

ISSN 2597- 6052DOI: <https://doi.org/10.56338/mppki.v7i10.6173>**MPPKI****Media Publikasi Promosi Kesehatan Indonesia**
*The Indonesian Journal of Health Promotion***Review Articles****Open Access****Identification of Risk Factors for Work Stress Field Workers in Oil and Gas Industry: Literature Review****Bram Sinatra Napitupulu^{1*}, Baiduri Widanarko²**¹Fakultas Kesehatan Masyarakat Universitas Indonesia | email: bram.sinatra@yahoo.co.id²Fakultas Kesehatan Masyarakat Universitas Indonesia | email: baiduri@ui.ac.id*Corresponding Author: bram.sinatra@yahoo.co.id**ABSTRACT**

Background: Work-related stress is a significant issue in the oil and gas industry, where workers often face high-risk environments and heavy workloads. Factors such as age, length of service, type of work, and interpersonal conflicts frequently cause stress, which can affect workers' mental health and performance.

Objective: This study aims to identify and analyze the risk factors of work-related stress in the oil and gas sector and provide recommendations for improved stress management.

Method: This research was conducted using a literature review method, analyzing previous studies related to work-related stress among oil and gas workers. Data were collected from relevant quantitative and cross-sectional studies, involving variables such as age, length of service, workload, role conflict, and leadership.

Results: The literature review shows that age, length of service, type of work, workload, and interpersonal conflict significantly relate to workers' stress levels. Interpersonal conflict is the most influential factor, while organizational support, good leadership, and work-life balance policies help reduce stress levels.

Conclusion: Effective interventions in stress management, such as employee wellness programs, improved workplace safety, and work-life balance policies, are essential in this sector. Early detection of stress sources is also crucial to maintaining workers' mental health and increasing productivity in the oil and gas industry.

Keywords: Occupational Risk Factors; Oil and Gas Industry; Stress Management; Work-Related Stress

INTRODUCTION

Work stress has become an increasingly prevalent health issue across various industrial sectors, including the oil and gas industry. Field workers in this sector often face high-pressure and high-risk working conditions, making them vulnerable to stress, which can adversely affect their physical and mental health. According to the World Health Organization (WHO), work-related stress is closely linked to an increased risk of mental health disorders, such as anxiety and depression, which can negatively impact workers' productivity and well-being (World Health Organization, 2021) [1].

The oil and gas industry in Indonesia has unique characteristics that contribute to high levels of stress among workers. Research by Rahmawati et al. (2023) shows that nearly 67% of oil and gas workers experience significant work-related stress due to factors such as long working hours, hazardous working environments, and unpredictable work schedules [2]. Nahrwold et al. (2022) also identified various environmental stressors, such as extreme temperatures and noise, which can exacerbate workers' psychological conditions [3]. In addition, a study by Zainal et al. (2023) emphasizes that irregular shift patterns and job discomfort can further increase the psychological burden on field workers in the oil and gas industry [4].

The existing literature highlights the importance of effective stress management in the oil and gas industry to improve workers' health and safety. A study by Sulistyarningsih and Daulay (2023) underscores the need for interventions to detect and reduce stress risk factors, which can lower workplace accidents and boost productivity [5]. Furthermore, research by Mustika et al. (2024) shows that workplace stress management programs can have a positive impact on workers' mental and physical well-being [6].

Data from the Ministry of Energy and Mineral Resources of the Republic of Indonesia (2024) also indicates significant mental health issues among oil and gas workers, stressing the need for a systematic approach to addressing work stress in this sector [7]. Although several studies on work-related stress in the oil and gas industry exist, there is still a gap in understanding the specific risk factors that affect field workers in Indonesia.

Therefore, this literature review aims to identify and analyze the risk factors associated with work-related stress experienced by field workers in the oil and gas industry, as well as to provide a foundation for further research and the development of effective interventions. This study is expected to help improve working conditions and the mental health of workers in this vital sector for Indonesia's economy.

METHOD

This study uses a literature review study approach. The purpose of this study is to collect relevant articles on risk factors for work stress in field workers in the oil and gas industry (oil and gas) with a quantitative research approach in the Indonesian region. The database used is Google Scholar. The keywords used are "work stress" "Field workers", "Oil and gas industry", "oil and gas", "pertamina" in Indonesian and "risk factors", "determinant", "Burnout", "work stress", "workplace stress" "Field workers", "Oil and gas industry", "Indonesia" in English. The criteria for the articles searched include articles published in the last 5 years from 2019 to 2024, accessible and not a review.

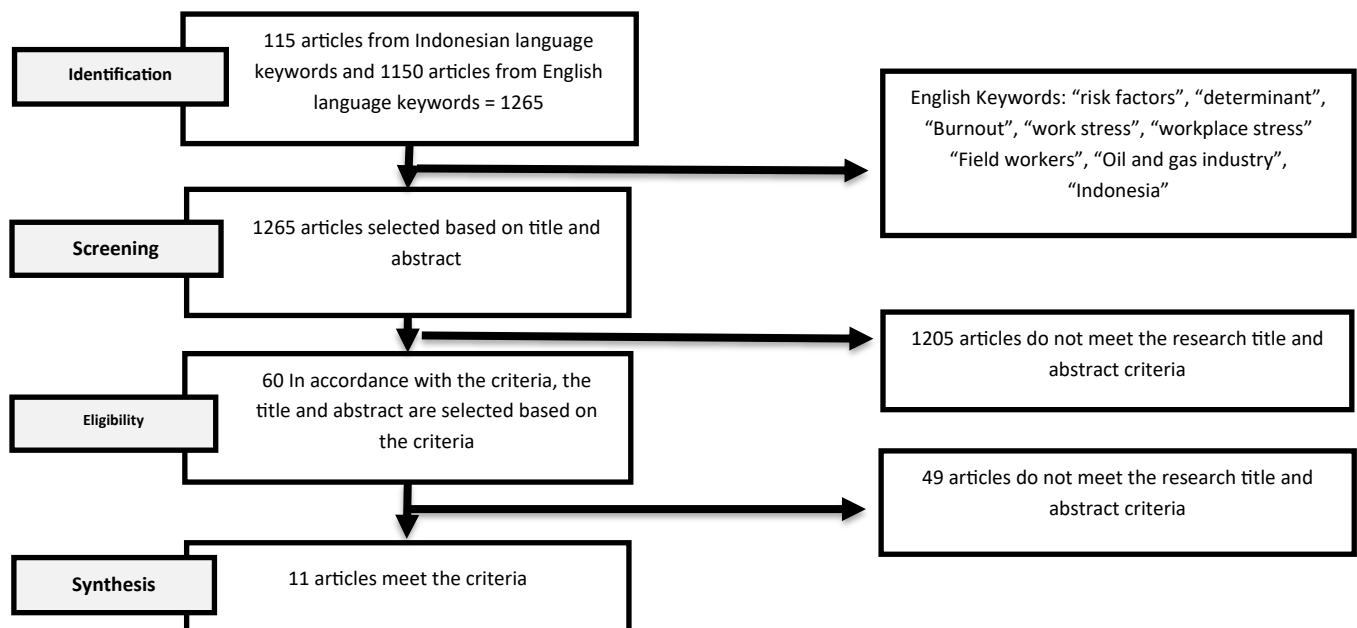


Figure 1. Article Selection with PRISMA

RESULTS

The final results of the article search obtained 115 articles from Indonesian keywords and 1150 articles from English keywords so that the total articles obtained from the two keyword sources were 1265 articles. A total of 1254 articles did not match the title and abstract and criteria so they were removed before entering the review stage. The synthesis results obtained 11 articles that passed the screening selection and met the criteria so they could be reviewed.

Tabel 1. Articles Review Result

No	Authors	Title	Method	Sample	Result
1.	Sutrisno, et al. (2024) [8]	Factors Contributing to Burnout among Offshore Workers	Quantitative Study with Cross-Sectional Design	80 respondents	There is a relationship between age ($p = 0.021$), education ($p = <0.001$), marital status ($p = 0.021$), years of service ($p = 0.038$), job type ($p = 0.000$), work stress ($p = <0.001$), and workload ($p = 0.003$) with burnout among offshore workers.
2.	Mega Kurnia DN, et al. (2023) [9]	The Impact of Work-Life Balance on Employee Performance Moderated by the Role of Organizational Support and Job Burnout at PT. Pertamina Hulu Rokan.	Quantitative Study with Cross-Sectional Design	17 (seventeen) measurement indicators from observational data of 4 studies	Work-life balance has a negative effect on job burnout ($p = <0.001$). Organizational support moderates the relationship between work-life balance and job burnout ($p = <0.001$). Job burnout has a negative effect on employee performance ($p = 0.088$), while work-life balance has a positive effect on employee performance ($p < 0.001$).
3.	Hirsa Antari Sukma, MD, et al. (2022) [10]	Correlation between Tryptophan Daily Intake and Occupational Factors with Stress Outcome Scores among Offshore and Onshore Workers	Cross-sectional study	14 offshore workers and 20 onshore workers	There was a significant correlation between occupational factors and stress outcome scores among offshore and onshore workers, specifically between workload and fatigue ($r = 0.35$, $p = 0.04$), workload and depression ($r = 0.4$, $p = 0.02$), interpersonal conflict and anxiety ($r = 0.47$, $p = 0.005$), role conflict and anxiety ($r = 0.47$, $p = 0.005$), as well as between tenure and physical reaction stress ($r = -0.42$, $p = 0.02$).
4.	Endang Haryati, et al. (2019) [11]	The Effect of Work Environment and Work Stress on Employee Performance at PT Aneka Gas Industri Tbk	Quantitative	35 respondents	There is a partial influence between the Work Environment ($b = 0,496$; $t\text{-count} = 3.935 > t\text{-table} = 1.6923$) and employee performance. There is no effect of Job Stress on Employee Performance ($b = 0,013$; $t\text{-count} = -, 0171 < t\text{-table} = 1.6923$).
5.	Sri Indrawati, et al. (2018) [12]	The mental workload analysis of safety workers in an Indonesian oil mining industry	Quantitative	30 respondents	The result shows mental demand (MD) is the most dominant indicator affecting the mental workload between safety man contractor, safety man field, and safety officer. The highest mental workload score among safety workers is on the safety man field with a WWL score of 62,38 because, among the three types of safety workers, the highest MD is on the safety man field due to the responsibility.
6.	Kurnia Putra Wardhana, et al. (2024) [13]	Analysis of Factors Affecting the Work Stress in Workers at PT. X, An Oil and Gas Company	Quantitative design cross-sectional	80 respondents	There was a significant relationship between marital status ($p=0.009$), work period ($p=0.015$), role conflict ($p=0.021$), and interpersonal conflict ($p=0.002$) on work stress in workers. The study results also show that interpersonal conflict is the factor that has the most influence on work stress (estimate=0.64, $p=0.049$).
7.	Khoirun Nisa, et al. (2019) [14]	The Relationship Between Servant Leadership, Employee	Quantitative Cross-sectional study	276 respondents	There is a correlation between servant leadership on burnout ($p= 0,001$). There is

		Engagement, Burnout, and Job Satisfaction at PT Pertamina Mor VI			no correlation between burnout on job satisfaction ($p=0,991$).
8.	Ratu sekar Langen P, et al, (2024) [15]	The Effect of Work Environment, Work-Life Balance, and Burnout on Employee Performance (Case Study at PT. Pertamina (Persero) RU-VI Balongan	Quantitative survey method	62 respondents	The analysis results indicate that the work environment ($p=0,500$), work-life balance ($p=0,131$), and burnout ($p=0,580$) do not have a significant effect.
9.	Widi F, at al. (2023) [16]	The Relationship between Individual Characteristics and Work Safety with Work Stress in Workers at PT Pertamina Zone 1 Jambi Field in 2022	Quantitative cross-sectional study	36 respondents	The prevalence of workers with old age was 58.3%, long service life was 61.1%, work safety was not good at 38.9% and those who experienced work stress were 77.8%. there was a relationship between age ($p =0.046$, $PR=1.508$), years of service ($p =0.036$, $PR=1.591$), work safety ($p =0.013$, $PR=1.571$) and work stress.
10.	Budhi Alfiyyah A, et al. (2024) [17]	The effect of work-family conflict and work overload on turnover intention with job stress as mediation in state-owned enterprises employees	Quantitative	245 respondents	The variables of work-family conflict ($p <0,05$), work overload ($p <0,05$), and job stress ($p <0,05$) have a positive influence on turnover intention. The variables of work-family conflict ($p <0,05$) and work overload ($p <0,05$) positively and significantly influence job stress.
11.	Akbar Alif H, et al, (2024) [18]	The effect of transactional leadership on employee performance mediated by job satisfaction, job stress, and trust	Quantitative	69 respondents	There was a relation between Transactional leadership on employee performance ($p=0,002$), transactional leadership on job satisfaction ($p=<0,001$), transactional leadership on job stress ($p=0,024$), transactional leadership on trust ($p=<0,001$), job satisfaction on employee performance ($p=<0,001$), and trust on employee performance ($p=<0,001$).

DISCUSSION

After reviewing work stress-related articles, it becomes clear why these factors impact stress levels. Factors such as age, education, marital status, job type, and workplace safety all contribute to how workers manage stress, particularly in high-risk environments like oil and gas. Understanding these influences is key to creating effective stress management strategies, which will be explored in detail below.

Age

Age is one of the key factors in determining workers' stress levels. Younger workers often face limitations in work experience, which can increase anxiety and stress when they encounter unfamiliar situations. They may also feel additional pressure from expectations to quickly learn and grow in the workplace. In contrast, older workers tend to have more experience, helping them handle stressful situations better. However, they may face other issues such as fatigue or difficulties adapting to rapidly changing technology, which can also cause stress [8][9][16].

Education

Education level plays a crucial role in how workers manage work-related stress. Workers with higher education levels usually possess better analytical and problem-solving skills, enabling them to handle complex job pressures more effectively. They are also more likely to understand the importance of stress management and have access to resources that help them cope. On the other hand, workers with lower education levels may have limited access to safer or more prestigious positions and are more likely to be involved in demanding physical work, increasing the risk of stress [8]. For example, in the oil and gas industry, workers with lower education may be placed in high-risk roles like drilling or welding, while those with higher education could occupy more strategic, less physically demanding managerial positions.

Marital Status

Marital status often influences workers' stress levels. Married workers or those with family responsibilities may experience additional pressure from outside of work. They frequently have to balance family and work responsibilities, which can be a significant source of stress. The demands of providing for a family, educating children, or caring for elderly parents add complexity to their lives. This pressure can be more pronounced for those working in high-risk environments or with long hours, such as offshore workers in the oil and gas industry who are away from home for extended periods [8][13].

Tenure

Work tenure usually affects how workers handle stress. Workers with longer tenure generally have broader experience, making them better prepared to face work pressures and challenges. They have learned from previous experiences and are more adept at developing strategies to deal with difficult situations. However, long tenure can also contribute to physical and mental fatigue, especially for those who have worked in high-pressure environments for years. In the oil and gas industry, long-tenured workers may also experience fatigue from irregular working hours or exposure to harsh working conditions [8][16].

Job Type

The type of job is one of the most significant factors affecting stress levels. In the oil and gas sector, high-risk jobs such as offshore work, drilling, or pipeline maintenance demand high levels of physical and mental stamina. These jobs often involve hazardous environments, exposure to extreme weather, and the need to remain alert during long shifts. All of this can significantly increase stress compared to more administrative or managerial roles, where workers mostly interact with computers in a more controlled environment [8]. Additional stress arises from the constant potential danger of accidents and the heavy responsibility of ensuring the safety and operational continuity of the company.

Burnout

Burnout is a state of physical, emotional, and mental exhaustion caused by prolonged stress. In the workplace, burnout occurs when workers feel overwhelmed by continuous job demands and are unable to find ways to alleviate the pressure. Workers in heavy industries like oil and gas, who face daily physical and mental challenges, are often more susceptible to burnout. Those working long shifts, far from family, and in dangerous environments often experience burnout more quickly. This condition can affect workers' mental and physical health, reduce productivity, and increase the risk of accidents [15].

Workload

Excessive workload is one of the primary causes of workplace stress. In heavy industries like oil and gas, workloads often exceed workers' physical and mental capacity. For instance, offshore platform workers may be required to work long shifts, sometimes up to 12 hours a day, with little time to rest. High workloads, combined with significant responsibilities, can lead to both physical and mental exhaustion. When workers feel that job demands exceed their ability to cope, they become more vulnerable to stress, fatigue, and ultimately burnout [8][10][12][17].

Work-Life Balance

Balancing personal life and work is crucial to maintaining workers' mental health. When workers are unable to balance these two aspects, they are more prone to stress. In the oil and gas industry, where workers often work far from home and have irregular work schedules, maintaining this balance becomes particularly challenging. Failure to achieve a work-life balance can increase the risk of stress, depression, and burnout. Workers who manage to maintain a good balance between work and personal life tend to be more relaxed and productive [9][15].

Role Conflict

Role conflict occurs when workers experience conflicting demands from various sources, both within and outside of work. For example, a worker may need to meet a manager's expectations for completing important tasks while also serving as a team leader, which requires more time to guide colleagues. The mismatch between these demands can trigger stress, especially when workers feel unable to meet all expectations simultaneously. In complex work environments like the oil and gas sector, where responsibilities often overlap, role conflict becomes more common [13].

Interpersonal Conflict

Interpersonal conflict refers to tension or disagreements between individuals in the workplace, whether with colleagues or supervisors. A work environment filled with conflict can create an unproductive atmosphere, affecting both performance and mental health. Such conflicts can range from minor differences of opinion to serious disputes over work methods or management decisions. In high-risk industries like oil and gas, where teamwork is critical, interpersonal conflict can increase stress as it disrupts effective communication and jeopardizes workplace safety [10].

Leadership

Leadership style has a significant impact on workers' stress levels. Supportive, open, and inclusive leaders tend to foster a positive work environment, reducing stress levels. In contrast, authoritarian or unresponsive leadership can exacerbate stress. In heavy industries, effective leadership is especially important because leaders' decisions directly affect the safety and well-being of their teams. Poor leadership can make workers feel undervalued and unsupported, increasing their stress levels [14][18].

Work Environment

An unsafe or unsupportive work environment, such as exposure to physical hazards, harsh working conditions, or inadequate facilities, can increase workers' stress. In the oil and gas sector, workers are often exposed to high-risk environments, such as offshore platforms, deep-sea drilling, or remote areas with limited access to healthcare facilities. These conditions can create constant discomfort and anxiety, ultimately increasing stress levels. Conversely, a safe and supportive work environment can help reduce stress and improve workers' mental well-being [11][15].

Workplace Safety

A sense of security in the workplace plays a crucial role in reducing stress. Workers who feel their company takes adequate measures to protect their safety tend to have lower stress levels. Conversely, workers who feel they are working in dangerous environments, where the risk of accidents is high and safety procedures are insufficient, are more prone to stress. In the oil and gas industry, workplace safety is critical given the high risks involved, such as fires, explosions, or oil spills. Proper and effective safety measures can provide peace of mind for workers and help reduce their stress levels [16].

Family-Work Conflict

Conflicts between family and work responsibilities often become significant sources of stress, especially for workers in the oil and gas industry who must work far from home for extended periods, such as on offshore platforms. Physical absence from family life can create emotional strain for both workers and their family members. The pressure to meet work demands while staying involved in family life often leads to feelings of guilt and additional stress. This conflict can worsen workers' mental health and affect their overall productivity and well-being [17].

Turnover Intention

High job stress often drives workers to consider changing jobs. When workers feel that workplace pressure is too much and the company does not provide adequate support to help them manage stress, they may start looking for job alternatives elsewhere. High stress levels and a lack of work-life balance in the oil and gas industry often lead to high turnover intention, especially when workers feel they are not compensated or rewarded fairly for the efforts and risks they face daily. High turnover intention can negatively impact companies, as losing experienced workers reduces operational efficiency and increases costs for recruiting and training new staff [18].

CONCLUSION

Work stress in the oil and gas industry is influenced by factors such as age, education, marital status, tenure, job type, workload, and role or interpersonal conflicts. These factors can exacerbate stress, especially in high-risk work environments. Organizational support, strong leadership, and a healthy work-life balance are proven to reduce stress and enhance performance. Effective stress management is vital for maintaining workers' health and improving productivity in this sector.

REKOMENDATION

To alleviate work stress in the oil and gas industry, companies should implement stress management programs, enhance workplace safety, and create a more comfortable work environment. Flexible policies and job

rotation are essential for ensuring work-life balance, along with leadership that focuses on workers' well-being. Early detection and intervention of stress are also crucial to prevent issues from escalating.

REFERENCES

1. World Health Organization. Mental Health in the Workplace: Fact Sheet. 2021.
2. Rahmawati, F., Jannah, R., & Nurbaiti, N. (2023). The prevalence of occupational stress and its determinants among oil and gas workers in Indonesia. *Occupational Health Psychology*, 28(2), 105-118.
3. Nahrwold, M., Tatar, E., & Agung, M. (2022). Work-related stress in the oil and gas industry: A review. *International Journal of Occupational Safety and Ergonomics*, 28(4), 887-895.
4. Zainal, A., Samad, A., & Lestari, N. (2023). The impact of shift work on workers' mental health in the oil and gas sector: A systematic review. *Journal of Occupational Health*, 65(1), e12327.
5. Sulistyarningsih, E., & Daulay, H. (2023). The impact of working conditions on employee stress in the oil and gas sector: Evidence from Indonesia. *Journal of Business Research*, 143, 245-253.
6. Mustika, R., Yuliansyah, A., & Dwianto, I. (2024). Managing workplace stress in the oil and gas industry: Challenges and recommendations. *Journal of Energy Management*, 36(1), 56-78.
7. Ministry of Energy and Mineral Resources of the Republic of Indonesia. (2024). Annual Report on Mental Health and Occupational Safety in the Energy Sector.
8. Soesanto, Soesanto, E., Indahnah, Yulisetyaningrum, & Faiqh Albyn, D. (2024). Faktor-Faktor Yang Menyebabkan Burnout Pada Pekerja Lepas Pantai (Offshore) at Holding PT Perkebunan Nusantara, Jakarta How to cite: Sutrisno. *Medical : Jurnal Kesehatan Dan Kedokteran*, 1(1).
9. DN, M. K., & Gunawan, A. W. (2023). PENGARUH WORK-LIFE BALANCE TERHADAP EMPLOYEE PERFORMANCE YANG DIMODERASI OLEH PERAN DARI ORGANIZATIONAL SUPPORT DAN JOB BURNOUT DI PT. PERTAMINA HULU ROKAN. *Journal of Comprehensive Science*, 2.
10. Sukma, H. A., Adi, N. P., Widyahening, I. S., Fitriani, D. Y., & Mansyur, M. (2022). Correlation between Tryptophan Daily Intake and Occupational Factors with Stress Outcome Scores among Offshore and Onshore Workers. *Acta Medica Philippina*, 56.
11. Haryati, E., Suharyanto, A., Hasmayni, B., & Siregar, F. (2019). The Effect of Work Environment and Work Stress on Employee Performance at PT Aneka Gas Industri Tbk. *ICSSIS*. <https://doi.org/10.4108/eai.24-10-2019.2290609>
12. Indrawati, S., Prabaswari, A. D., & Pradipta, T. (2018). The mental workload analysis of safety workers in an Indonesian oil mining industry. *MATEC Web of Conferences*, 154. <https://doi.org/10.1051/mateconf/201815401078>
13. Wardhana, K. P., Muis, M., Russeng, S. S., Saleh, L. M., Naiem, M. F., & Thaha, R. M. (2024). Analysis of Factors Affecting the Work Stress in Workers at PT. X, An Oil and Gas Company. *International Journal of Chemical and Biochemical Sciences*, 25(19). <https://doi.org/10.62877/30-ijcbs-24-25-19-30>
14. Nisa, K., Yacobson, H., & Chandra, M. W. (2019). The Relationship Between Servant Leadership, Employee Engagement, Burnout And Job Satisfaction At PT Pertamina Mor VI. *International Journal of Innovative Research and Advanced Studies (IJIRAS)*, 6(10). www.ijiras.com
15. Sekar, R., Pujiwati, L., Aisyah, N., Prasetya, B. A., & Maulana, S. (2024). The Effect of Work Environment, Work-Life Balance, dan Burnout on Employee Performance (Case Study at PT. Pertamina (Persero) RU-VI Balongan. *Indonesian Journal of Business Analytics (IJBA)*, 4(3), 895–910. <https://doi.org/10.55927/ijba.v4i3.9309>
16. Fatchurrachman, W. P., & Halim, RD. (2023). The Relationship between Individual Characteristics and Work Safety with Work Stress in Workers at PT Pertamina Zone 1 Jambi Field in 2022. *Formosa Journal of Applied Sciences*, 2(4), 569–578. <https://doi.org/10.55927/fjas.v2i4.3899>
17. Alyaa, B. A., Daud, I., Hendri, M. I., Kalis, M. C. I., & Fahrana, Y. (2024). The effect of work-family conflict and work overload on turnover intention with job stress as mediation in state-owned enterprises employees. *Journal Ekonomi*, 13.
18. Hutama, A. A., Noermijati, N., & Wirawan Irawanto, D. (2024). The effect of transactional leadership on employee performance mediated by job satisfaction, job stress and trust. *International Journal of Research in Business and Social Science (2147- 4478)*, 13(3), 151–166. <https://doi.org/10.20525/ijrbs.v13i3.3297>