

The Relationship between Individual Characteristics and Work Safety with Work Stress in Workers at PT Pertamina Zone 1 Jambi Field in 2022

Widi Fatchurrachman P^{1*}, RD. Halim²

Program studi Ilmu Kesehatan Masyarakat, Fakultas Kedokteran dan Ilmu Kesehatan Universitas Jambi

Corresponding Author: Widi Fatchurrachman P

fatchurrachmanpratama@gmail.com

ARTICLE INFO

Keywords: : Work Stress, Work Safety, Pertamina

Received : 24, February

Revised : 26, March

Accepted: 28, April

©2023 Fatchurrachman, Halim:

This is an open-access article distributed under the terms of the [Creative Commons Attribution 4.0 International](https://creativecommons.org/licenses/by/4.0/)



ABSTRACT

An unsafe workplace can cause anxiety at work which is one of the symptoms of work stress, the aim of this research is to determine the relationship between age, length of work and work safety with work stress. This type of research is quantitative observational cross sectional study design. The research population is production workers at PT Pertamina Zone 1 Field Jambi, totaling 36 workers as well as being the research sample. Data analysis used the Chi-Square statistical test. The results showed that 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%. The results of the bivariate analysis showed that there was a relationship between age (p-value=0.046, PR=1.508), years of service (p-value=0.036, PR=1.591), work safety (p-value=0.013, PR=1.571) and work stress.

INTRODUCTION

Work stress is a process that can cause people to feel sick and uncomfortable or anxious because of their work, workplace or work situation (Beehr & Franz, 1987). Data from the 2020 Health and Safety Executive (HSE) shows that as many as 828,000 workers are affected by work-related stress, depression or anxiety in 2019 to 2020. And for the average prevalence of work-related stress, depression and anxiety in the industry, there are 1,579 cases per 100,000 workers (Health and Safety Executive, 2020). According to the International Labor Organization (2020), in 2019 around 779 for every 100,000 workers experience non-lethal work accidents and as many as 23.6 per 100,000 workers experience fatal accidents (ILO, 2020). Work stress is a serious problem in Indonesia. Basic Health Research (Riskesmas 2018) of the Ministry of Health shows data that the number of mental disorders is 9.8%. Furthermore, the work stress rate is as much as 35% which can be fatal and as many as 43% are estimated to have lost working days (Ministry of Health RI, 2018).

Occupational safety and health or K3 aims to improve the health status of workers as high as possible. The application of K3 has spread widely in almost every industrial sector. With the application of K3 workers can avoid the threat of danger that can arise in the workplace due to the conditions and work environment (Putri, 2018). The elements in Occupational Health and Safety are not fixated on physical factors, but also mental, emotional and psychological factors that can trigger work stress. Potential hazards at PT Pertamina Zone 1 Field Jambi, apart from the current Covid-19 disease, there are also other potential hazards that affect the situation and conditions at PT Pertamina Zone 1 Field Jambi, namely Accidents (fires, explosions, and other sources of injury), radiation, hazardous chemicals, psychosocial and ergonomic disorders. Therefore, it is mandatory for the management of PT Pertamina Zone 1 Field Jambi to implement health and safety measures in the workplace.

METHOD

This research was conducted at PT Pertamina Zone 1 Field Jambi from March to April 2022. This type of research is an observational quantitative study with a cross-sectional approach, and aims to determine the relationship between the dependent variable and the independent variable by simultaneously examining the dynamics of the correlation between risk factors and effects. The population in this study were all workers in the production section of the Central Facility (CF) and Main Collection Station (SPU) at PT.Pertamina Zone 1 Field Jambi, totaling 36 workers. Sampling uses total sampling technique because the population is less than 100. So, the sample of this study is 36 people. Data collection used the DASS questionnaire and the scale of work safety implementation according to Anoraga with indicators of the work environment, machines and work tools as well as humans. Data analysis used the Chi-Square statistical test.

LITERATURE REVIEW

a. Work Stress

Stress is all stimuli or actions externally or internally in the human body that can cause various kinds of adverse effects ranging from poor health to suffering from an illness (Tarwaka & Bakri, 2004).

Work stress is an excessive amount of work, exceeding a person's capacity to work, including the relationship between working conditions and an individual's perspective that can change the normal and mental state of workers, making individuals feel sick, insecure, uncomfortable or tense because of work, work climate or place. work (BEEHR & NEWMAN, 1978). It can be concluded that job stress is a feeling that gives pressure due to excessive work, emotional tension, a disturbing work environment that can hinder individual performance in his work.

b. Age

Age can affect the level of stress experienced by a person. Older individuals tend to experience higher stress than younger individuals. The older an individual is, the easier it is to experience stress, due to the physical factors the individual has experienced a setback in various abilities such as visual, thinking, remembering, and hearing. The effect of age on the stress experienced usually occurs in certain jobs, especially those related to physical strength and the use of the senses. Work stress can be at risk in three phases of human life, namely childhood, adolescence, to adulthood (Smet, 1994). Age factor is also one of the factors that cause work stress. Furthermore, as the human age increases, human skills, especially speed, dexterity, strength, and coordination decrease. Therefore, the older the worker, the higher the occurrence of work stress due to physical factors owned by the worker (Smet, 1994).

c. Years of service

The tenure is related to the experience of workers in dealing with problems at work. The working period is calculated when the employment relationship occurs between the employee and the employer, or when he first enters work at a specific company/institution based on a company agreement. (Ministry of Industry, 2003). Tenure of work relates to the experience of a worker in dealing with problems at work. tenure also influences the emergence of work stress. Individuals with longer work experience generally have more work problems than individuals with new work experience (Harigopal, 1995). Workers who have work experience of more than five years generally have a higher level of saturation compared to workers with new work experience, then this can result in job stress (Munandar, 2001).

d. Work safety

Occupational Health and Safety promotes and maintains the highest level of physical, mental and social well-being for all workers of all occupations, prevents work-related health problems and maintains the health of workers in all workplaces. harm caused by damaging factors. Maintaining workers in a work environment that is appropriate to the physiological and psychological state of employees and building a response between work and employees and everyone and their work.(ILO, 2020). The Occupational Safety and Health (K3) indicator is divided into 3 factors, including: (a) Work Environment, the environment is everything that is around the worker and can influence him in carrying out the tasks assigned to the worker. The state of the work environment has a major influence on work stress. The factors of the work environment are lighting, temperature and circulation, noise, etc.; (b) Machinery and work equipment. The condition of work machines and equipment can affect cases of work accidents, both directly and indirectly. Good equipment is always ready to be used by employees; and (c) Humans, lack of physical, mental and psychological abilities, lack of insight and skills/expertise, as well as inadequate stress and determination or ambition; (Anoraga, 2005)

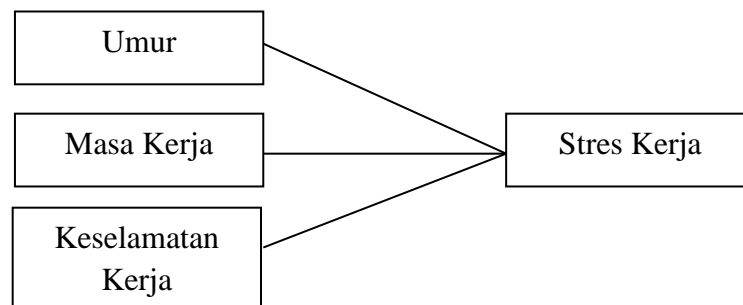


Figure 1. Research Concept Framework

METHODOLOGY

This research was conducted at PT Pertamina Zone 1 Field Jambi from March to April 2022. This type of research is an observational quantitative study with a cross-sectional approach, aiming to determine the relationship between the dependent variable and the independent variable by simultaneously examining the dynamics of the correlation between factors risks and effects. The population in this study were all workers in the production section of the Central Facility (CF) and Main Collection Station (SPU) at PT.Pertamina Zone 1 Field Jambi, totaling 36 workers. Sampling using total sampling technique, totaling 36 workers. Data collection used the DASS questionnaire and the scale of work safety implementation according to Anoraga with indicators of the work environment, machines and work tools as well as humans. Data analysis used the Chi-Square statistical test.

RESEARCH RESULT

1. Univariate Analysis

Table 1. Distribution of Respondents Based on Research Variables

Research variable	Frequency	Percentage
Age		
Old (41-60)	21	58.3%
Young (21-40)	15	41.7%
Years of Service		
Long (>10 Tahun)	22	61.1%
New (≤10 Tahun)	14	38.9%
Work safety		
Not good	14	38.9%
Good	22	61.1%
Work stress		
Work Stress	28	77.8%
No Work Stress	8	22.2%

Based on table 1, the age of the workers is mostly in the old category of 21 workers (58.3%) and the young category of 15 workers (41.7%). Most of the employees' tenure was in the old category with 22 workers (61.1%) and in the new category with 14 workers (38.9%). Occupational safety is mostly found in the unfavorable category of 14 workers (38.9%) and in the good category of 22 workers (61.1%). 28 (77.8%) workers had job stress while 8 (22.2%) workers had no work stress.

1. Bivariate analysis

Table 2. Bivariate Analysis of Research Variables

Variable	Work Stress				Total		P Value	PR (95% CI)
	Work Stress		No Work Stress		n	%		
	n	%	N	%				
Age								
Old	19	90.5	2	9.5	21	100	0,046	1.51 (0.975-2.332)
Young	9	60.0	6	40.0	15	100		
Years of service								
Long	20	90.9	2	9.1	22	100	0.036	1.59 (0.992-2.552)
New	8	57.1	6	42.9	14	100		
Work safety								
Not good	14	100.0	0	0.0	14	100.0	0.013	1.57 (1.146-2.155)
Good	14	63.6	8	36.4	22	100.0		
Total	28	77.8	8	22.2	36	100		

Based on table 2, it was found that the older age group experienced more work stress 19 (90.5%) than the younger age group 9 (60%). Statistically, there is a significant relationship between the age of workers and work stress (P Value: 0.046) and the risk that older workers have a 1.51 times the risk of experiencing work stress compared to young people. Old work experience experienced more Work Stress 90 (90.9%) compared to new work period 8 (57.1%). Statistically, there is a significant relationship between tenure and work stress (P Value: 0.036) and risk. Workers with long tenure have a risk of 1.59 times experiencing work stress compared to those with new tenure. Poor work safety experienced more Job Stress 14 (100%) than good work safety 14 (63.6%). Statistically, there is a significant relationship between tenure and work stress (P Value: 0.036) and risk. Workers with poor job safety have a 1.57 times the risk of experiencing work stress compared to new years of service.

DISCUSSION

Relationship between Age and Job Stress

This study shows that there is a significant relationship between worker age and job stress. Old age workers have 1.51 times the risk of experiencing work stress compared to young people. Age is closely related to stress. The older the age of the worker, it will cause the organs and physical condition to decline, making it more susceptible to experiencing stress, according to the theory put forward by Tarwaka (2005) which states that age conditions affect one's physical work ability or muscle strength (Tarwaka & Bakri, 2004). This is in accordance with what was found at the research site, namely that many older workers experience work stress compared to younger workers. This is because many older workers have work experience so they are believed to do a lot of work with poor health conditions compared to young workers. However, it is possible that young workers can experience work stress because there is quite a lot of work being done.

The researchers assumed that based on the results of the study, it was found that there were more workers in the old age category (41-60 years) 58.3% compared to the number of workers in the young age category (21-40 years) 41.7%. And the proportion of the older age group (90.5%) experienced work stress compared to the younger age group (60%). The results of the field information also showed that there were more old age groups working at PT. Pertamina Zone 1 Jambi Field, this is affected because most of the workers are permanent workers who have worked for Pertamina for a long time with a working period of more than 10 years. Workers who were previously hired at a young age are now considered old due to increasing age because they have worked for a long time. The need to maintain good working conditions such as dividing the portion of work between old and young workers in order to survive and prevent work stress. Relationship between Tenure and Work Stress.

This research shows that there is a significant relationship between tenure and work stress. The risk of workers with long tenure has a risk of 1.59 times to experience work stress compared to those with new tenure. The results of this study are not in line with previous research conducted by Hasbi Ibrahim (2016) regarding factors related to work stress in factory 2 workers at PT. Maruki Internasional Indonesia which stated that there was no relationship between work period and work stress (Ibrahim et al. , 2016). The period of work related to work stress is related to causing boredom at work. Workers with long working terms generally have a higher level of saturation than workers with new working terms. This saturation will cause stress in the workplace (Munandar, 2001). In accordance with the theory of Robbins (2006) states that individual skills, especially speed, dexterity, strength and coordination decrease with increasing age, and cause prolonged boredom that can trigger work stress (Robbins, 2006). This is because workers who have worked for a long time are more exposed or exposed to work situations that can cause work stress compared to workers whose work period is still relatively new. Tenure of work is also related to the emergence of burnout at work, workers who have worked for more than 10 years generally have a higher level of work saturation compared to workers whose working period is still relatively new.

The researcher's assumption is that based on the results of the study it was found that there were more workers in the long service category who had worked for more than 10 years by 61.1% compared to the number of workers in the new service category whose working period had not yet reached or less than 10 years by 38.9%. And the proportion of the long service category group (90.9%) experienced work stress compared to the new service period group (57.1%). The results of the field information also showed that there were also more long service groups working at PT.Pertamina Zone 1 Jambi Field, this was because more workers worked as permanent workers who had a longer working period compared to contract workers who usually worked only Only 2 years according to the work contract and after the contract is completed, the worker does not work anymore unless the work contract is extended, then the working period will also increase. The need to pay attention to the division of work responsibilities, such as rolling so that workers don't get bored doing the same job repeatedly to avoid work stress.

This study shows that there is a significant relationship between work safety and work stress. Risks Workers with poor work safety have a 1.57 times the risk of experiencing work stress compared to those with a new job tenure. The perception of the application of Occupational Safety is the employee's view of what the company is trying to do so that workers can work safely and securely. Anoraga (2005), states that work stress is a form of a person's response, both physically and mentally, to a change in the work environment that is felt to cause him to be threatened (Anoraga, 2005). With the implementation of good occupational safety and health, the anxiety and discomfort felt by workers will be reduced. Anxiety and discomfort is an indicator of stress on the work performed by these workers. Workers who comply with the regulations applied

in the company and have a good perception of Occupational Safety can work calmly without feeling anxious and can position themselves well. Perceptions of occupational safety and health programs can work well if workers have the awareness to behave carefully at work.

The researcher's assumption is that based on the results of the study it was found that there was a greater number of groups in the category of good Occupational Safety perceptions of 61.1% compared to the number of groups in the category of poor Occupational Safety perceptions of 38.9%. And the proportion of the Occupational Safety category (100%) experienced work stress compared to the good Occupational Safety category (63.6%). The results of field information obtained at the time of the study found that 100% of workers in the unfavorable safety category experienced work stress. This means that all workers in the category of less work stress and no workers who do not experience work stress in the category of unfavorable safety. When compared to workers in the good Occupational Safety category, 63.6% experienced work stress. This is because workers who are in the poor Occupational Safety category feel anxious when doing work and feel insecure, distracted or confused so that they cannot position themselves when doing work. The need to pay close attention to the Occupational Safety program and comply with the procedures for implementing the safety program properly in order to avoid feeling anxious which is one of the symptoms of work stress.

CONCLUSIONS AND RECOMMENDATIONS

There is a relationship between age, years of service, work safety and work stress at PT Pertamina Zone 1 Field Jambi in 2022. It is hoped that workers will be able to manage work stress well by dividing the work into groups of young and old, rotating to avoid burnout. pay attention to and improve various matters relating to worker safety so that workers work well

ADVANCED RESEARCH

Future research can conduct research by adding variables such as physical factors of the work environment, job security, workload, and work shifts in the hope that the research results can add insight and become a source of reference related to work stress

ACKNOWLEDGMENTS

This research was made possible with the support from the University of Jambi, especially the Department of Public Health, guidance provided by supervisors and examiners, facilities provided from research sites and participating respondents and support from family and friends. I thank you very much for the support that has been given.

REFERENCES

- Anoraga, P. (2005). *Psikologi Kerja*. Rineka Cipta.
- Beehr, T. A., & Franz, T. M. (1987). *The Current Debate About the Meaning of Job Stress*, *Journal of Organizational Behavior Management*, 8(2), 15–18.
https://doi.org/https://doi.org/10.1300/J075v08n02_02
- BEEHR, T. A., & NEWMAN, J. E. (1978). Job Stress, Employee Health, and Organizational Effectiveness: a Facet Analysis, Model, and Literature Review. *Personnel Psychology*, 31(4), 665–699.
<https://doi.org/10.1111/j.1744-6570.1978.tb02118.x>
- Harigopal, K. (1995). *Organizational Stress: A Study of Role Conflict*.
- Health and Safety Executive. (2020). Work-related stress, anxiety or depression statistics in Great Britain, 2020. *Annual Statistics*, 1–9.
<http://www.hse.gov.uk/statistics/lfs/index.htm>
- Ibrahim, H., Amansyah, M., & Yahya, G. N. (2016). Faktor - Faktor yang Berhubungan dengan Stres Kerja pada Pekerja Factory 2 PT . Maruki Internasional Indonesia Makassar. *Public Health Science Journal*, 8(1), 60–68.
- ILO. (2020). *International Labour Organization*. https://doi.org/10.1007/978-981-10-5206-4_26
- KEMENPERIN. (2003). Undang - Undang RI No 13 tahun 2003. *Ketenagakerjaan*.
- Kementerian Kesehatan RI. (2018). *Hasil Riset Kesehatan Dasar (Riskesdas)*.
- Munandar, A. S. (2001). *Psikologi Industri dan Organisasi*. UI PRESS.

- Putri, R. S. (2018). Hubungan Stres Kerja dengan Tekanan Darah Pada Pekerja PT Pertamina (Persero) DPPU Hasanuddin Tahun 2018. In *Universitas Hasanuddin*.
- Robbins, S. P. (2006). *Perilaku Organisasi* (PT.Indeks (ed.)). Kelompok Gramedia.
- Smet, B. (1994). *Psikologi Kerja*. PT Gramedia Widiasarana.
- Tarwaka, & Bakri, S. H. A. (2004). *Ergonomi untuk Keselamatan, Kesehatan Kerja dan Produktivitas*. UNIBA PRESS. <http://shadibakri.uniba.ac.id/wp-content/uploads/2016/03/Buku-Ergonomi.pdf>