.

## REFERENCES

1. Santrock JW. Adolescence. 18th, editor. New York: McGraw Hill; 2023.
2. Herdiani RT, Sugarni M, Lisa RG, Islamarida R, Romina F, dkk. Kesehatan Mental Remaja. Jakarta: Eureka Media Aksara; 2024.
3. Campbell M, Auchterlonie JL, Andris Z, Cooper DC, Hoyt T. Mental Health Stigma in Department of Defense Policies: Analysis, Recommendations, and Outcomes. *Military Medicine*. 2021;188(5- 6):e1171-e7.
4. WHO. Mental Health of Adolescents. 2024
5. Dirjen PP. Pedoman Manajemen Pencegahan dan Tatalaksana Gangguan Penggunaan NAPZA untuk Tenaga Kesehatan. Jakarta: Kemenkes RI; 2021.
6. Maslim R. Buku Saku Diagnosis Gangguan Jiwa Rujukan Ringkas Dari PPDGJ-III, DSM-5, ICD-11. Jakarta: FK Unika Atmajaya; 2019.
7. Kemenkes RI. Survei Kesehatan Indonesia 2023. In: RI K, editor. Jakarta: Kemenkes RI; 2023.
8. Sianturi R, Hartawan LA, Rahmah NA, Nuril PJJJI-H. Efek Penggunaan NAPZA Terhadap Kesehatan Psikologis. 2022;5(2).
9. Badwi A, Andi A, Syafruddin, Muhammad M. Analisis Triger Perilaku Penggunaan Napza pada Pelajar. *Window of Health: Jurnal Kesehatan*. 2022;5(1):463 - 74.
10. Nawi AM, Ismail R, Ibrahim F, Hassan MR, Manaf MRA, Amit N, et al. Risk and protective factors of substance use among adolescents: a systematic review. *BMC Public Health*. 2021;21(1):2088.
11. Rumasoreng NH, Winahyu KM, Yoyoh I. Hubungan antara Tingkat Kecemasan dan Perilaku Merokok pada Remaja di Kabupaten Tangerang. *Jurnal Ilmiah Keperawatan Indonesia*. 2023;7(1):78-91.
12. Siti Azzahra R, Koswara I, Fuady I. Faktor-Faktor Yang Mempengaruhi Perilaku Merokok Pada Mahasiswa Psdku Unpad Pangandaran. *Jurnal Ilmu Psikologi dan Kesehatan (SIKONTAN)*. 2025;3(3):137-46.
13. Peng Y, Ishak Z. Self-compassion as a mediator of attachment anxiety, attachment avoidance, and complex PTSD in college students with adverse childhood experiences. *Scientific Reports*. 2025;15(1):786.



14. Hasan MM, Ahmed SM, Duale HA. Substance use and Mental Illness in Erigavo Mental Hostiptal, Erigavo, Somalia. *Journal of Addiction Therapy*. 2024;8(1):16-23.
15. Jiang MM, Gao K, Wu ZY, Guo PP. The influence of academic pressure on adolescents' problem behavior: Chain mediating effects of self-control, parent-child conflict, and subjective well-being. *Front Psychol*. 2022 Sep 21;13:954330.doi: 10.3389/fpsyg.2022.954330. PMID: 36211862; PMCID: PMC9534181.
16. Nova R, Abdullah D, Rahmadhoni B, Ivan M, Nurwiyen N, chan Z, et al. Bahaya Napza Bagi Kesehatan Dan Perkembangan Intelektual Anak Usia Sekolah. *Jurnal Pengabdian Kolaborasi dan Inovasi IPTEKS*. 2024;2(4):1126-40.
17. Graybill E, Ashley S, Brian B, and Roach AT. Examining the predictive utility of the self-report Strengths and Difficulties Questionnaire with middle school students. *International Journal of Mental Health*. 2025;54(2):178-90.
18. Jones L, Vigo D. Mental Health and Substance Abuse. In: Raviglione MCB, Tediosi F, Villa S, Casamitjana N, Plasència A, editors. *Global Health Essentials*. Cham: Springer International Publishing; 2023. p. 197-201.
19. Gintari KW, Jayanti DM, Laksmi IGA, Sintari SN. Kesehatan Mental Pada Remaja: The Overview of Mental Health in Adolescents. *Journal Nursing Research Publication Media*. 2022 Okt 30;2(3).167-183. Available from: <https://doi.org/10.55887/nrpm.v2i3.49> .