Quality : Jurnal Kesehatan
Volume 19, Nomor 1 Tahun 2025, pp 62-67
pISSN : 1978-4325, eISSN : 2655-2434, DOI: 10.36082/qjk.v19i1.1192

THE ASSOCIATION BETWEEN STRESS AND SMOKING HABITS AMONG PRISONERS AT THE SURABAYA CORRECTIONAL INSTITUTION

[1]Anindya Arum Cempaka, [2]Maria Theresia Arie Lilyana
[1,2] Nursing Faculty, Widya Mandala Catholic University, Surabaya, Indonesia

Information of Article:

Genesis of article:

Received: 3 July 2023
Revised: 3 May 2025
Accepted: 28 May 2025
Published:12 June 2025

Keywords:
Stress; Smoking Habits; Prisoners

This is an open access article under the CC-BY-SA license.Copyright © 2025 by Author. Published by Politeknik Kesehatan Kemenkes Jakarta I

Abstract

Background: Imprisonment is a big part of the stressor. People who initially live freely are stripped of their independence and freedom in a prison or detention center. They are always monitored and restricted in their movements and behavior. In addition, they cannot interact with their family, have to live in prison with strict supervision, and need some adjustments to live a new life. Everyone has different ways of coping with stress; some take a positive way while others take a negative one, such as smoking. **Methods**: This study uses a correlation design with a cross-sectional approach. This research was carried out in December 2022 at the Surabaya Correctional Institution, involving 35 male adult respondents. A modified questionnaire was used as the instrument to obtain information about the independent variable, i.e., smoking. Meanwhile, the Perceived Stress Scale questionnaire sheet was used as the instrument to find out about the dependent variable, i.e., the level of stress. The bivariate analysis used the Spearman rank test with a significance level of 95% (α=0.05) using SPSS 17. **Result**: The results show a p-value ≤0.05, indicating a relationship between stress and smoking among prisoners. Officers and prisoners who live and are serving criminal sentences are expected to be aware of stress and its causes. Therefore, they can appropriately manage stress to reduce and divert it positively and harmlessly.

Corresponding author:
Anindya Arum Cempaka
Jl. Kalisari Selatan No. 1, Tower A Lantai 8, Surabaya, Indonesia
Email: anindya@ukwms.ac.id

Introduction

Data from WHO in 2017 showed that 450 million people worldwide experience stress. In Indonesia, it is estimated that 1.3 million people experience stress (Marcus, Sagita and Artawan, 2021). Stress is a condition where individuals experience pressure on a problem that must be overcome to get maximum results (Bartsch, 2015). Taylor (2017) defines stress as a negative emotional experience accompanied by physiological, biochemical, and behavioral changes designed to reduce or adapt to the stressor by manipulating the situation, changing the stressor, or accommodating its effects.

Psychosocial stress is a social or environmental factor that hinders an individual's ability to adapt. Psychosocial stressors include various unpleasant life experiences that trigger stress, e.g., work stress, stress relating to others, stress obtained from the environment, experiences of discrimination, financial stress, stressful life events, and childhood difficulties. Stress can happen to anyone, including prisoners in Correctional Institutions (Wilson, 2004 in Pamungkas, 2019). A detainee or prisoner is physically and mentally under pressure because they lose their freedom, and their every activity is always monitored. They are not free to communicate with their families and only get limited time for family meetings. This situation causes detainees and convicts in detention centers or prisons to experience mental or psychological pressure while their criminal process continues. According to Harsono, (1995) in Sofyan et al. (2022), imprisonment is a big stressor for someone who initially lives freely and independently since their independence and freedom are removed. They are always monitored and restricted in their movements and behavior. In addition, they cannot interact with their family, have to live in prison with strict supervision, and need some adjustments to live a new life (Sofyan et al., 2022).

Indonesia is a developing country with the third largest consumption of cigarettes in the world, after China and India (Marcus, Sagita and Artawan, 2021). The prevalence of smoking is 46.8% in men and 3.1% in women aged 10 years and over. The largest number of smokers is in the lower middle class, with a percentage of 40% of the total number of smokers in Indonesia (Setiawan, Setiawati and Lestari, 2020). Stress occurs due to releasing cortisol (the main stress hormone). The stress experienced causes someone to try to reduce or divert the stress by coping with stress management. Everyone has different ways of coping with stress. Some take positive ways while others take negative ones, such as smoking or alcohol addiction. (Berg *et al.*, 2010).

Smoking is the most commonly consumed stimulant. Many studies have proven that smoking can increase the risk of death. Smoking increases the chances of contracting serious illnesses that carry a risk of death. With the increasing number of smokers and secondhand smokers in Indonesia, the number of cases of lung disease caused by smoking is also rising. This is certainly not too surprising considering the high per capita consumption of cigarettes in Indonesia. It is noted that 90% of lung cancer deaths are initially caused by smoking. Male smokers are 22.4 times more at risk of dying from lung cancer compared to non-smoking males, and 11.9 times more at risk among females (Satriawan, 2022). Smoking behavior is bad for health since it can cause some diseases such as chronic cough, lung disease, infertility, pregnancy disorders, atherosclerosis, and mouth and lung cancers. According to Sadri (in Setiawan et al., 2020), smoking can endanger health including impotence, osteoporosis, pregnancy disorders, coronary heart attacks, and respiratory system disorders.

Various factors cause someone to be interested in smoking, including the perception that smoking is a symbol of status or masculinity (self-pride) among friends (Amalizar, Octavia and Setianto, 2023). The need to be accepted often makes people do anything to be accepted by their group include smoking behaviour. In the correctional institution, it is still unclear whether they smoke due to be accepted, stress or other reasons. Previous research conducted by many studies has proven that there is a relationship between stress and smoking behavior, but there has been no research specifically discussing the relationship between stress and smoking among prisoners in correctional institutions (Ablelo, Kusuma and Rosdiana, 2019; Ramadan and Sunarti, 2020; Marcus, Sagita and Artawan, 2021). Therefore, this study examines the relationship between stress and smoking behavior among prisoners in correctional institutions.

Open Access: http://ejournal.poltekkesjakarta1.ac.id/index.php/adm
Email: jurnalquality@poltekkesjakarta1.ac.id

Methods

This study used a correlation design with a cross-sectional approach. This research was carried out in December 2022 at the Surabaya Correctional Institution, involving 35 male adult respondents. The inclusion criteria of this study were adult prisoners with a sentence of more than three years, had served a minimum of one year's sentence, were able to read and write, and were willing to become respondents. Meanwhile, the exclusion criteria in this study were the prisoners who refused to be respondents.

A modified questionnaire was used as the instrument to obtain information about the independent variable, i.e., smoking. Meanwhile, the Perceived Stress Scale questionnaire sheet was used as the instrument to find out about the dependent variable, i.e., the level of stress. The bivariate analysis used the Spearman rank test with a significance level of 95% (α=0.05) using SPSS 17. The test results are considered to have a significant relationship if the value of $p \leq \alpha$ ($p \leq 0.05$).

Results

The results show that the prisoners who experienced stress were 30 people, while the ones who did not experience stress were five people. Twenty-nine people had smoking habits, while six people did not smoke.

Tabel 1. Bivariate analysis Relationship association between stress and smoking habit

Smoking Habit	**Stress Condition**		***p-value***
	Stress	Not Stress	
Smoking	27	2	0.005
Not Smoking	3	3	
Total	30	5	

The results of statistical tests to find out the relationship between stress levels and smoking behavior show a value of $p \leq 0.05$. Therefore, it can be concluded that there is a statistically significant association between stress and smoking among prisoners.

Discussion

The concept of health from the World Health Organization (WHO) is physically, mentally/socially perfect, free from disease, and able to be productive and carry out activities optimally. This healthy concept emphasizes the ability to carry out activities optimally, including facing and managing the stress experienced (Primatanti, Ayu and Ratna, 2022). Stress is a mental and emotional disorder or chaos caused by external factors. Meanwhile, a stressor is a condition or event that causes a change in a person's life, forcing him to make adaptations or adjustments to overcome it. Not everyone can adapt and overcome these stressors, giving rise to complaints, namely stress. Stress can cause body reactions and even symptoms, such as loss of appetite, muscle weakness, and decreased interest in the surrounding environment (Sati and Harahap, 2020).

Stress symptoms can be seen in physiologic and cognitive aspects. Physiological symptoms can be marked by increased blood pressure and heart rate. Wiebbe and Williams in Sofyan et al. (2022) suggest the physiological symptoms in individuals who experience stress include headaches, digestive problems, excessive fatigue, sleep disturbances, and shortness of breath. Meanwhile, cognitive symptoms can occur due to disturbing thoughts that continue to run in the brain if the individual is faced with a stressor. The individual thinks about possible sources of action, feels afraid of the consequences of the actions taken, and may berate himself for being unable to handle the situation better. Excessive stress can threaten an individual's ability to deal with the environment.

Prisoners are one of the vulnerable populations who are at risk of experiencing health problems, both physical and mental. These prisoners experience spatial and social limitations during their sentences, causing complex health problems (Wai *et al.*, 2021). The common health problem is related to mental stress. Worries about family and communication limitations often lead to sleep disturbances, anxiety, sadness, depression, and thoughts of committing suicide (Primatanti, Ayu and Ratna, 2022). One in seven prisoners has a psychotic illness or major depression and is twice as likely to experience a psychotic illness or major depression as the general population. Several studies state that more than 50% of prisoners experience mild to severe stress. Prisoners who experience stress show negative symptoms or behaviors. Each individual has a level of stress tolerance that is different from one another. The stressor that comes will make the

Open Access: http://ejournal.poltekkesjakarta1.ac.id/index.php/adm
Email: jurnalquality@poltekkesjakarta1.ac.id

individual active and then cause various reactions. If the individual is able to mobilize strength and overcome and fight the stressor, then the individual has a low-stress level. In comparison, if individuals cannot overcome and fight all forms of stressors they face, it is likely that individuals will experience high-stress level (Abdullah, 2020).

Individuals with mental health problems such as stress will smoke more often than individuals who do not. According to Putri in Ablelo et al. (2019), everyone has a way to minimize the impact of stress, i.e., a coping strategy. There are two coping strategies, namely coping centered on emotions and on problems. An example of coping centered on emotions is smoking behavior, which can reduce stress without aiming to solve the problems that cause stress. Meanwhile, problem-centered coping aims to solve and find sources of what causes stress. Smoking is done because it is considered to make one's mind calm.

Some people respond to stress by smoking more frequently (Kosendiak *et al.*, 2022). Research by arreras et al. (2022) and Koopmann et al. (2021) reported that increased cigarette consumption is associated with increased feelings of mental distress. Furthermore, Carreras et al. (2022) stated that increased cigarette consumption by 9.1% is associated with decreased quality of life, increased sleep disturbances, and increased stress and anxiety. Nicotine is inhaled through the lungs through the carotid arteries and then to the brain and will have an effect on the brain for 10-15 seconds. Nicotine then releases dopamine, GABA, serotonin, and beta-endorphins, which give pleasure, improve mood, and reduce anxiety and tension. Nicotine causes addiction caused by cholinergic receptors in the brain, especially in the Ventral Tegmental area. The bond between nicotine and nicotinic receptors causes dopamine release in the nucleus accumbent, which causes a feeling of comfort and dependence, thereby increasing the smoking frequency (Marcus, Sagita and Artawan, 2021).

Every pack of cigarettes has written the negative impact of smoking on health, including heart attacks, impotence, and disorders of pregnancy and the fetus. Smoking will encourage the occurrence of vasoconstriction and atherosclerosis, which causes subclinical myocardinal ischemia, as well as carbon monoxide, which increases the risk of hypoxemia and myopacardinal hypoxia. In addition to impacting the body's organs, the content of cigarette substances, especially nicotine, affects psychological conditions, nerves, and brain activity and function, both in active and passive smokers. The use of nicotine affects the brain, which then causes psychological effects such as a decrease in the ability to recognize emotions and tend to be depressed, making cigarette addicts continue to smoke to stay enthusiastic and calmer. In addition, nicotine can have an addictive effect on smokers. This addiction can make smokers to have prolonged depression and even stress if they do not smoke a day (Liem, 2010). Although the number of smokers has decreased in the last decade, the number of smokers in people with mental health problems remains high (Lawrence and Williams, 2016) Data from the 2017 National Health Interview Survey shows that the prevalence of smoking in adults with stress disorders increased by 35% compared to the prevalence of smoking in individuals who did not have stress disorders (Wang, Asman and Gentzke, 2018).

The respondents who experience stress but do not smoke can carry out good coping management, a process in which individuals try to manage the perception gap between the demands of a stressful situation and their ability to meet them (Maryam, 2017). According to Goldfield and Merbaum (in Setiawan et al., 2020)), self-control is an ability to guide, structure, direct, and regulate behavior that can lead individuals toward good consequences. Low self-control in a person will lead to uncontrolled actions and negative behavior such as smoking. Self-control is the ability to override or change one's inner response, prevent unwanted behavioral tendencies, and refrain from carrying out these behaviors (Wardhani, Soerjoatmodjo and Kaihatu, 2021).

Conclusions and Recommendations

Smoking behavior is higher found in people who experience stress, where individuals tend to choose the wrong way to be free from stress. Smoking is a way that individuals deal with stress experienced because smoking is considered to reduce tension and help relax stress experienced. However, suppose someone has good self-control in dealing with the stress experienced. In that case, they can control their emotional attitudes and thoughts to produce positive behavior such as physical exercise, increasing worship, listening to music, and others

rather than smoking. Officers and prisoners who live and are serving criminal sentences are expected to be aware of stress and its causes. Thus, they can get the right stress management to reduce and divert it positively.

Acknowledgment

We would like to express our gratitude to the Rector of Widya Mandala Catholic University (WMCU) Surabaya, Dean of the Faculty of Nursing WMCU, Head of the LPPM WMCU, Surabaya Penitentiary Manager, prisoners and students of the Faculty of Nursing WMCU who were involved in this research.

References

Abdullah, A. A. (2020) 'Pemberian Self Help Groups Terhadap Tingkat Stres Pada Warga Binaan di Lembaga Pemasyarakatan', *Jurnal Ilmu Kesehatan Stikes Duta Gama Klaten*, 12(1), pp. 1–17. doi: https://dx.doi.org/10.5737/e-journal.v11i1.476.

Ablelo, F. O., Kusuma, F. H. D. and Rosdiana, Y. (2019) 'Hubungan Antara Frekuensi Merokok dengan Tingkat Stres pada Remaja Akhir', *Nursing News*, 4(1), pp. 133–144.

Amalizar, D., Octavia, W. A. and Setianto, B. (2023) 'Hubungan dukungan teman sebaya dengan perilaku merokok remaja laki-laki di RW 05 Kelurahan Wonokromo Surabaya', *WIDYALOKA*, 10(1), pp. 59–69.

Bartsch, E. K. (2015) *The wounded healer*. Semarang: Panji Graha.

Berg, C. J. *et al.* (2010) 'Predictors of smoking reduction among Blacks', 12(4), pp. 423–431. doi: 10.1093/ntr/ntq019.

Carreras, G. *et al.* (2022) 'Impact of COVID-19 lockdown on smoking consumption in a large representative sample of Italian adults', *Tobacco Control*, 31(5), pp. 615–622. doi: 10.1136/tobaccocontrol-2020-056440.

Koopmann, A. *et al.* (2021) 'The Effects of the Lockdown during the COVID-19 Pandemic on Alcohol and Tobacco Consumption Behavior in Germany', *European Addiction Research*, 27(4), pp. 242–256. doi: 10.1159/000515438.

Kosendiak, A. *et al.* (2022) 'The changes in stress coping, alcohol use, cigarette smoking and physical activity during covid-19 related lockdown in medical students in Poland', *International Journal of Environmental Research and Public Health*, 19(1). doi: 10.3390/ijerph19010302.

Lawrence, D. and Williams, J. M. (2016) 'Trends in smoking rates by level of psychological distress-time series analysis of US national health interview survey data 1997-2014', *Nicotine and Tobacco Research*, 18(6), pp. 1463–1470. doi: 10.1093/ntr/ntv272.

Liem, A. (2010) 'Pengaruh Nikotin Terhadap Aktivitas Dan Fungsi Otak Serta Hubungannya Dengan Gangguan Psikologis Pada Pecandu Rokok', *Buletin Psikologi*, 18(2), pp. 37–50.

Marcus, D. A., Sagita, S. and Artawan, I. M. (2021) 'Hubungan Antara Tingkat Stres Dengan Perilaku Merokok Pada Mahasiswa Fakultas Teknik Sipil Univeristas Nusa Cendana', *Cendana Medical Journal (CMJ)*, 9(1), pp. 128–134. doi: 10.35508/cmj.v9i1.4945.

Maryam, S. (2017) 'Strategi Coping: Teori dan Sumberdayanya', *Jurnal Konseling Andi Matappa*, 1(2). Available at: https://journal.stkip-andi-matappa.ac.id/index.php/jurkam/article/view/12.

Pamungkas, A. Y. F. (2019) 'Hubungan Dukungan Sosial dengan Tingkat Stres pada Warga Binaan Pemasyarakatan Perempuan di Lembaga Pemasyarakatan', *Journal of Holistic Nursing and Health Science*, 2(2), pp. 42–47. doi: https://doi.org/10.14710/hnhs.2.2.2019.42-47.

Primatanti, P. A., Ayu, D. and Ratna, P. (2022) 'Pemberdayaan Warga Binaan Pemasyarakatan Wanita dalam Manajemen Stres di Lapas Kelas IIB Tabanan Konsep sehat dari World Health', *Warmadewa Medical Minesterium Journal*, 1(1). Available at: https://www.ejournal.warmadewa.ac.id/index.php/wmmj/article/view/4402.

Ramadan, M. R. and Sunarti, S. (2020) 'Hubungan Tingkat Stress dengan Perilaku Merokok pada Remaja di SMPN 029 Samarinda', *Borneo*

Student Research, 1(2), pp. 1261–1267. Available at: https://journals.umkt.ac.id/index.php/bsr/article/view/633.

Sati, A. and Harahap, S. (2020) 'Intensitas Dukungan Keluarga Dalam Mengurangi Tingkat Stres Pada Warga Binaan Wanita Di Lembaga Pemasyarakatan', *TAZKIR: Jurnal Penelitian Ilmu-ilmu Sosial dan Keislaman*, 6(1), pp. 69–86. doi: 10.24952/tazkir.v6i1.2672.

Satriawan, D. (2022) 'Gambaran Kebiasaan Merokok Penduduk Di Indonesia', *Jurnal Litbang Sukowati: Media Penelitian Dan Pengembangan*, 5(1), pp. 51–58.

Setiawan, I. D., Setiawati, O. R. and Lestari, S. M. P. (2020) 'Kontrol Diri Dan Perilaku Merokok Pada Siswa Sma', *Jurnal Psikologi Malahayati*, 2(2), pp. 1–9. doi: 10.33024/jpm.v2i2.2538.

Sofyan, D. S. A., Prayudha, J. B. E. and Lestari, R. (2022) 'Coping stres pada warga binaan pemasyarakatan di Rutan Kelas I Surakarta', *Jurnal Sudut Pandang*, 2(12), pp. 147–159. doi: https://doi.org/10.55314/jsp.v2i12.

Taylor, S. E. (2017) *Health Psychology*. New York: McGraw-Hill Education.

Wai, V. *et al.* (2021) 'Relationships between hope and mental health among women in prison', *Criminal Behaviour and Mental Health*, 31(2), pp. 96–108. doi: https://doi.org/10.1002/cbm.2191.

Wang, T. W., Asman, K. and Gentzke, A. S. (2018) 'Great American Smokeout — Tobacco Product Use Among Adults — United States , 2017', 67(44).

Wardhani, P. R., Soerjoatmodjo, G. W. L. and Kaihatu, V. A. M. (2021) 'Kontrol diri remaja warga binaan di lembaga pemasyarakatan X', *JURNAL ADAT-Jurnal Seni, Desain & Budaya Dewan Kesenian Tangerang Selatan*, 3(2), pp. 107–112. Available at: https://jurnaladat.org/web/artikel-74.html.