

# Stress Management and Mental Health Among Employees of PT. Ngali Sumbawa Mining

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## ABSTRACT

The mining industry is one of Indonesia's vital economic sectors, yet the demanding and high-risk nature of mining work makes employees highly vulnerable to stress and mental health issues. This study aimed to analyze stress management and mental health levels among employees of PT. Ngali Sumbawa Mining. The research used a descriptive quantitative approach with a cross-sectional design involving 32 employees, who were selected using a total sampling technique. Data were collected through the Perceived Stress Scale-10 (PSS-10) questionnaire distributed via Google Forms. Results showed that 18.75% of employees experienced mild stress, while 81.25% experienced moderate stress, with an average score of 20.56 (SD  $\pm 6.15$ ). No respondents were identified with severe stress levels. These findings indicate that employees generally experience moderate stress, requiring routine stress management programs such as soft skills training, relaxation techniques, and managerial support to enhance mental well-being and workplace productivity.

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## ABSTRAK

Industri pertambangan merupakan salah satu sektor ekonomi penting di Indonesia, namun karakteristik pekerjaan yang berat dan berisiko tinggi menjadikan pekerjaannya rentan terhadap stres dan gangguan kesehatan mental. Penelitian ini bertujuan untuk menganalisis manajemen stres dan tingkat kesehatan mental karyawan PT. Ngali Sumbawa Mining. Penelitian menggunakan pendekatan kuantitatif deskriptif dengan desain cross-sectional, melibatkan 32 karyawan yang dipilih secara total sampling. Data dikumpulkan menggunakan kuesioner Perceived Stress Scale-10 (PSS-10) melalui Google Forms. Hasil menunjukkan 18,75% karyawan mengalami stres ringan, 81,25% stres sedang, dan tidak ada yang mengalami stres berat, dengan rata-rata skor 20,56 (SD  $\pm 6,15$ ). Temuan ini menegaskan bahwa sebagian besar karyawan mengalami tingkat stres sedang, sehingga diperlukan program manajemen stres yang terstruktur, seperti pelatihan soft skills, teknik relaksasi, dan dukungan manajerial, untuk meningkatkan kesejahteraan psikologis serta produktivitas kerja.

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## Introduction

Indonesia's mining industry is a major pillar of the national economy, contributing significantly to GDP at around 10-12% from the extractive sector and creating millions of jobs, including in West Nusa Tenggara such as Sumbawa Regency. PT. Ngali Sumbawa Mining, an active mining company with hundreds of hectares of concessions and full production stages, absorbs local labor and contributes to regional infrastructure development through CSR programs. However, job characteristics in this sector such as long shift hours, extreme physical environments (heat, dust, noise), production target pressures, and high safety risks often become heavy sources of work stress for employees (Djamalus et al., 2021; Puspita et al., 2024; Tobing & Haro, 2025).

Work stress among mine workers is not only physical but also psychological, triggered by factors like excessive workload, role conflict, lack of social support, and geographic isolation. Studies in Indonesia show that 68.5% of mine workers experience moderate to severe stress, manifesting in symptoms like mental fatigue, anxiety, insomnia, and mild depression. Globally, mine workers have higher mental health disorder risks than other sectors, with stress prevalence at 30-50% due to safety and interpersonal stressors (Havenga & Bester, 2025; Lestari et al., 2021; Liu et al., 2025a; Maharani Jamil Latief & Mandiri, 2025).

The negative impacts of work stress on employee mental health include reduced quality of life, increased absenteeism, employee turnover, and higher work accident risks, ultimately lowering company productivity by 20-30%. At the organizational level, companies like PT. Ngali Sumbawa Mining face additional challenges such as rising health costs and reduced employee loyalty, especially amid strict OHS regulations from the Ministry of Energy and Mineral Resources (Liu et al., 2025) Rifqi et al., 2022).

Effective stress management including soft skills training interventions, positive coping strategies, and organizational support has proven to reduce stress by 14-25% and improve mine workers' psychological well-being. Nevertheless, specific studies at PT. Ngali Sumbawa Mining remain limited, necessitating research to identify stress levels, risk factors, and contextual management models (Liu et al., 2025).

This study aims to analyze stress management and mental health among PT. Ngali Sumbawa Mining employees, with results serving as a basis for company policy recommendations to create a healthy and sustainable work environment.

## Methods

This study employed a descriptive quantitative approach with a cross-sectional design to describe work stress levels and mental health among PT. Ngali Sumbawa Mining employees. The population consisted of 32 employees at the company office in Lopok/Dete Village, Lape Subdistrict, Sumbawa Regency, West Nusa Tenggara, selected via total sampling from January 28-30, 2026. The main instrument was the Perceived Stress Scale-10 (PSS-10) questionnaire via Google Forms, accessed via employees' phones/laptops, supported by PowerPoint socialization materials. Scoring used a 0–4 scale based on feeling frequency. Four positive

items (nos. 4, 5, 7, 8) were reverse-scored. Total scores were categorized as 0–13 (mild), 14–26 (moderate), and 27–40 (severe) (Riski et al., 2025).

## Results

This study involved 32 PT. Ngali Sumbawa Mining employees, all participating (100% response rate). Based on PSS-10 measurements, stress level distribution showed most respondents in the moderate stress category (81.25%), 18.75% in mild stress, and none in severe stress.

Table 1 Distribution of stress levels

Stress Category	Score Range	Number of Respondents	Percentage
Mild	0–13	6	18.75%
Moderate	14–26	26	81.25%
Severe	27–40	0	0%
<b>Total</b>			<b>32 (100%)</b>

Descriptive statistics for PSS-10 scores showed a minimum of 5, maximum of 26, mean of 20.56, and standard deviation of  $\pm 6.15$ . The median was 24.00 and mode 26, indicating most scores near the upper moderate category limit. The substantial score variation reflects individual differences in stress perception. Moderate score dominance highlights significant psychological impacts from the mining environment, though not reaching severe levels.

Table 2 Descriptive statistics of PSS-10 scores

Statistic	Value
Minimum Score	5
Maximum Score	26
Mean (Average)	20.56
Median	24.00
Mode	26
Standard Deviation	$\pm 6.15$

## Discussion

The research results show that the majority of employees at PT. Ngali Sumbawa Mining are in the moderate stress category (81.25%) with an average PSS-10 score of 20.56 (SD  $\pm 6.15$ ). The median value (24.00) and mode (26), which are close to the upper limit of the moderate category, indicate a concentration of scores at a relatively high stress level. This pattern suggests that the psychological pressure experienced is not merely individual variation but likely reflects systemic characteristics of the mining work environment.

Theoretically, these findings can be explained through the Transactional Theory of Stress proposed by Richard Lazarus and Susan Folkman. According to Lazarus and Folkman, stress arises from a cognitive appraisal process when individuals assess environmental demands as exceeding their coping resources. The dominance of moderate stress in this study indicates that most employees are likely still able to perform adaptive secondary appraisal but are at the

threshold of optimal coping capacity. This condition signals consistent pressure that has not yet reached severe psychological dysfunction.

Additionally, the research results can also be analyzed using the Job Demand Resources (JD-R) Model developed by (Bakker & Demerouti, 2007). This model explains that work stress emerges when job demands such as high workload, time pressure, safety risks, and long shift systems are not balanced by job resources like social support, autonomy, and adequate feedback. In the mining context, high-risk job characteristics and production target-based work can potentially increase psychological strain if not offset by strong organizational support.

Empirically, these findings align with studies showing that workers in the mining sector have higher levels of stress and psychological pressure compared to other sectors due to a combination of physical and psychosocial factors (Havenga & Bester, 2025). Research by (Liu et al., 2025) also found that metal mine workers exhibit moderate work stress levels correlated with fatigue and physical health disruptions. This consistency strengthens the assumption that moderate stress is a common phenomenon in the extractive industry.

Interestingly, the absence of severe stress in this study can be critically interpreted in two possibilities. First, the company may have effective safety management and psychosocial support mechanisms preventing stress escalation. Second, there may be underreporting bias, particularly in masculine work cultures oriented toward physical resilience like mining, where expressions of psychological vulnerability are often suppressed. This phenomenon aligns with literature stating that masculinity norms in heavy industries can hinder mental health issue reporting (Milner et al., 2019)

The relatively large standard deviation ( $\pm 6.15$ ) indicates heterogeneity in stress levels among individuals. This signifies that individual factors such as age, tenure, job position, and personal coping strategies also influence stress perception. Thus, work stress in this population is the result of dynamic interactions between organizational and individual factors, as explained in the biopsychosocial approach to work stress (Quick & Henderson, 2016).

From a practical implication perspective, the dominance of moderate stress should be viewed as an early warning signal. Research shows that chronic moderate stress can develop into burnout, cognitive function decline, and increased work accident risk (Bakker & Demerouti, 2017). In high-risk industries like mining, even mild concentration disruptions can significantly impact work safety. Therefore, organization-based interventions such as enhancing job resources, stress management training, and integrating mental health screening into OHS programs are highly relevant.

## **Conclusion**

This study found that most employees of PT. Ngali Sumbawa Mining experience moderate stress levels (81.25%) with a mean PSS-10 score of 20.56 (SD  $\pm 6.15$ ), while no severe stress cases were identified. Although stress has not reached a critical level, the dominance of moderate stress indicates substantial psychological pressure related to the demanding characteristics of mining work. These findings highlight the need for structured stress management programs, including organizational support, coping skills training, and routine

mental health screening, to prevent escalation and maintain employee well-being and productivity.

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