



The Relationship Between Smoking Behavior and Mental Health (*Mental Distress*) In Generation Z Students

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Abstract

Aims. This study aims to determine the relationship between smoking behavior and mental health in Generation Z students.

Methods. This research involved 104 Generation Z students who are active smokers in Indonesia using a purposive sampling technique. The instruments used were the Glover-Nilsson Smoking Behavior Questionnaire to assess smoking behavior and the Self-Reporting Questionnaire to assess mental health. Data analysis used the Pearson Product-Moment correlation technique.

Result. The results showed a significant positive correlation between smoking behavior and mental health, with a correlation coefficient of 0.232 and a significance value of 0.018. This finding indicates that the higher the smoking behavior of Generation Z students, the higher the mental distress experienced.

Conclusion. The contribution of smoking behavior to mental distress was 5.4 percent, while the remaining 94.6 percent was influenced by other factors not examined in this study.

Implementation. This research is expected to provide empirical evidence for developing comprehensive prevention and intervention programs related to smoking behavior and mental health in universities.

Keywords: smoking behavior; mental health; mental distress; Generation Z students; College Students



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INTRODUCTION

Generation Z students born between 1997-2012 are currently the dominant population in college. This generation grew up in the digital era with full access to technology and the internet

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(Seemiller & Grace, 2016). Despite their high level of technological adaptation, Generation Z students face various psychological pressures that can affect their well-being. Mental health is a state of well-being in which individuals are aware of their own abilities, can cope with everyday pressures, work productively, and contribute to their communities (World Health Organization, 2022). However, mental health problems or mental distress are the opposite condition, which is when individuals experience emotional and psychological disorders that hinder optimal functioning in daily life.

International data from the American College Health Association (2023) reports that more than 60 percent of college students experience tremendous anxiety, and about 40 percent report depression that interferes with daily functioning. At the national level, the 2022 Indonesian Adolescent Mental Health Survey shows that 34.9 percent of adolescents have mental health problems, and 5.5 percent have mental disorders (Ministry of Health of the Republic of Indonesia, 2022). Research by Livana et al. (2020) found that 47.7 percent of college students experienced symptoms of anxiety, 58.7 percent experienced symptoms of depression, and 26.4 percent experienced stress. Research by Rahma and Hamidah (2022) on Generation Z students in Indonesia shows that the level of academic stress ranges from 45 to 60 percent. A study by Hasanah et al. (2023) on students in Yogyakarta found that 52.3 percent of students experienced mild to severe anxiety disorders, with the main factors including academic burden, financial problems, and future uncertainty.

The impact of mental health problems on students is wide and serious. Eisenberg et al. (2009) found that college students with mental health problems had lower cumulative achievement indexes and higher dropout rates. Seemiller and Grace (2016) explain that mental health problems can lead to decreased academic achievement, concentration difficulties, social isolation, sleep and eating disorders, and, in extreme cases, can increase the risk of substance abuse and suicidal ideation. Long-term impacts include disruptions in the transition to the workforce, difficulties in building a career, and an overall decline in quality of life. (Breslau et al., 2009)

Many factors affect mental health, including family history, genetic factors, traumatic experiences, socio-economic stress, and lifestyle behaviors. One of the lifestyle behaviors that is strongly suspected to affect mental health is smoking behavior. Basic Health Research data in 2018 shows that 32.8 percent of the Indonesian population aged 15 years and above are active smokers,

with a significant proportion in the Generation Z age group (Ministry of Health of the Republic of Indonesia, 2018). Research by Kusuma and Hidayat (2019) on college students shows that the prevalence of smoking ranges from 25-40 percent.

The relationship between smoking behavior and mental health can be explained through the Self-Medication Hypothesis put forward by Khantzian (1997), in which individuals with mental health problems tend to use substances, including nicotine, as a form of self-medication to cope with the symptoms they are experiencing. This theory is supported by a neurobiological mechanism whereby nicotine activates nicotinic acetylcholine receptors in the brain, releasing dopamine and creating a temporary sensation of comfort (Picciotto, 2018). However, chronic nicotine exposure leads to receptor desensitization and changes in brain neuroplasticity, which makes smokers more susceptible to mood and anxiety disorders (Kutlu & Gould, 2016).

A meta-analysis by Taylor et al. (2014) showed that smokers have a 70 percent higher risk of developing anxiety disorders and depression than non-smokers. Research by Goodwin et al. (2022) found that college students who smoked more than ten cigarettes per day had a 2.3 times higher risk of developing anxiety disorders than non-smokers. A study in Indonesia by Pratiwi and Suhariadi (2021) found a significant positive correlation between smoking intensity and stress levels in college students. Longitudinal research from Fluharty et al. (2017) found that smokers had higher levels of psychological distress than non-smokers, and quitting smoking was associated with a decrease in symptoms of anxiety and depression. Based on this background, this study aims to determine the relationship between smoking behavior and mental health in Generation Z students.

METHODS

This study used a quantitative approach with a correlational design to test the relationship between smoking behavior and mental health in Generation Z students. The sampling technique used is nonprobability purposive sampling, with subject criteria, namely active Generation Z students in Indonesian universities, active smokers of both conventional and electronic cigarettes, and domiciled in Indonesia.

The variables in this study consisted of the independent variable, namely smoking behavior, and the dependent variable, namely mental health. Smoking behavior is defined as the

activity of smoking cigarettes intentionally, consistently, and regularly based on physical and psychological dependence on nicotine. Mental health in this study refers to the level of mental distress experienced by individuals, which is a condition in which individuals experience various psychological symptoms that interfere with their normal functioning.

The data collection instrument used is the Glover-Nilsson Smoking Behavioral Questionnaire, which has been modified based on the research of Molina et al. (2023) to measure smoking behavior. This instrument consists of 24 items that measure four aspects, namely the function of smoking in daily life, smoking intensity, smoking place, and smoking time. The instrument uses a 1-5 Likert scale, with a total score range of 24-120. The results of the instrument test showed a reliability coefficient of 0.984 with a grain discrimination power ranging from 0.570 to 0.928.

The second instrument is the World Health Organization's Self-Reporting Questionnaire, adapted by Beusenbergh and Orley (1994) to measure mental health. This instrument consists of 29 items with a dichotomous answer format of yes or no that measure four dimensions, namely symptoms of neurosis, symptoms of psychoactive substance use, psychotic symptoms, and symptoms of post-traumatic stress disorder. The total score ranges from 0-29 where a higher score indicates a higher level of mental distress.

Data analysis techniques use descriptive statistics to describe participant characteristics and categorize data, and inferential statistics use Pearson's Product-Moment correlation to test research hypotheses. Before conducting a hypothesis test, an assumption test was carried out, including a normality test and a linearity test. Data analysis was carried out with the help of SPSS software.

RESULTS AND DISCUSSION

Results

The description of the characteristics of the study participants showed that of the 104 Generation Z students who became participants, most of them were male as many as 73 people or 70.2 percent and women as many as 31 people or 29.8 percent. Based on age, the most participants were in the age range of 21-23 years as many as 52 people or 50 percent, followed by 18-20 years old as many as 42 people or 40.4 percent, and 24-26 years old as many as 10 people or 9.6 percent. The majority of the types of cigarettes consumed are conventional cigarettes, as many as 83 people

or 79.8 percent, and e-cigarettes, as many as 21 people or 20.2 percent. Based on domicile, 62 participants or 59.6 percent came from Java, and 42 participants or 40.4 percent came from outside Java.

The description of the research data based on hypothetical and empirical scores showed that for the smoking behavior variables, the hypothetical score ranged from 24-120 with a mean of 72 and a standard deviation of 16, while the empirical score ranged from 24-106 with a mean of 69.68 and a standard deviation of 27.537. For the mental health variable, the hypothetical score ranged from 0-29 with a mean of 14.5 and a standard deviation of 4.83, while the empirical score ranged from 0-29 with a mean of 18.64 and a standard deviation of 8.600.

Table 1 Description of Research Data

Variable	N	Hypothetical Min	Hypothetical Max	The Red Hypothesis	SD Hypothetical	Empirical Min	Empirical Max	Empirical Red	Empirical SD
Smoking Behavior	104	24	120	72	16	24	106	69,68	27,537
Mental Health	104	0	29	14,5	4,83	0	29	18,64	8,600

The categorization of smoking behavior data based on mean and hypothetical deviation standards showed that 57 participants, or 54.8 percent, were in the high category, 18, or 17.3 percent, in the medium category, and 29, or 27.9 percent, in the low category. Categorization of mental health data showed that 54 participants, or 51.9 percent, were in the high category, 41 participants, or 39.4 percent, in the medium category, and 9 participants, or 8.7 percent, in the low category. A high category of mental health indicates a high level of mental distress.

Table 2. Categorization of Smoking Behavior

Categories	Score Interval	Frequency	Percentage
Height	$X \geq 88$	57	54,8%
Medium	$56 \leq X < 88$	18	17,3%
Low	$X < 56$	29	27,9%
Total		104	100%

Table 3. Mental Health Categorization

Categories	Score Interval	Frequency	Percentage
High	$X \geq 92$	54	51,9%
Medium	$58 \leq X < 92$	41	39,4%
Low	$X < 58$	9	8,7%
Total		104	100%

The results of the normality test using the Shapiro-Wilk test showed that the smoking behavior variable had a W value of 0.887 with a significance of 0.000 and the mental health variable had a W value of 0.895 with a significance of 0.000. These results show that neither variable is normally distributed, as the significance value is less than 0.050. However, considering the number of research subjects as many as 104 ($N > 30$), based on the Central Limit Theorem, the data can be considered to meet the assumption of normality for the purposes of parametric analysis. The results of the linearity test indicated an F linearity value of 6.734 with a significance of 0.012 ($p < 0.050$), indicating a linear relationship between the smoking behavior variable and the mental health variable.

The results of the hypothesis test using Pearson's Product-Moment correlation showed a correlation coefficient value of 0.232 with a significance of 0.018. A significance value smaller than 0.050 indicates that there is a significant positive relationship between smoking behavior and mental health in Generation Z students. The determination coefficient value of 0.054 or 5.4 percent showed that smoking behavior contributed 5.4 percent to the mental distress of Generation Z students, while the remaining 94.6 percent was influenced by other factors that were not studied.

Table 4. Hypothesis Test Results

Variable	Correlation Coefficients	Significance	Coefficient of Determination	Remarks
Smoking Behaviors with Mental Health	0,232	0,018	0,054	Significant

Discussion

The results of the study show that there is a significant positive relationship between smoking behavior and mental health in Generation Z students. These findings are in line with previous studies that show a positive relationship between smoking behavior and mental distress. Taylor et al. (2014) in a meta-analysis found that smokers had a 70 percent higher risk of experiencing anxiety and depression disorders than non-smokers. Research by Goodwin et al. (2022) also found that college students who smoked more than ten cigarettes per day had a 2.3 times higher risk of developing anxiety disorders than non-smokers. Pratiwi and Suhariadi (2021), in a study on Indonesian students, also found a significant positive correlation between smoking intensity and stress levels in college students. These results are also supported by a longitudinal study from Fluharty et al. (2017), which found that smokers have higher levels of psychological distress than non-smokers in terms of symptoms of anxiety, depression, and stress.

The positive relationship between smoking behavior and mental distress can be explained through several mechanisms. From the perspective of the Self-Medication Hypothesis put forward by Khantzian (1997), individuals with mental distress tend to use cigarettes as a self-medication strategy to overcome symptoms of anxiety or depression. However, this strategy is maladaptive because it only provides short-term relief and actually worsens mental conditions in the long run.

Neurobiological mechanisms suggest that nicotine activates nicotinic acetylcholine receptors in the brain, releasing dopamine and creating a sensation of temporary comfort (Picciotto, 2018). However, chronic nicotine exposure leads to receptor desensitization and changes in brain neuroplasticity, which makes smokers more susceptible to mood and anxiety disorders (Kutlu & Gould, 2016). Kutlu and Gould (2016) further explain that chronic nicotine exposure can alter the structure and function of the brain, particularly in the hippocampus, which plays a role in learning and memory, and in the amygdala, which is involved in regulating emotions and responses to threats.

Nicotine withdrawal symptoms also play an important role in worsening mental distress. Hughes (2007) explains that when smokers do not smoke, they experience withdrawal symptoms such as irritability, anxiety, difficulty concentrating, and poor mood. These symptoms are often mistaken for stress or anxiety that requires cigarettes to be overcome, when in fact these symptoms are the result of nicotine dependence itself. This cycle creates a reinforcement loop that reinforces smoking behavior and, at the same time, increases levels of mental distress.

Ziedonis et al. (2008) found that nicotine dependence creates a cycle in which smokers feel the need to smoke to cope with withdrawal symptoms, which are often mistaken for stress or anxiety. The social and economic effects of smoking also contribute to mental distress, where college smokers spend significant money to buy cigarettes, which can exacerbate financial problems and increase financial stress.

The results of the data categorization showed that 54.8 percent of participants had high-category smoking behavior and 51.9 percent had high-category mental distress. This indicates that most of the student smokers in this study sample experience significant mental distress. The strength of the relationship found in this study was included in the weak category with a correlation coefficient of 0.232 and an effective contribution of 5.4 percent. This indicates that despite a statistically significant relationship, smoking behavior explains only a small part of the variance in mental distress. Most of the variance, or 94.6 percent, was explained by other factors not studied in this study.

Other factors that can affect mental distress in college students include biological factors such as genetics and neurotransmitter imbalances, psychological factors such as personality traits and negative cognitive patterns, as well as external factors such as academic load, financial problems, quality of social relationships, social support, social media exposure, sleep patterns, and physical activity. Goldberg and Huxley (1992) and the World Health Organization (2001) explain that mental health is influenced by the complex interaction between internal and external factors.

Although the strength of the relationship is weak, these findings remain clinically and practically important because smoking behavior is a modifiable risk factor for mental distress. Taylor et al. (2014) found that quitting smoking was associated with a significant reduction in symptoms of anxiety, depression, and stress, with an effect size comparable to or even greater than the use of antidepressants. The results of this study support the importance of an integrated treatment approach in dealing with smoking students who experience mental distress, as well as the need for comprehensive prevention and intervention programs in universities.

The practical implications of this study are the need to develop comprehensive prevention and intervention programs in universities that include education on the impact of smoking on mental health, the provision of smoking-cessation counseling services integrated with mental health support services, and the strengthening of smoke-free area policies on campus. Colleges

also need to provide counseling and psychological support services that are easily accessible to students as well as organize workshops or seminars on stress management and healthy coping strategies.

CONCLUSION

Based on the results of the study, it can be concluded that there is a significant positive relationship between smoking behavior and mental health in Generation Z students, with a correlation coefficient value of 0.232 and a significance value of 0.018. The hypothesis in this study was accepted because the direction of the relationship was found in accordance with the hypothesis that stated that there was a positive relationship between smoking behavior and mental health (mental distress). The results of the study show that the higher the smoking behavior of Generation Z students, the higher the level of mental distress experienced, and vice versa. Smoking behavior contributed 5.4 percent to the mental distress of Generation Z students, while the remaining 94.6 percent was influenced by other factors that were not studied in this study. This study has several limitations, including weak relationship strengths indicating that there are many other factors that need to be explored, a cross-sectional design cannot definitively determine causal relationships, and the use of self-report methods that are susceptible to response bias. Therefore, further research is recommended to involve additional variables that can affect mental distress, such as social support, academic stress, sleep patterns, and physical activity, use a longitudinal design to be able to establish causal relationships more definitively, and expand the research subject by involving students from a variety of more diverse backgrounds.

The practical suggestion from this study is that Generation Z students need to develop coping strategies that are more adaptive in dealing with academic stress and consider reducing or quitting smoking. Colleges need to design and implement comprehensive prevention and intervention programs related to smoking behavior and student mental health. Health workers and campus counselors need to develop an integrated treatment program that addresses both smoking behavior and mental distress at the same time. Governments and policymakers need to formulate more comprehensive policies related to tobacco control and mental health promotion among the younger generation.

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