

**EFFECT OF ANXIETY AND WORK FATIGUE ON JOB BURNOUT, DISTRESS, HEALTH EATING INDEX AND BLOOD PRESSURE THROUGH COPING MECHANISM IN OIL AND GAS COMPANY****Shintia Yunita Arini<sup>1\*</sup>, Dominikus Raditya Atmaka<sup>2</sup>, Irpan Nurhakim<sup>3,4</sup>, Andian Shodiq<sup>3,4</sup>, Devy Syanindita Roshida<sup>5</sup>**<sup>1</sup>Department of Occupational Health and Safety, Faculty of Public Health, Universitas Airlangga, Surabaya, Indonesia<sup>2</sup>Department of Nutrition, Faculty of Public Health, Universitas Airlangga, Surabaya, Indonesia<sup>3</sup>Postgraduate Student, Master of Occupational Health and Safety, Faculty of Public Health, Universitas Airlangga, Surabaya, Indonesia<sup>4</sup>Pertamina EP Cepu, Indonesia<sup>5</sup>Postgraduate Student, School of Medicine, Griffith University, Australia

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**ABSTRACT**

**Introduction:** Workers in oil and gas companies are one of several groups of workers who have a heavy workload, both physically and psychologically, owing to the heavy work responsibilities related to the duration of work, which is not in accordance with the standard working time specified in Indonesia. Based on research conducted in similar industries, 69% of workers in critical jobs experience both acute and chronic fatigue. If not managed properly, it will result in occupational burnout. **Aims:** of this research was to determine whether there is a relationship between coping style, eating habits, work stress, fatigue and occupational burnout **Method:** Design study of cross-sectional manner with the research respondents being permanent workers in oil and gas companies in Bojonegoro, East Java. The total sample comprised of 102 respondents. The data obtained will then be statistically processed using IBM SPSS software with multiple regression tests. **Result:** The level of work fatigue experienced by oil and gas company employees had a significant indirect effect on the healthy eating index through the copying mechanism variable, and the anxiety experienced by oil and gas company employees had a significant indirect effect on the healthy eating index and blood pressure, both systolic and diastole via the copying mechanism variable. **Conclusion:** Anxiety experienced by workers influences the healthy eating index and systolic blood pressure with coping mechanisms as an intervening variable. Work fatigue experienced by workers influences the healthy eating index, with coping mechanisms as an intervening variable.

**Keywords:** anxiety, coping mechanism, job burnout, health eating index, work fatigue

**INTRODUCTION**

Anxiety disorders are a group of conditions that provide an important description of excessive anxiety accompanied by behavioral, emotional, and physiological responses (American *et al.*, 2009; American et Association, 2012; Silverman and van Schalkwyk, 2019). Someone who experiences anxiety shows unusual attitudes and behaviors, for example, panic for no apparent reason, excessive fear of the object or life condition that is being faced, and repetitive actions that are difficult to control by

oneself (Bandelow, Michaelis and Wedekind, 2017). Work fatigue is a health problem that often occurs among workers. Work fatigue is a feeling of fatigue experienced by workers (Lee and Giuliani, 2019). Work fatigue can have various impacts, one of which is a decrease in work efficiency, which then has an impact on decreasing work productivity (Arini, Martiana and Ardyanto, 2019). Burnout is a feeling of continuous hopelessness associated with an excessive workload, but with no significant change through the efforts that have been made or any difficulties that occur during work

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effectively due to lack of support (Soares and Grossi, 2007). Some researchers have revealed that burnout also represents a negative mood. Burnout is also defined as fatigue or frustration because of the unachieved expectation or the hard effort to achieve the goal, but has difficulties in achieving the goal or far from reality (Soares and Grossi, 2007; Wu et al., 2019). In addition, burnout can also refer to a negative internal state, including psychological experiences that indicate fatigue or exhaustion, and decreased work motivation.

Workers in oil and gas companies are one of several groups of workers who have heavy workloads, both physically and psychologically, owing to their heavy work responsibilities. This is also related to the duration of work, which is not in accordance with the standard working hours specified in Indonesia. Based on workload, workers are at risk of experiencing work stress and fatigue both physically and mentally, which, if not managed properly, will result in occupational burnout. In addition, the differences in each individual coping mechanism when workers have many burdens, habits, or eating patterns will also affect their body's reactions when they begin to show symptoms of burnout. Therefore, researchers want to analyze the relationship between coping style, eating habits, work stress, and fatigue with occupational burnout in order to be able to propose appropriate control for workers in the oil and gas sector, which is one of the vital sectors owned by Indonesia as one of the countries that has a large amount of oil and gas production in the world. The data obtained will then be processed statistically to determine whether there is a relationship between coping style, eating habits, work stress, fatigue, and occupational burnout.

## **METHODS**

This cross-sectional study included research respondents who were permanent

workers in oil and gas companies in Bojonegoro, East Java. This study was conducted from March to December 2022. The population in this study was permanent workers in the oil and gas company where the research was conducted. The sample was part of the research population that will later be studied or observed, involving inclusion and exclusion criteria as a condition for determining the sample. The inclusion criteria in this study were over 18 years of age, had worked for at least 3 months, had no reading limitations, and were willing to become respondents by signing an informed consent form. The exclusion criteria were workers who did not come to work and did not fill out the questionnaire. Respondents were chosen using simple random sampling. The number of samples required in this study was calculated using the two-proportion population hypothesis test formula developed by Lameshow et al. Putra (2018), and the minimum sample size required was 100 subjects.

The study variables included independent, dependent, and intermediate variables. The independent variables were anxiety and work fatigue. The dependent variables in this study were job burnout, distress, eating health index, and blood pressure. In addition, the intermediate variable in this study was coping mechanism.

Measurements for each variable were performed using a questionnaire or measuring instrument with a ratio data scale. The anxiety variable is a feeling of unease, such as worry or fear, that can be mild or severe, as measured using the GAD 7 Anxiety questionnaire, which is a feeling felt by workers where work feels tired, which is characterized by a decrease in efficiency at work that was measured using the Industrial Fatigue Research Committee (IFRC) questionnaire.

The dependent variable was measured using the Maslach Burnout Inventory (MBI) questionnaire to measure job burnout. Job burnout is a feeling of

displeasure at work, feeling tired from work or workload, and starting to appear as symptoms that attack physically and mentally. Distress is an imprecise term that typically refers to unpleasant subjective stress responses, such as anxiety and depression, as measured using The Kessler Psychological Distress Scale questionnaire. The Healthy Eating Index is a measure of diet quality used to assess how well a set of foods is measured using The Healthy Eating Assessment questionnaire. Blood pressure is a condition of systolic and diastolic blood pressure compared to normal values that were measured with the sphygmomanometer to determine blood pressure. The coping mechanism variable is the way workers respond to job stress due to the demands of work, measured using the Cope Inventory Carve questionnaire.

Data analysis was performed using the IBM SPSS Statistics 21 software. Several types of data analyses used in this study are descriptive analysis to see the distribution of research data descriptively, classical assumption test, which includes normality test, multicollinearity, and

heteroscedasticity data as the requirement for multiple linear regression tests. The multiple linear regression test is used to determine the relationship or influence of the independent variable on the dependent variable. This study also involved an intermediate variable (intervening) in the effect testing of the independent variable on the dependent variable; therefore, the multiple linear regression test was performed twice, where the first multiple linear regression test was used to see the effect of the independent variable on the intermediate variable (intervening), and the second multiple linear regression test was conducted to determine the effect of the intervening variable on the dependent variable. The results of the two regression tests are then compared with the respective values to determine whether the independent variable influences the dependent variable through the intervening variable. This research was approved by the Health Research Ethics Committee of the Faculty of Public Health Airlangga University (number 56/EA/KEPK/2022).

## RESULT

### Distribution of Respondent Characteristics

**Table 1.** Characteristics Distribution

Characteristics	n	%
Age (Mean ± SD)	29.37 ± 6.964	
<b>Educational Background</b>		
Senior High School	99	97.6
University	3	2.4
<b>Marriage Status</b>		
Unmarried	32	2.8
Divorce	2	2.4
Married	68	67.9
<b>Nutritional Status</b>		
Normal	45	53.6
Obesity	35	41.7
Underweight	4	4.8
<b>Exercise Habit</b>		

Characteristics	n	%
Rarely (Less than once in 3 months)	1	1.2
Minimum 1x per week	81	96.4
Minimum 1x per month	2	2.4
<b>Smoking Habit</b>		
Yes	60	71.4
No	24	28.6
<b>Staying Up Late Habit</b>		
Rarely (Minimum 1x per week)	36	42.9
Always	1	1.2
Frequently (3-5x per week)	27	32.1
Never	20	23.8
<b>Having Disease History</b>		
Yes	1	1.2
No	83	98.8
<b>Leukocyte</b>		
Negative	101	99.0
Positive	1	1.0
<b>Urobilinogen</b>		
Normal	102	100
<b>Urine Protein</b>		
(+) 0,3	5	5.0
(+) Trace	1	1.0
Negative	96	94.0
<b>Nitrite</b>		
Negative	97	95.0
Positive	5	5.0

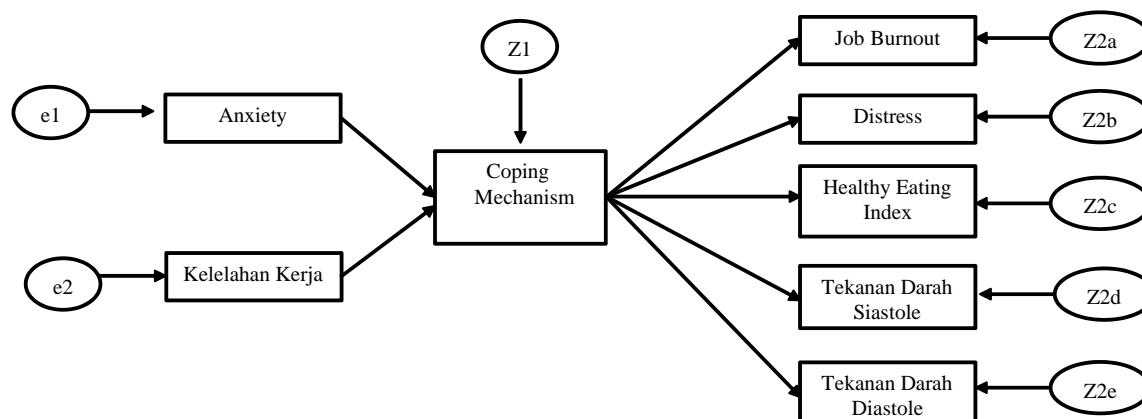
The characteristics of respondents were used to provide an overview of what we wanted to know about the condition of the respondents in the study. In this study, the characteristics of the respondents were age, recent education history, marital status, nutritional status, exercise habits, smoking habits, staying up late, disease history, and urine profile, which included examination of leukocyte content, urobilinogen, protein, and nitrite in the urine. Based on the results of the study, it was found that the average respondent was 29 years and 3 months old, 97.6% had a recent history of high school education,

and 67.9% were married. In terms of nutritional status, 53.6% had normal nutritional status, 96.4% of respondents were accustomed to exercising at least 1 time per week, 71.4% were active smokers, and 42.9% of respondents had a low habit of staying up late (at least 1 time per week). Meanwhile, from the health status, 98.8% of respondents had no history of disease, with a negative percentage of leukocyte values (99% of all respondents), 100% of respondents had normal urobilinogen values, 94% of respondents have no protein in their urine, and 95% respondents have negative nitrite values.

## Analysis of the Correlation between Independent and Dependent Variables

**Table 2.** Distribution of Respondents

Hypothesis	Independent Variable	Dependent Variable	P Value	Note
H1	Anxiety	Job Burnout	0.212	Not Significant
H2	Fatigue	Job Burnout	0.306	Not Significant
H3	Anxiety	Distress	0.003	Significant
H4	Fatigue	Distress	<0.000	Significant
H5	Anxiety	Healthy Eating Index	0.581	Not Significant
H6	Fatigue	Healthy Eating Index	<0.000	Significant
H7	Anxiety	Sistole Blood Pressure	0.022	Significant
H8	Fatigue	Sistole Blood Pressure	0.247	Not Significant
H9	Anxiety	Diastole Blood Pressure	0.023	Significant
H10	Fatigue	Diastole Blood Pressure	0.458	Not Significant



**Figure 1.** Pathway Analysis.

In this study, the correlation of the independent variable with the dependent variable was analyzed in two ways: direct and indirect. The indirect relationship involves the intervening variable, whereas in this study, the independent variable

shows the direct influence of the independent variables on the dependent variable. If the value of sig. indicates the number <0.05, it can be said that the variable can affect other variables. The variables that had an influence included

anxiety on distress, fatigue on distress, anxiety on systolic blood pressure, fatigue on healthy eating index, and

**Table 3.** Independent Variable Regression Test Results (Anxiety, Fatigue) on Dependent Variables Job Burnout, Distress, Healthy Eating Index, and Blood Pressure) through Intervening Variables (Coping Mechanism)

Dependent Variable	Variabel Independent			
	Anxiety		Fatigue	
	$\beta$ Direct Effect	$\beta$ Indirect Effect	$\beta$ Direct Effect	$\beta$ Indirect Effect
Job Burnout	0.150 No Effect	0.037	0.124 No Effect	0.035
Distres	0.402 No Effect	0.098	0.046 No Effect	0.013
HEA	-0.062 Have Effect	-0.015	-0.434 Have Effect	-0.122
Sistole BP	-0.288 Have Effect	-0.070	0.145 No Effect	0.041
Diastole BP	-0.153 Have Effect	-0.037	0.095 No Effect	0.027

Based on Table 3, it can be concluded that anxiety about job burnout and distress through coping mechanisms has no effect, and fatigue on job burnout, distress, and blood pressure both systole and diastole through coping mechanisms have no effect. Meanwhile, anxiety about healthy eating index and blood pressure, both systolic and diastolic, through coping mechanisms, has a significant influence, as well as fatigue on healthy eating index through coping mechanism.

**DISCUSSION**

**Anxiety and Job Burnout**

Anxiety is a condition in which a person is worried that something bad will occur (American *et al.*, 2009; American et Association, 2012; Silverman and van Schalkwyk, 2019; Gibson-Smith *et al.*, 2020). Job burnout is a condition in which individuals experience a decrease in conditions that lead to physical and psychological fatigue triggered by various factors, such as high workload, which can cause a decrease in employee performance (Demerouti *et al.*, 2001; Chen *et al.*, 2020; Afonso *et al.*, 2021).

Job burnout is influenced by three main factors: demographic, personal, and organizational (Chen *et al.*, 2020; Soelton *et al.*, 2020). Demographic factors include gender, age, education, length of work, and marital status; personal factors include work stress, workload, and personality type; and organizational factors include working conditions and social support (Mazloomi *et al.*, 2018). However, this study does not show that anxiety levels have an influence on job burnout, so it is not in line with previous research where anxiety levels that are not handled properly can interfere with employee performance due to the emergence of a complex sense of fatigue dominated by mental fatigue or burnout (Bandelow, Michaelis, & Wedekind, 2017; Mikolajczak *et al.*, 2020; Suzabar *et al.*, 2020). This study shows that there is no direct influence of anxiety on job burnout, with a p-value >0.05, as presented in Table 2. Meanwhile, Table 3 shows that anxiety about job burnout through the coping mechanism does not have a significant effect, where the  $\beta$  value of the direct effect is larger than the indirect effect.

## Fatigue and Job Burnout

Work fatigue is a health problem that often occurs among workers. Work fatigue is the feeling of fatigue experienced by workers. Work fatigue can have various impacts, one of which is a decrease in work efficiency, which then has an impact on decreasing work productivity (Lee and Giuliani, 2019; Powell, 2020; Zhu *et al.*, 2020). As shown in Table 2, there was no direct effect of fatigue on job burnout ( $p$ -value  $>0.05$ ). Meanwhile, Table 3 shows that fatigue on job burnout through the coping mechanism did not have a significant effect, where the  $\beta$  value of the direct effect was greater than the indirect effect. This study is not in line with previous research that states that job burnout is caused by work fatigue experienced by workers (Ozel and Hacıoglu, 2021; Sikaras *et al.*, 2022). Research further explains that, to understand fatigue, one must be aware of its symptoms. Obvious and subjective signs of fatigue include dizziness, boredom, loss of concentration, lack of alertness, and decreased physical and mental abilities (Ahman, Santoso and Bagaskara, 2022). Job burnout is a work phenomenon that can have a major impact on physical and mental health, and work performance (Titan Permana, Ginanjar and Fatima, 2020). This is in line with Septio's study, which shows that work fatigue has a positive and significant effect on worker health, such that employees who have high work fatigue will have an impact on employee job burnout, which is also high (Septio *et al.*, 2020).

## Anxiety and Distress

Someone with an anxiety disorder tends to think negatively about things that do not necessarily happen; negative thoughts cause anxiety, which develops into worry and leads to stress (Bandelow *et al.*, 2017; Zezelj *et al.*, 2019; Arcand *et al.*, 2020). Distress is the body's emotional and physiological response to an event that is

considered stressful and threatening, and has a negative impact on individuals characterized by symptoms of depression and anxiety (Gibson-Smith *et al.*, 2020; Keck *et al.*, 2020; Aucoin *et al.*, 2021).

Psychological distress is caused by high expectations of life, for example, in terms of education, career, and personal relationships, which trigger feelings of depression, anxiety, and anger in emerging adults (Wang and Heppner, 2002). The psychological distress that occurs in an individual can be influenced by two factors, namely intrapersonal and situational factors (Davidson *et al.*, 1999). Intrapersonal factors are related to personality traits and self-esteem in each individual, especially in individuals with personality traits of extraversion and neuroticism who are ambitious, easily nervous, easily anxious, short-sighted, and others (Mirowsky and Ross, 2002). Situational factors can be divided into physiological, cognitive, and social factors.

Other factors that can cause distress include psychological, cognitive and social factors. Physiological factors are related to biological processes and brain mechanisms that influence individual responses to certain events that can cause and increase distress. Cognitive factors are an individual's expectations of external situation events, which often cause stress. Social factors reflect disturbances or mistakes in interpersonal relationships. Establishing positive relationships with those closest to them can reduce psychological distress in emerging adulthood (Dewayani, Sukarlan and Turnip, 2011).

As shown in Table 2, there was a direct influence of anxiety on distress, with a  $p$ -value  $<0.05$ . Meanwhile, Table 3 shows that anxiety about distress through coping mechanisms did not have a significant effect, where the  $\beta$  value of the direct effect was larger than the indirect effect. Therefore, it can be concluded that this study proves that the level of anxiety that is not handled well will lead to

distress, where anxiety and anxiety will develop into a complex sense of depression to face an event that has a negative impact on individuals that are characterized by symptoms of depression and anxiety (Gibson-Smith *et al.*, 2020; Keck *et al.*, 2020; Aucoin *et al.*, 2021).

### **Fatigue and Distress**

As shown in Table 2, there is a direct effect of fatigue on distress, with a p-value <0.05. Meanwhile, Table 3 shows that fatigue on distress through coping mechanisms did not have a significant effect, where the  $\beta$  value of the direct effect was greater than the indirect effect. Feelings of fatigue, both physically and mentally, encourage a person to take an action or activity as a form of adaptation to overcome these feelings so that it does not lead to stress, which is a form of coping mechanism (Desmond, Shevlin, & Maclachlan, 2006; Lee & Giuliani, 2019).

Everyone has their own way of dealing with these feelings; therefore, the form of the coping mechanism is also different. In this study, the level of work fatigue felt by workers of oil and gas companies influenced their feelings of stress. Work fatigue includes both physical and mental fatigue; this mental fatigue experienced by workers then develops into a sense of stress (Lee and Giuliani, 2019). Mental fatigue that is not treated immediately develops into a prolonged sense of stress, which is in line with previous research, where psychological conditions or mental perceptions and psychological stress have the greatest influence on prolonged fatigue (Tang *et al.*, 2020). A survey conducted on the adult population in Hong Kong found that respondents who experienced chronic fatigue had poor mental health (Wong and Fielding, 2010). Other research shows a relationship between the level of work fatigue and work stress (Aprilia & Novitasari, 2021). This means that the more severe the fatigue experienced by workers at work, the higher the level of

work stress. Work fatigue can cause several conditions such as decreased work performance due to stress (Ekaputri and Faslina, 2022). Work fatigue has been proven to contribute to more than 60% of accidents at work, but this can be anticipated by improving self-coping mechanisms to manage perceived work stress.

### **Anxiety and Healthy Eating Index**

In this study, it was proven that the level of anxiety that is not balanced with a good coping mechanism can adversely affect the healthy eating index. As shown in Table 2, anxiety had no direct influence on the health eating index ( $p > 0.05$ ). Meanwhile, Table 3 shows that anxiety about healthy eating through the coping mechanism has a significant effect, where the  $\beta$  value of the direct effect is higher than the indirect effect. Lower levels of anxiety are found in people with healthy lifestyles who have high levels of vegetable and fruit consumption and the number of calories consumed in one day as needed. Individuals with a high level of fat consumption, low protein, and high sugar intake tended to have a high level of anxiety. When someone is anxious, they tend to eat foods that are high in sugar and fat (Gibson-Smith *et al.*, 2020; Nitturi *et al.*, 2021). Fear and anxiety about something that will happen are problems that are often experienced by many people. Anxiety can increase sympathetic activity, which can then continue to become a somatic reaction. If it affects the circulatory system, it can increase heart rate and blood pressure (Byrd and Brook, 2014).

### **Fatigue and Eating Healthy Index**

In this study, it was proven that the level of work fatigue that is not balanced with a good coping mechanism can have an adverse effect on the healthy eating index. As shown in Table 2, fatigue had a direct effect on job burnout with a value of  $p < 0.05$ . Meanwhile, Table 3 shows that



fatigue has a significant effect on job burnout through the coping mechanism, where the  $\beta$  value of the direct effect is greater than the indirect effect. Someone who experiences work fatigue will tend to choose food that the preparation does not take long or, in other words, fast food (Keck *et al.*, 2020; Endo and Sudo, 2021).

Lower levels of work fatigue are commonly found in people with healthy lifestyles who have high levels of vegetable and fruit consumption and calories consumed in one day as needed. Individuals with a high level of fat consumption, low protein, and high sugar intake tend to have a high level of fatigue. When a person is in a tired body condition, both physically and mentally exhausted, they will have a tendency to choose foods that do not take a lot of time to serve, which are high in sugar and fat (Food Fatigue, 2019). The choice of food is one of the forms of coping mechanisms that they use to suppress fatigue so that it does not develop into a sense of stress. The results of the research by Khoiroh *et al.* (2022) showed a significant relationship between the level of energy sufficiency and the level of work fatigue ( $p < 0.001$ ). The level of energy adequacy is the percentage of fulfilling energy intake compared to energy needs according to the 2019 RDA, which considers a person's weight, height, and age; the fulfillment of this energy intake can also be influenced by the eating level index (Khoiroh *et al.*, 2022).

A person with a low level of energy sufficiency can experience a decrease in glucose levels. Decreasing glucose levels cause glycogenolysis and gluconeogenesis in the body. These two processes cause energy reserves in the muscles to decrease, resulting in a decrease in muscle contractions, which can increase work fatigue (Hidayah, 2018).

### Anxiety and Blood Pressure

As shown in Table 2, anxiety had a direct effect on systolic blood pressure and

diastolic blood pressure ( $p < 0.05$ ). Meanwhile, Table 3 shows that anxiety on systolic and diastolic blood pressure through the coping mechanism had a significant effect, where the  $\beta$  value of the direct effect was greater than the indirect effect. In this study, it was proven that the level of anxiety or anxiety that is not balanced by a good coping mechanism can increase blood pressure. Fear and anxiety about something that will happen are problems that are often experienced by many people. Anxiety can increase sympathetic activity, which continues to become a somatic reaction. If it affects the circulatory system, it can increase heart rate and blood pressure (Byrd and Brook, 2014).

### Fatigue and Blood Pressure

As shown in Table 2, there was no direct effect of fatigue on systolic and diastolic blood pressure ( $p > 0.05$ ). Meanwhile, Table 3 shows that fatigue on systolic and diastolic blood pressure through the coping mechanism does not have a significant effect, where the  $\beta$  value of the direct effect is higher than the indirect effect. This study is in line with previous research in which blood pressure values were not closely related to the occurrence of work fatigue (Nelesen *et al.*, 2008). This study has limitations in that blood pressure is only measured after the workers finish working, and it is better to measure blood pressure not only at the end but also at the beginning before the workers do the work to see the real blood pressure change.

### CONCLUSIONS

Anxiety experienced by workers influences the healthy eating index and systolic blood pressure with coping mechanisms as an intervening variable. Work fatigue experienced by workers influences the healthy eating index, with coping mechanisms as an intervening variable. Based on the results of the study,

it is recommended that workers who have anxiety disorders and are also feeling tired both mentally and physically are expected to be able to do good coping mechanisms so that they do not continue to worry about things such as distress, eating disorders or healthy eating index, and blood pressure. occurrence of work fatigue

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