IJCOM 2025 July;5(1):11-8

The Relationship between Job Insecurity, Work distress and Anxiety with Hypertension in Fishing Equipment Manufacturing Worker

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Abstract

Background: Hypertension is one of the main risk factors for cardiovascular disease and can be influenced by psychosocial factors such as job insecurity, work distress, and anxiety. The objective of this study to analyze the impact of job insecurity, work distress, and anxiety on the incidence of hypertension among employees. Explore the mediating role of distress and anxiety in the relationship between job insecurity and hypertension.
Method: There was a cross-sectional design, encompassing a population of employees from a fishing equipment manufacturing company. Consecutive sampling was utilized to select study participants, and data was collected via COPSOQ III questionnaires for assessed job insecurity, the 4DSQ instrument for assesses work distress and anxiety, and measuring blood pressure. The collected data underwent logistic regression analysis for mediating role of work distress and anxiety in the relationship between job insecurity and hypertension
Result: In the bivariate analysis, the probability of hypertension is significantly 4.05 times higher in workers experiencing moderate distress than low distress. In the multivariate analysis, after adjusting for dependent variables, ikelihood of hypertension is 3.88 times higher in workers experiencing moderate distress compared to those with low distress.
Conclusion: There is a correlation between work distress and hypertension among workers in a fishing equipment manufacturing company. Work distress and anxiety do not serve as mediators in the relationship between job insecurity and hypertension among workers. Recommendations for this company is implementation of distress management programs such as training in relaxation techniques, or counseling to reduce worker distress.
Keywords: distress, anxiety, job insecurity, hypertension

Abstrak

Latar belakang: *Hipertensi adalah salah satu faktor risiko utama penyakit kardiovaskular dan dapat dipengaruhi oleh faktor psikososial seperti ketidakamanan pekerjaan, stres kerja, dan kecemasan. Tujuan dari penelitian ini adalah untuk menganalisis dampak ketidakamanan pekerjaan, stres kerja, dan kecemasan terhadap kejadian hipertensi di antara karyawan. Menjelajahi peran mediasi stres dan kecemasan dalam hubungan antara ketidakamanan pekerjaan dan hipertensi.*
Metode: *Penelitian ini menggunakan desain potong lintang, meliputi populasi karyawan dari perusahaan manufaktur peralatan penangkapan ikan. Pengambilan sampel secara berturut-turut digunakan untuk memilih peserta penelitian, dan data dikumpulkan melalui kuesioner COPSOQ III untuk menilai ketidakamanan pekerjaan,instrumen 4DSQ untuk menilai stres kerja dan kecemasan, serta mengukur tekanan darah. Data yang dikumpulkan dianalisis menggunakan regresi logistik untuk peran mediasi stres kerja dan kecemasan dalam hubungan antara ketidakamanan pekerjaan dan hipertensi.*
Hasil: *Dalam analisis bivariasi, peluang hipertensi signifikan 4,05 kali lebih tinggi pada pekerja yang mengalami stres sedang dibandingkan dengan stres rendah. Dalam analisis multivariasi, setelah disesuaikan dengan variabel dependen, peluang hipertensi adalah 3,88 kali lebih tinggi pada pekerja yang mengalami stres sedang dibandingkan dengan mereka yang memiliki stres rendah.*
Kesimpulan: *Terdapat korelasi antara stres kerja dan hipertensi di antara pekerja di perusahaan manufaktur peralatan penangkapan ikan. Stres kerja dan kecemasan tidak berfungsi sebagai mediator dalam hubungan antara ketidakamanan pekerjaan dan hipertensi di antara pekerja. Rekomendasi untuk perusahaan ini adalah implementasi program manajemen stres seperti pelatihan teknik relaksasi, atau konseling untuk mengurangi stres pekerja.*
Kata kunci: *stres, kecemasan, ketidakamanan pekerjaan, hipertensi*

Introduction

In Indonesia, hypertension remains a significant public health concern among the working population. The prevalence rates among adults was 34.1 % in 2018 and hovering around 29–31% by 2023.[1,2] Occupational studies reveal that workers facing prolonged work hours and psychosocial stress—including job strain, effort–reward imbalance, inadequate decision-making control, and night-shift schedules—exhibit notably higher rates of hypertension.[3] A national Indonesian analysis found that for each additional hour of work per week, the probability of hypertension rose by 0.06 percentage points, while a Jakarta-based study reported that moderate to high qualitative job stressors and increased workload raised hypertension risk by over four- to seven-fold.[4,5] These findings suggest a multifactorial interplay where long hours and psychosocial strain could contribute significantly to elevated blood pressure among Indonesian workers

Among psychosocial constraints are job insecurity , anxiety and distress.[2] Job insecurity arises when employees perceive a threat to they are continued employment and feel powerless to influence the situation. This sense of insecurity is not limited to the fear of job loss but also includes concerns about losing valued aspects of the job, such as income stability, career progression, or role clarity. Such uncertainty can diminish motivation and reduce productivity, as employees may struggle to perform optimally while attempting to secure their position within the organization.[4-5] Rhobichaud[6] explained that job insecurity is one of the psychosocial stressors in the workplace that contributes to the high prevalence of hypertension. High psychological demands in the workplace are associated with the incidence of hypertension.[6]

Work distress is another psychosocial problem that is also faced by workers. Work distress is a condition where an individual faces a task or job that cannot or has not been reached by his/her abilities. Stress in the workplace, hereinafter referred to as work distress, is a problem that is increasingly affecting workers, superiors and/or the community. Work distress can be caused by conditions of overwork, Job insecurity , low levels of job satisfaction, and economic insufficiency.[7]

Work distress can have a negative effect on the incidence of hypertension. More than 25% of employee in this company often experience distress, 8% of employee always experience stress, 5% never experience stress.[8] Data from *the International Labor Organization* (ILO) states that around 10% of workers experience depression, distress, and anxiety in the United States, England, Germany, and Finland. In Finland, 50% of workers report signs of distress. In England, 3 out of 10 workers experience mental disorders due to work.[9] There are various types of distressors including role ambiguity, role conflict, excessive workload, career development, and personal responsibility and Job insecurity. There is no data yet showing the prevalence of work distress in Indonesia. However, data from the 2018 Riskesdas shows that the prevalence of the Indonesian population in the population over 15 years of age who experience emotional mental disorders or distress is 37,728 people (9.8%).[1]

Job insecurity and work distress can cause negative impacts, in non-psychological aspects. The impact of non-psychological aspects that arise can be in the form of health disorders such as hypertension.[10,11] In a meta-analysis, it was found that the most common health disorder due to Job insecurity is hypertension.[10] Gonzales[12] in his study stated that job insecurity causes anxiety that can lead to hypertension**.** Fear of losing a job is associated with a higher prevalence of hypertension among Latino workers compared to those who do not experience this distressor. High levels of Job insecurity accompanied by increased work distress and overall worker working conditions are contributors to population health and health inequalities.[13]

This study aims to find out the relationship between job insecurity, work distress and anxiety with hypertension in workers.

Methods

This was across sectional study conducted at fishing equipment manufacturing company in East Java, Indonesia, from March to August 2024. The company was selected proposal. It has a regular medical check-up to all of their employees every year and the report showed that there has been an increase of workers with hypertension. In December 2023, workers was diagnosed with hypertension. In the company, hypertension was the third most common disease based on the number of clinic visits as a health problem for workers.[11] On the other hand, in 2023, 17.2% of workers experienced a decline in performance, 51 of 1984 workers were dismissed and asked to resign from their jobs. The majority (61.3%) of workers are casual workers who can be dismissed at

any time, which can cause fear of losing their jobs or Job insecurity and work distress.

Study population and recruitment

All workers in the company were invited into the study. We included workers who met the inclusion criteria was workers of productive age employed. Subjects with a history of previous mental disorders, kidney disease, endocrine diseases (such as diabetes mellitus or thyroid disorders), or heart disease, as determined by an individual health history questionnaire, were excluded from the study. Workers who met the inclusion and exclusion criteria were selected consecutively until the sample size requirement was met. To assess the relationship between job distress, anxiety, and hypertension we assumed that 140 samples,

Data collection

We collected the data by interviewing respondents directly. After the interview, we measured respondents weight, height, and their blood pressure. Blood pressure was measured using a sphygmomanometer, with hypertension defined as a blood pressure reading of ≥140/90 mmHg during the assessment.

The data from the questionnaire collection were verified manually (data *editing was carried out*). Editing was carried out to check the completeness of the data on the respondent data form based on the existing variables. Incomplete data was excluded from the analysis. After the questionnaire was complete, it was entered into the *database system* (MS-Excel). Furthermore, *data entry was carried out* into the computer through the coding process *into* the MS Excel *database* and for data analysis, input into the SPSS Statistics version 26.0 and Stata version 17 programs. Interpretation has been carried out using the SPSS analytical program version 26 and Stata version 17.

The initial step taken was univariate, bivariate, and multivariate data analysis. Univariate analysis was conducted to provide a description of the characteristics of the study respondents and the results of measuring work distress and hypertension. Bivariate analysis was conducted to assess the relationship between each risk factor and hypertension using the appropriate test. Hypertension has been categorized into Yes/No, while the characteristics of the respondents are in the form of categorical variables. Therefore, bivariate analysis was conducted using the chi-square test or its alternative test (if it does not meet the Chi Square requirements). In addition, a bivariate test has been conducted between Job insecurity and hypertension with distress and anxiety as mediators. Then continued with multivariate analysis (binary logistic regression test) that have a p value <0.2 in the bivariate test. The results of the data of the factors that have the most influence on hypertension in fishing equipment manufacturing company workers were obtained; which was assessed from the odds ratio and 95% confidence interval.

This study also pays attention to ethical aspects and has obtained an ethical approval number from the Ethics Committee of the Faculty of Medicine, University of Indonesia with ethical number KET-1380/UN2.F1/ETIK/PPM.00.02/2024.

Results

A total of 185 worker agreed to be the study sample, nine workers were excluded, depand on one worker with a history of kidney disease, five workers with a history of diabetes mellitus, and three workers with a history of thyroid disease. A total of 176 participants completed the questionnaire and were included in the analysis. The average age of workers is 42.35 years, with the youngest and oldest being 21 and 59 years respectively. The range of years of service as workers is between 1-39 years with an average length of service of 18.9 years. The respondents of this study are dominated by men (67.6%).

In this study, no respondents had high distress and anxiety. The prevalence of moderate distress was 18.18% and moderate anxiety was 7.39%. Moderate job insecurity was 64.20% and high job insecurity was 21.59%. In this study it was found that 62 workers (35.2%) experienced hypertension. Average pressure blood systolic was 132 ± 20.2 mmHg.

In bivariate analysis, the likelihood of hypertension was significantly 4.05 times higher in workers experiencing moderate distress compared to low distress.

From the results above obtained that possibility hypertension 8.77 times higher high in workers who have hypertension previously. In the analysis multivariate, with adjust all dependent variables, possibility hypertension 3.88 times higher high on workers with moderate distress compared to low distress.

Table 1. Prevalence distress, anxiety, job insecurity and hypertension

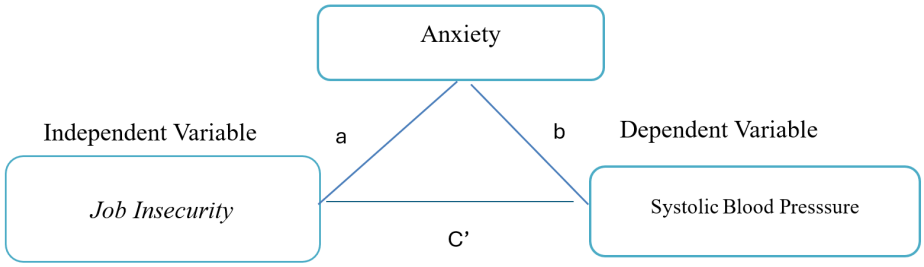
Characteristics	n (%)
Work Distress	
Low	144 (81.82)
Moderate	32 (18,18)
Anxiety	
Low	163 (92.61)
Moderate	13 (7.39)
Job insecurity	
Low	25 (14.20)
Moderate	113 (64.20)
High	38 (21.59)
Hypertension	
Yes	62 (35.20)
No	114 (64.8)
History of Hypertension	
Yes	19 (10.7)
No	157 (89.3)

Table 2. Relationship between distress, anxiety, job insecurity and hypertension

Variables	Hypertension		OR	95% CI	p-value	aOR	95% CI	p-value
	Yes	No						
Work Distress								
Low	42 (29.17)	102 (70.83)	Reference			Reference		
Moderate	20 (62.50)	12 (37.50)	4.05	1.82 – 9.02	0.001	3.88	1.72 – 8.73	0.001
Anxiety								
Low	55 (33.74)	108 (66.26)	Reference			Reference		
Moderate	7 (53.85)	6 (46.15)	2.29	0.73 – 7.15	0.153	2.41	0.73 – 7.93	0.149
Job insecurity								
Low	9 (36.00)	16 (64.00)	Reference			Reference		
Moderate	36 (31.86)	77 (68.14)	0.83	0.34 – 2.06	0.690	0.78	0.31 – 2.01	0.612
High	17 (44.74)	21 (55.26)	1.44	0.51 – 4.06	0.491	1.27	0.43 – 3.74	0.668

Table 3. Work distress mediation between job insecurity and hypertension

Track	Coefficient	p-value
Total effect: Job insecurity →Systolic	0.47	0.416
(a) Direct effect: Job insecurity →Work distress	0.39	0.127
(b) Direct effects: work distress →Systolic	0.53	0.001
(C) Direct effect: Job insecurity →Systolic	0.26	0.645
(c') Indirect effects: Job insecurity →Work distress →Systolic	0.21	0.167



(b) Anxiety as a mediator between Job insecurity and systolic blood pressure
Figure 1. Mediator diagram

Table 4. Analysis mediation anxiety between job insecurity and hypertension

Track	Coefficient	p-value
Total effect: Job insecurity →Systolic	0.47	0.416
(a) Direct effect: Job insecurity →Anxiety	0.42	0.010
(b) Immediate effect: Anxiety →Systolic	-0.04	0.859
(c) Direct effect: Job insecurity →Systolic	0.49	0.406
(c') Indirect effects: Job insecurity →Anxiety→ Systolic	-0.02	0.859

Job insecurity does not have a significant relationship with systolic blood pressure. From the result of the mediation analysis, Job insecurity not significantly related to work distress, but work distress has a statistically significant relationship with systolic blood pressure. Thus, Job insecurity is not significantly related to systolic blood pressure, either directly or through work distress mediation.

From the mediation analysis above, Job insecurity is not significantly related to anxiety, and anxiety also has no relationship with systolic blood pressure. Thus, job insecurity is not significantly related to systolic blood pressure, either directly or through anxiety mediation.

Discussion

The Copenhagen Psychosocial Questionnaire (COPSOQ) instrument is one type of instrument used based on study and developed for use in the workplace and for study purposes.[13] This instrument is internationally recognized as a risk assessment tool by the International Labor Organization and the World Health Organization and is used in workplace surveys worldwide for work environment development. In this study, it was found that the Cronbach's Alpha Value was greater than 0.7, especially in the assessment of anxiety and distress so that the three variables were reliable.[13] In the Rha's Study[14] in Tembilahan, it was stated that the validity and reliability tests on the COPSOQ III questionnaire showed that this questionnaire met the criteria in the reliability test so that it could be applied especially in this study. Risnawati's[14] study in 2022 with the results of the agreement value of the questionnaire items, namely 0.869 - 0.96, which can be concluded that each item of the Indonesian version of the COPSOQ III instrument has good validity.

In this study, 62 workers (35.2%) had hypertension. Hypertension was assessed by measuring systolic blood pressure. This is because the mediation analysis must use a numeric scale. In addition, the use of systolic blood pressure alone because systolic pressure is stronger in predicting cardiovascular complications. Both systolic and diastolic blood pressure are associated with the risk of cardiovascular disease (CVD) and both are important predictors: Systolic pressure is the pressure on the arteries when the heart pumps blood. Increased systolic blood pressure is a major modifiable risk factor for mortality from cardiovascular disease. Even mild or moderate increases in systolic blood pressure can

in adults have shown that both systolic and diastolic blood pressure have a significant effect on the risk of cardiovascular disease events.[17,18] The prevalence of hypertension in this study was higher when compared to the prevalence of hypertension in workers in general in Indonesia. From this data, it shows that the number of hypertension cases in fishing equipment manufacturing company is still quite high.

The prevalence of moderate distress was 18.18% of the total respondents. Other data from *the Health and Safety Executive* (HSE) in 2020 showed that as many as 828,000 workers were affected by distress, depression, or anxiety in 2019 to 2020. And for the average prevalence of work-related distress, depression, and anxiety in the industry, there were 1,579 cases per 100,000 workers.[19] This study found that moderate anxiety was 7.39%. Based on global data, the prevalence of anxiety in the workplace ranges from 10-30%, depending on the work sector. Studies in Indonesia show that the prevalence of generalized anxiety disorder (GAD) in workers can reach around 15-25%, especially in high-pressure jobs. This shows that the prevalence of anxiety in this company is lower than the general population. Workers in the fisheries sector face various distress factors, such as the risk of work accidents and low levels of welfare.[20]

From the study data, it was found that most (64,2%) of participants had moderate job insecurity, some participants Job insecurity was high at 21.59%. When compared to the study of Togatorop C, et al.[21] regarding Job insecurity in airport rescue employees, it was stated that most (54.3%) of participants had Job insecurity in the moderate category, some participants were at a high level of Job insecurity (1.4%). Job insecurity category in fishing equipment manufacturing company is higher than those companies.

This study found that the possibility of hypertension was 3.88 times higher in workers with moderate distress compared to mild distress. In the National Health Interview Survey (NHIS) study in the United States with samples of other general workers, it was found that work distress was significantly associated with hypertension with OR = 2.4 (1.5-4.4).[22] This shows that the incidence of hypertension is twice as high in workers who experience work distress compared to those who do not experience work distress. Rosenthal T in a systematic review also noted that increased distress situations are associated with increased blood pressure. Perceived distress among workers is positively associated with hypertension. Stress assessment uses *the Karasek's Job Content Questionnaire* (JCQ), *Cesana's Mopsy Questionnaire* (modified JCQ),[23] and *Siegrist's Effort-Reward Imbalance* (ERI) instruments.[19]

The correlation between work distress and hypertension is well known. Job-related distress can significantly contribute to the development and exacerbation of hypertension (hypertension). When individuals experience distress, the body releases hormones such as adrenaline and cortisol, which can temporarily increase blood pressure. If distress becomes chronic or ongoing, this temporary increase in blood pressure can become permanent, leading to hypertension. Prolonged hypertension can then cause damage to blood vessels and organs throughout the body, increasing the risk of serious health problems such as heart disease, stroke, and kidney disease.[20]

In this study, distress measurement used the 4DSQ instrument. This 4DSQ instrument can be used for the general population, such as the general public who come to primary health facilities (eg, health centers or general practitioner practices). This tool helps distinguish whether someone is experiencing a psychological disorder that requires further attention or just ordinary stress symptoms.[23] The 4DSQ instrument is not specifically designed to assess the source of distress, either from internal or external work. This tool focuses more on identifying psychological symptoms of the distress dimension. This instrument assesses the level of emotional stress in general, without distinguishing whether the source comes from work or external factors. This distress includes reactions to the pressures of everyday life.[24]

In this study, it was found that the components of the questionnaire of unexplained fear and disinterest were the most frequently found related to work distress. Unexplained fear often disturbs a person's mind, causing difficulty in concentrating on daily tasks or work. Employees may feel anxious without knowing exactly what they are afraid of, so that their attention is divided and they cannot fully focus on their work. This fear can cause physiological responses, such as increased heart rate, rapid breathing, or muscle tension. These body reactions can lead to physical and mental fatigue, making a person feel more easily stressed or anxious at work.[22]

On the other hand, the results of this study showed that there was no statistically significant relationship between anxiety and hypertension. Yu et al[13] study showed a relationship between anxiety and hypertension, with

results indicating that anxiety can increase the risk of hypertension. This difference may be due to the fact that this study used a cross-sectional study design where anxiety and hypertension data were collected at the same time, which could affect the ability to conclude a cause-and-effect relationship. In contrast, Yu et al.'s study used a meta-analysis that combined data from multiple studies, including prospective studies that could better describe a cause-and-effect relationship, because participants were monitored over a period of time.[13]

This study showed that there was no high level anxiety, so it may not be strong enough to cause hypertension. This suggests that individuals with anxiety have a slightly higher chance of developing hypertension. Theoretically, the mechanism between anxiety and hypertension is very complex. In general, anxiety can increase blood pressure, systemic vascular resistance, sympathetic activity, plasma renin activity, homeostasis models, and blood lipids. First, high anxiety will increase blood pressure in the short term, and the „white coat" effect derived from anxiety is a typical example. A recent study on ambulatory blood pressure monitoring reported that anxiety disorders are associated with nocturnal hypertension and early morning hypertension in outpatient hypertensive patients.[23]

Second, anxiety is closely related to the renin-angiotensin system and increases angiotensin II levels. Long-term anxiety can reduce vascular variability, so that persistent vascular resistance causes hypertension. The impact of anxiety on increasing high blood pressure is acute. This means that if the workers being studied are not in a state of anxiety, it will be difficult to obtain subjects with high blood pressure. Third, several experiments have shown that patients with anxiety usually have physiological signs of sympathetic system activation, and anxiety can greatly stimulate sympathetic outflow and vasovagal reflexes. Rozanski and colleagues argue that anxiety can activate the sympathetic nervous system, increase cardiac output, constrict blood vessels, and increase arterial blood pressure.[24]

The 4DSQ instrument usually assesses symptoms of psychological disorders including anxiety based on an individual's experience in the past seven days. This period provides an overview of the severity of acute symptoms, but may not reflect long-term chronic patterns unless repeated assessments are performed.[25] The occurrence of hypertension in this study can be associated with a history of previous hypertension, which is statistically proven to have a relationship between a history of hypertension and hypertension in workers with $p < 0.001$. Physiologically, individuals with a history of hypertension may have persistent vascular damage, such as arterial stiffness or endothelial dysfunction, which increases the risk of recurrent hypertension. Anxiety can act as an additional factor that triggers or worsens hypertension, but is not the only cause of hypertension in workers with a history of hypertension.[26]

Subjects with low, medium, or high job insecurity did not have significant differences in the occurrence of hypertension, either directly or through the mediation of anxiety and work distress. This study applied mediation to assess if job insecurity factor is mediated by anxiety and distress to develop hypertension. This study has several limitations. This study didn't measure factors contributing to hypertension, such as diet, physical activity, or genetic factors because of time limit and technical difficulties. Results of this study may not be generalizable to the population of workers outside the company studied, due to the specific characteristics of the work environment and demographics of the participants.

Conclusions

Based on research, the prevalence of hypertension in fishing equipment companies reached 35.2%. This figure is higher than Indonesia's national prevalence. From the study results it can be concluded that there is no relationship between job insecurity and anxiety with hypertension in fishing equipment manufacturing company workers. However, there is a relationship between work distress and hypertension among workers in this company. Work distress and anxiety do not serve as mediators in the relationship between job insecurity and hypertension among workers in this company.

Recommendations for this company is implementation of distress management programs such as training in relaxation techniques, meditation, or counseling to reduce worker distress.

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