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Analysis of Factors Associated with Work-Related Distress Level Among Mechanics at PT X

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Abstract

Distress is a negative form of psychosocial conditions that may be caused by work, family, social, and individual factors. Several incidents occurring at PT X have indicated the presence of distress among mechanics who work in the company, which is apparent from the physiological, psychological, behavioral, and cognitive symptoms experienced by these workers. This study aims to analyze the level of work-related distress, as well as factors influencing the level of distress experienced by mechanics at PT X. This was a cross-sectional study on all mechanics (n=37) working for PT X. Data analysis was performed using the chi-square test and logistic regression. Factors identified to be linked with distress level were organizational culture and function, interpersonal relations, work pressure, work-family conflict, task design, work schedule and working hours, exercise intensity, anxiety, emotional control, and smoking habits. Various factors have been identified as influencing the distress level among mechanics at PT X, with the emotional control factor as the factor with most influence on distress (Exp(B)=0.34). These factors require actions to reduce the risk of distress, such as providing better arrangement of overtime schedule and training.

Keywords: distress, mental health, psychosocial, workplace

INTRODUCTION

Distress is a negative form of psychosocial condition occurred as a physical and mental response to an imbalance between demands and the ability to cope with these demands (Cox, 1993). The source of psychosocial risks or stressors can include occupational factors and external factors. According to Cox et al. (2000), occupational factors in psychosocial risks are divided into two categories: job content and job context. Other factors outside of work or external factors, such as family, social, and individual factors, can also become additional stressors for workers (Kalimo et al., 1987).

Distress has now been referred to as the 21st Century Health Epidemic by the WHO and is estimated to cost American businesses up to $300 billion per year (Smith, 2012) in the form of costs related to accidents, absenteeism, worker turnover, lost productivity, compensation awards, lawsuit, and medical, legal, and insurance costs. The National Institute of Occupational Safety and Health (NIOSH) revealed that 40% of workers has reported work as the cause of severe distress for them, where 25% of workers consider work as the number one cause of distress in life while 75% believe that they have a greater level of distress than the previous generation and that distress has a stronger influence on health problems when compared to financial problems (Borkowski, 2016).

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Oil and gas mining business is a high-risk business activity that requires a special attention on the issue of operational safety. The number of work accidents that occur in various industries, especially the oil and gas industry, is concerning. In the 2016 OSHEP (Occupational Safety, Health and Environmental Protection) Performance Report for Upstream Oil and Gas Business Activity, it is stated that the 2016 incident rate reached 1.49 with all incidents involved work partners or contractors. In the same year, fatal accidents also occurred in the oil and gas industry, comprising of accidents in construction activities (25%), surveys (25%), and drilling or well service activities (50%) (SKK Migas, 2016).

In 2020, a pandemic caused by coronavirus, which is referred to as the COVID-19 pandemic, has struck all countries in the world, including Indonesia. This pandemic has affected the sustainability of work activities. The impact of the COVID-19 pandemic is felt by almost all companies in Indonesia, including by PT X. PT X is a company engaged in oil and gas services with the main business of providing oil pumps (Artificial Lift System) for oil and gas customers. Thus, the activities of PT X are linked with drilling or well service activities.
Based on the results of a preliminary survey conducted by the authors, it is apparent that various situations may cause distress during an assignment of mechanics, especially among those who have been assigned for less than six months. With the company's policy that new mechanics cannot be scheduled for a vacation before 6 consecutive months, some mechanics try to escape from their boredom by renting a speed boat to go home during their assignment in a remote site. There are also mechanics whose wife was pregnant but they cannot accompany the wife during the pregnancy. In addition, some mechanics who are originally stationed close to their family are then suddenly assigned to a site away from their family. Several other events also reflect jealousy among fellow workers. These trigger work-related distress experienced by mechanics at PT X.

Compared to other occupational health and safety issues, mental health has not been considered as a serious concern by the management of PT X despite the fact that several events indicate the presence of distress among workers, which can be recognized from the physiological, psychological, behavioral, and cognitive symptoms that individuals may experience. By referring to the changes in the current work situation, added by the existing job demands, this paper explains the analysis on the level of distress among mechanics at PT X and the need for immediate distress management in their workplace. Factors that partially and combinedly influence this distress phenomenon, including work, family, social, individual, and social factors, are also explored.

METHOD

This was a cross-sectional semi-quantitative study on mechanics working at PT X Indonesia. This study was conducted in the operational area of PT X, which is located in Subang City (West Java Province), Jambi City (Jambi Province), and Tarakan and Sembakung Districts (North Kalimantan Province), during the period of October – December 2021. By considering the indications of distress phenomena at work; changes in work patterns, design, and job demands; and adjustment to study objectives, it was decided that the target population of this study were all mechanics working at PT X, Indonesia. Based on the company database, the total number of mechanics actively working in this company was thirty-seven (37) people. Total sampling method was used in this study with all 37 mechanics at PT X included in the sample.

Primary data were obtained through questionnaires distributed directly by the researchers to the study subjects. The items in the questionnaire on work-family conflict and family-work conflict were adapted from Carslon, Kacmar, and Williams (2000). Meanwhile, the items on job, social, and other individual factors, as well as work-related distress, were

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adapted from Netemeyer (2004). Respondents were asked to give response to all items using a Likert scale on a scale of 1-4, with 1 means strongly disagree and 4 means strongly agree. Before being used to collect data from the respondents, the questionnaire was first tested for its validity and reliability. The validity test had identified eleven (11) items as invalid. These items were then revised, and some were removed from the questionnaire with the consideration that their removal would not weaken the variables. Meanwhile, the reliability test demonstrated that all items were reliable.

Variables related to work, social, home, and individual factors were divided into two categories, while variables on distress levels were divided into three categories. Data analysis was then performed univariately to see the frequency distribution of each study variable. After that, a bivariate analysis was performed using the Chi-Square statistical test with a significance level of $\alpha = 0.05$. Furthermore, multivariate analysis was performed using the multiple logistic regression statistical test to explore the relationship between all independent variables and dependent variables by using an equation.

RESULTS AND DISCUSSION

The characteristics of respondents, including their job position/title, marital status, number of children, placement location, last education, job tenure, sports intensity, and age, are listed in Table 1, while the results of univariate analysis for each study variable are presented in Table 2.

Table 1
Respondent Characteristics Frequency Distribution

Characteristics	Frequency (n)	Percentage (%)
Position		
Helper/Junior Mechanic	21	57%
Mechanic	12	32%
Senior Mechanic	4	11%
Marital Status		
Single	17	46%
Married	20	54%
Number of Children		
1 Child	7	19%
2 Children	8	22%
3 Children	4	11%
No Children	18	49%
Work Location		
Subang	2	5%
Jambi	14	38%
Tarakan	13	35%
Sembakung	8	22%
Education		
High School/ Equivalent	31	84%
Diploma 3/ Equivalent	2	5%
Bachelor/ Equivalent	4	11%
Job Tenure		
< 5 years	25	68%
5 -10 years	11	30%
> 10 years	1	3%
Exercise Intensity		

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1x per week	27	73%
2x per week	5	14%
3x per week	5	14%
Age		
20 - 39 years old	30	81%
40 - 59 years old	7	19%

Table 2
Univariate Frequency Distribution of Study Variable

Variable	Frequency (n)	Percentage (%)
Organizational Culture and Functions		
Good	17	45.9%
Poor	20	54.1%
Interpersonal Relations		
Good	14	37.8%
Poor	23	62.2%
Pressure at Work		
Low	8	21.6%
High	29	78.4%
Work-Family Conflict		
No Conflict	31	83.8%
Conflict	6	16.2%
Family-Work Conflict		
No Conflict	10	27%
Conflict	27	73%
Task Design		
Good	15	40.5%
Poor	22	59.5%
Work Schedule		
Good	9	24.3%
Poor	28	75.7%
Working Hours		
Good	12	32.4%
Poor	25	67.6%
Exercise		
Adequate	13	35.1%
Inadequate	24	64.9%
Social Support		
Good	28	75.7%
Poor	9	24.3%
Family Member Support		
Good	34	91.9%
Poor	3	8.1%
Anxiety		
Low	6	16.2%
High	31	83.8%
Emotional Control		
Poor	28	75.5%
Good	9	24.3%
Smoking Habit		
Good	8	21.6%

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Poor	29	78.4%
Distress Level		
Low	10	27%
Moderate	27	73%
High	0	0%

From those results, it was demonstrated that, for the distress level, most respondents had a moderate distress level (n=27.73%), while the remaining workers experienced low level of distress (n=10.27%). The results also showed that none of the respondents were experiencing a high level of distress.

The bivariate analysis using Chi Square test presents resulted in the form of significance values for each independent variable against the dependent variable. With a p-value of 5% for the significance level and a CI of 95%, it was indicated that the organizational culture and function; interpersonal relationship pressure at work; family work conflict; work schedule; working hours; exercise; anxiety; emotional control; and smoking habits variables were linked to the work-related distress level. Meanwhile, the variables of work family conflict, task design, social support, and family member support presented no significant relationship to the work-related distress level.

The results of multivariate analysis demonstrated that the R square value was 0.473. This means the combined independent variables were able to explain 47% percent of the dependent variables. The independent variables referred here were organizational culture and function; interpersonal relations; family work conflict; work schedule; working hours; exercise; anxiety level; emotional control; and smoking habits. Meanwhile, the remaining 53% percent could be explained by other factors outside the study variables.

Of all independent variables in the model compiled in this study, the emotional control variable had a Sig value of 0.001 (<0.05); hence, the emotional control partially affected the distress level with Exp(B) of 0.034. This showed that the stronger the emotion is, the higher the level of distress experienced by workers with an exponential increase of 3.4%.

Table 3
Bivariate Test Results

Variable	Category	Low Distress		Moderate Distress		Total		p-value at 95% CI
		N	%	N	%	N	%	
Organizational Culture and Functions	Good	8	47.1%	9	52.9%	17	100%	0.023*
	Poor	2	10%	18	90%	20	100%	
Interpersonal Relations	Good	8	57.1%	6	42.8%	14	100%	0.002*
	Poor	2	8.7%	21	91.3%	23	100%	
Pressure at Work	Low	5	62.5%	3	37.5%	8	100%	0.02*
	High	5	17.2%	24	82.8%	29	100%	
Work-Family Conflict	No Conflict	9	29%	22	71%	31	100%	1.000
	Conflict	1	16.7%	5	83.3%	6	100%	
Family-Work Conflict	No Conflict	6	60%	4	40%	10	100%	0.012*
	Conflict	4	14.9%	23	85.1%	27	100%	
Task Design	Good	3	13.6%	19	86.4%	22	100%	0.056
	Poor	7	46.7%	8	53.3%	15	100%	
Work Schedule	Good	7	77.8%	2	22.2%	9	100%	0.000*
	Poor	3	10.7%	25	89.3%	28	100%	
Working Hours	Good	7	58.3%	5	41.7%	12	100%	0.006*
	Poor	3	12%	22	88%	25	100%	

Variable	Category	Low Distress		Moderate Distress		Total		p-value at 95% CI
		N	%	N	%	N	%	
Exercise	Adequate	9	69.2%	4	30.8%	13	100%	0.000*
	Inadequate	1	4.2%	23	95.8%	24	100%	
Social Support	Good	10	35.7%	18	64.3%	28	100%	0.079
	Poor	0	0%	9	100%	9	100%	
Family Member Support	Good	10	71.4%	4	28.6%	14	100%	0.548
	Poor	0	0	23	100%	23	100%	
Anxiety	Low	5	83.3%	1	16.7%	6	100%	0.003*
	High	5	16.1%	26	83.9%	31	100%	
Emotional Control	Poor	3	10.7%	25	89.3%	28	100%	0.000*
	Good	7	77.8%	2	22.2%	9	100%	
Smoking Habits	Good	6	75%	2	25%	8	100%	0.002*

Table 4
Recapitulation of Multivariate Analysis Results

Variables	N	P-Value	Exp (β)	Lower-Upper (95%)	R Square
Emotion	37	0.001	0.034	0.005 – 0.247	47.3%

Results of the study demonstrated that most of the mechanics had a moderate distress level. In its sense, distress is an adaptive response to external situations that cause behavioral, physical, and psychological deviations in organization members (Luthans, 2011). This can be seen from the statements of some mechanics who had difficulty to sleep after they finished working, especially after they have to deal with troubles in the unit. Troubles, which lead to temporary cessation of the oil production process (downtime), create burdens for these workers.

The reason for this is that there is a maximum target for the downtime as agreed in the employment contract. If this limit is exceeded, there will be a fine/penalty that must be paid by PT X to the customers. This becomes the reason mechanics skip their meals and break, leading to frequent complaints of gastritis or stomach ulcer among respondents. In addition, many mechanics admitted that they have experienced a decline in their motivation to work, and even unwilling to go to work. This situation is especially felt when they have spent their time home for a while and are going to go away for their duty, leaving home or family behind to work.

When the body experiences distress, several physiological symptoms will arise as a response to out-of-ordinary conditions. The body system response involves the autonomic nerve, hypothalamic-pituitary axis (HPA), and catecholamines that affect the function of organs in the body. Organs in cardiovascular system, gastrointestinal system, and other systems can present functional abnormalities (Wantoro in Andhika, 2017). In a state of distress, the muscles in the head and neck become tense, causing headaches, sleeping difficulty, hypertension, kidney disease, heart attack, ulcers, and decreased immunity Cartwright et al. (Andhika, 2017).

This study shows a relationship between organizational culture and function and the level of distress among mechanics at PT X. The feeling of never been involved in the decision-making process, inconsistency in carrying out policies, and discrimination or differences in treatment between senior and new workers are factors that contribute to the increase in distress among mechanics.

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These results are in line with a study conducted by Yuwono et al. (2014), stating that organizational culture shows a significant negative relationship to worker work distress. In a decision-making process, discussions should be built between superiors and subordinates to allow them to have the opportunity to communicate openly with each other (Kim, B.J., Lee, 2021).

A relationship is identified between interpersonal relations and the level of distress among mechanics at PT X. The difference in attention to workers, with special attention to workers who are relatives, and the feeling of not being involved in the decision-making process in the team has contributed to the increase of distress among the mechanics in this study.

These results support the findings of Viertio et al. (2021) and Nakahori et al. (2021), showing that interpersonal relations in the workplace significantly relate to the level of work-related distress. Workers with strong supports from superiors and colleagues tend to not experience distress, and vice versa. Interpersonal relations also play a positive role in reducing worker fatigue by helping them cope with stressful situations at work (Kim, B.J., Lee, 2021).

A relationship between pressure at work and the level of distress among mechanics at PT X is identified. The most frequent pressure experienced by mechanics is the pressure they feel when they encountered troubles in a unit that cause the unit to be temporarily out of service, which leads to a downtime. This requires them to work intensively to make the unit goes back to its normal function in a predetermined time frame. This creates a great pressure because if the unit does not function after the specified maximum time limit stated in the employment contract, PT X must pay a fine/penalty to the customers. Therefore, when there are troubles in a unit, the mechanics are required to make a quick decision to be able to fix it.

In addition, the demands of attaining good performance from the superiors also create burdens for mechanics. The lack of communication devices in the workplace makes it difficult for mechanics to contact their family and their significant others. It also hampers coordination on work issues.

These results are in line with a study conducted by Weigl et al. (2021), showing that work-related distress can be caused by pressure coming from the workplace. This pressure can come from the pressure due to deadlines and the demands to demonstrate satisfactory performance.

A relationship is revealed between family-work conflict and the level of distress among mechanics at PT X. Family problems often influence the mechanics when they are at work and interfere with their concentration in doing their job. In addition, if the family asks the mechanics to postpone their on-duty schedule due to family matters, most mechanics will try to adjust their on-duty schedule to fulfill the wishes of the family members. In the interests of the family, most mechanics prefer to have their income reduced as long as they can stay with their family. For example, during major holidays, some mechanics prefer to celebrate with their family rather than getting more incentives. These findings support a previous study conducted by Viertio et al. (2021), stating that family-work conflict has a stronger influence in increasing the risk of work-related distress than work-family conflict. Workers might spend less time with their significant others, friends, and family than interacting with colleagues on site (Viertio et al., 2021).

In terms of work schedule, there is a relationship between work schedule and the level of distress among mechanics at PT X. Most mechanics admitted that they have difficulties in determining the time for off-duty and taking leave. The high level of work activities with limited personnel, added with COVID-19 prevention and control measures applied before entering the site, make it more difficult for leaders to organize the work schedule.

Specifically for workers who are Helpers/Junior Mechanics, they are scheduled to be on duty for 6 months first before getting the right for 1 month off duty. Excessive long work schedules could lead to boredom, increased fatigue risk, and increase distress among workers.

This same situation is also described by Weigl et al. (2021) in their study that shows workers with shift work system and long work schedules are more at risk of experiencing distress while working. A work schedule that is too long has the risk of causing fatigue, increasing the potential for accidents, and even distress in the workplace (Agustina, 2018).

A relationship has been found to be exist between working hours and the level of distress among mechanics at PT X. Most mechanics admitted that troubles in the unit may occur at any time, including in early mornings. If the trouble occurs in the early morning, with the predetermined maximum downtime limit for a unit to be temporarily down, the mechanics must work as quickly as possible to solve the trouble immediately. As a result, the time for eating and resting is skipped, leading to complaints of gastritis/stomach ulcer, which is identified as the most frequent disease experienced by mechanics.

During this condition, it is possible that a mechanic works more than 8 hours a day. However, the company does not have regulations on overtime and incentives to compensate those who work more than 8 hours.

This result supports the findings in a study conducted by Weigl et al. (2021), showing that that workers with more overtime have a higher risk of experiencing distress. Meanwhile, based on a study conducted by Li et al. (2021), workers with fixed working hours tend to experience a lower risk of distress than workers with shift work system.

This study presents a relationship between exercise and the level of distress among mechanics at PT X. Most mechanics exercise once a week, but only when the facility for exercise is available in their workplace. According to recommendations from WHO, the frequency of exercise for moderate intensity is 3-5x a week, 30 minutes each. This moderate intensity exercise includes fast walking, jogging, cycling, swimming, rope jumping, tennis, or gymnastics (WHO, 2021).

The dorms located in Subang, Jambi, and Tarakan have areas and facilities for exercising, such as a jogging track and area for playing table tennis. It is different from the situation in Sembakung, where the site is remote and has limited facilities for exercise.

The results of this study are in line with a previous study conducted by Wang et al. (2021) stating that physical activities can contribute to reducing negative health impacts and improving the quality of life in workers. Thus, workers who do not exercise are more at risk of experiencing distress at work.

A relationship between the level of anxiety and the level of distress is identified among mechanics at PT X. Most mechanics admit to being anxious at the certainty of their future careers. Changes in the organizational structure can cause concerns among workers, especially concerns on how it may affect their employment status and future careers. Some mechanics also admit that they become very anxious when they have to face troubles in a unit on their own, such as when the Senior Mechanic is off duty. In addition, they also do not have the courage to argue with customers when they have to interact directly with them on the field.

This result supports a previous study by Matsuo et al. (2021), which stated that anxiety about the future is linked to work-related distress. Anxiety about the future and unstable emotional state can affect the psychological welfare of individuals.

A relationship is also revealed between emotional control and the level of distress among mechanics at PT X. Some mechanics admitted that they tend to remember other people's mistakes even if they have forgiven them. In addition, most mechanics choose to be silent when they are emotional rather than communicating their concerns or their contrasting opinion. On one hand, this is good, but unexpressed emotions can actually cause emotional exhaustion in individuals (Ramos, 2021).

In addition, the mechanics in this study also mentioned that when they feel that there are different treatments or injustice in the work organization, they also prefer to remain silent rather than discussing the matter with the person in charge. Not conveying something that

becomes the urge or will of an individual can cause distress. This is in accordance with a study conducted by Lee et al. (2020), which stated that the unexpressed emotion is associated to the high

Statistical results showed that there is a relationship between smoking habits and the level of distress among mechanics at PT X. Most mechanics are smokers, and some even start to smoke when they start working for the company. They admitted that their cigarette consumption increases when they face difficult situations even though they are aware of the health hazards of smoking cigarettes. They perceive that they feel calmer after smoking.

This result is in accordance with a study conducted by Viertio et al. (2021), which stated that smoking has a relationship with the level of worker distress. Risky lifestyle factors, such as smoking and alcohol, increase the risk of distress.

CONCLUSIONS

Occupational factors related to the level of work-related distress among mechanics at PT X are organizational culture and function; interpersonal relationships; pressure at work; family-work conflict; work schedule; and working hours. Meanwhile, the family and social factors that are linked to the level of work-related distress among mechanics at PT X is the exercise factor. At the individual level, the factors that influence the level of work-related distress among mechanics at PT X are anxiety, emotional control, and smoking habits.

The statistical analysis shows that the combined independent variables are able to explain 47% percent of the dependent variables, while the remaining are explained by other factors outside the study variables. The independent variable that has the most influence on the level of work-related distress is emotional control, where a poorer emotional control will increase the level of distress experienced by workers by 3.4%.

Based on these findings, it is suggested that the company should regulate the compensation for overtime by referring to the applicable laws and regulations or make specific rules that are adapted to the characteristics of the job. In addition, the company should provide training on communication skills to workers to enable them to voice their opinions or explain the field conditions to customers confidently.

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