

Article

The Relationship between Psychosocial and Work Stress among Construction Professionals during the COVID-19 Pandemic

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Abstract: Many aspects of society were impacted by the COVID-19 pandemic, including physical health, psychological well-being, social dynamics, and the economy. The construction sector experienced a significant influence from the pandemic. This research aimed to analyze the relationship between psychosocial factors (individual, home, and work factors) and the level of work distress among construction sector workers during the COVID-19 pandemic. This study employed a quantitative analytical approach with a cross-sectional design. Data collection took place in November–December 2021, and the total sample that met the inclusion criteria was 110 respondents. Work distress and psychosocial data were collected using a questionnaire that had undergone validity and reliability tests. Univariate analyses (frequency distribution), bivariate analyses (chi-square test), and multivariate analyses (multiple logistic regression tests) were conducted to analyze the data. The research revealed that the most closely related variables to the work distress levels were work duration, followed by employment status and career opportunities. This study underscores the importance of regulating working hours and providing opportunities for permanent employment and career advancement for the mental health of construction workers.

Keywords: construction; COVID-19; psychosocial



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1. Introduction

1.1. Background

There were many aspects of society that were impacted by the COVID-19 pandemic, such as physical health, psychological well-being, social dynamics, and the economy [1]. According to research conducted during the COVID-19 pandemic, there was a surge in the prevalence of mental health problems [2,3]. The level of anxiety among workers increased with rising numbers of infected people. Consequently, companies played a crucial role not only in preventing the transmission of the virus, but also in addressing its psychosocial consequences [4]. The increasing fear and anxiety among workers, combined with protocols to inhibit the spread of virus (such as lockdowns, quarantine measures, utilization of personal protective equipment, and so on) could lead to significant psychological disorders, including distress disorders [5].

Research by Prasad et al. found that workers in a particular industry experienced work distress during the pandemic, with identified risk factors including workload, interpersonal relationships, role ambiguity, management changes, work satisfaction, and the psychological health of workers [6]. The results of a multiple regression analysis revealed that independent factors such as interpersonal relationships, role ambiguity, management changes, and work satisfaction significantly influenced the mental health of industry workers during the pandemic. In the research conducted by Ruyter et al., it was observed that work distress had an adverse effect on job satisfaction, organizational commitment, and work performance [7]. Furthermore, the impacts on the company manifested in the form

of increased absenteeism, turnover, indirect costs due to lost workdays, and decreased productivity [8].

The construction sector also experienced a significant impact from the COVID-19 pandemic. Some of the effects of COVID-19 on the construction sector included a reduction in the number of workers in the field, challenges in importing industrial raw materials from outside the region, scarcity of materials, and a decrease in foreign investment [9]. The characteristics of construction projects are unique, involving different work locations that are open and influenced by weather conditions. These projects often have limited implementation times, are dynamic, and demand high physical endurance, with many tasks performed by untrained workers [10]. As construction work becomes increasingly complex and sophisticated, tight time constraints, changing demands for work results, and alterations in work regulations can create stressful situations for employees. This stress can lead to feelings of anxiety and boredom, resulting in distress [11]. Studies conducted in the construction sector have consistently shown that psychosocial aspects related to work have negative implications for workers' mental health [12].

One of the construction projects in Indonesia was the Light Rail Transit (LRT) project, categorized as a National Strategic Project. Within this project, there existed a core division known as the Civil and Trackwork Division. Initial observations before the research indicated that the Civil and Trackwork Division faced significant pressure due to tight progress targets. The turnover of workers in this division was notably high, attributed to the ease of replacement if progress targets were not met. This aligns with the findings of Zeng et al., who reported that high job demands are associated with employee turnover [13]. Consequently, workers in the Civil and Trackwork Division needed to adapt swiftly.

While the mental health of workers has been discussed in various settings, work distress experienced by construction professionals during the COVID-19 pandemic has not been thoroughly explored. All the workers encountered high job demands coupled with the fear of COVID-19 transmission. They were required to continue working on-site to achieve targets while adhering to health protocols to prevent the spread of the virus. Therefore, this research aimed to analyze the relationship between psychosocial aspects and work distress levels during the COVID-19 pandemic among construction sector workers. The hypothesis of this research posited the existence of a relationship between psychosocial aspects and work distress levels during the COVID-19 pandemic. The findings of this research could serve as a reference for companies in determining policies, organizational governance and management, and strategic planning related to work distress among employees.

1.2. Literature Review

1.2.1. Work Distress

Stress is a condition of worry or mental tension experienced by individuals in response to challenging situations [14]. It is considered an essential human reaction that encourages people to face challenges and obstacles in their lives [14]. Almost everyone may undergo stress to some extent during their life.

According to its nature, stress can be classified into two types: eustress and distress [15]. Eustress is a constructive form of stress associated with positive emotions, activation, and engagement in a particular situation. It is correlated with a moderate level of demands and can occur when someone has a high level of control over the situation. Eustress is perceived as a challenge to achieve goals [16].

In contrast, distress is an unconstructive form of stress that manifests negative feelings related to dissatisfaction and disengagement in a specific condition. Distress is linked to both low and high levels of demand. Individuals will experience distress if they have minimal control over the situation or perceive the circumstances as a threat [16]. Work distress is a physical and emotional hazard caused by an imbalance between job requirements and individual abilities, resources, or needs [17]. Workers in various sectors, especially the construction industry, may experience work distress. In China, 25.29% of construction workers reported experiencing work distress [18]. Research by Fauzan et al. found that 54.9% of

construction workers in Malaysia suffered from work distress [19]. Additionally, 73% of construction workers in East Java Province, Indonesia, experienced work distress [20].

1.2.2. Factors Related to Work Distress

Several studies across various professions, including health workers, drivers, industrial workers, and bank employees, have identified several factors associated with work distress. These factors encompass individual, home, and work-related aspects. Individual factors, such as age, gender, education level, position, health status, and knowledge about COVID-19, play a crucial role in work distress. Older workers tend to be more vulnerable to experiencing work distress compared to their younger counterparts [21]. Men are more likely to experience work distress than women, possibly due to the nature of high-risk jobs [19]. Workers with lower education levels are prone to higher work distress than those with higher educational backgrounds [21]. Non-managerial employees face a higher risk of work distress compared to managers [22]. Health problems can impede work performance and increase the likelihood of work distress [23]. Poor knowledge about the prevention and treatment of COVID-19 is also linked to work distress [24].

Home factors include the interaction between family and work, marital status, sleep quality, and sleep quantity. Positive interactions between family and work significantly reduce work distress. Conversely, workers experiencing work–family conflict are more susceptible to work distress [18]. Work distress is more common among married workers compared to unmarried individuals [25]. Workers with low-quality sleep face a 5.7 times higher risk of experiencing work distress than those with good sleep quality. Additionally, there is a six-fold increase in the risk of work distress among workers with short sleep durations [26].

Work factors encompass both the content and context of work. The content of work involves various elements such as workload, work period, work duration, work status, work rotation, work site, and work environment. Workers with higher workloads are more likely to experience elevated work distress compared to those with lower workloads [27]. Individuals with more than 5 years of work experience are more vulnerable to work distress than those with less than 5 years of experience [27]. Extended working hours also increase the risk of high-level work distress [28]. Contract workers for specific periods face a higher susceptibility to work distress compared to permanent workers [29]. Work rotation can lead to role conflict and an increased likelihood of work distress [30]. Additionally, workers exposed to high temperatures and noisy environments are more prone to experiencing work distress [27].

The context of work involves organizational structure and climate, interpersonal relationships, roles within the organization, organization management/leadership style, work rules, career opportunities, job satisfaction, and income. A negative organizational climate, characterized by a lack of support and innovation, can elevate the risk of work distress [31]. Poor relationships between coworkers can worsen work distress levels [32]. Individuals with unclear and insufficient roles within the organization are more prone to experiencing work distress [32]. A lack of effective leadership style increases the risk of work distress among employees [33]. Poor career development can trigger work distress among workers [32]. Job satisfaction has a negative relationship with work distress [31,34]. Low incomes may trigger work distress due to difficulties in meeting daily needs [23]. Work rules, including punishment and reward systems, have a positive relationship with work distress, meaning that workers may experience distress if they do not receive appropriate punishment and reward based on their work performance [35].

In the construction sector, several studies on work distress have been conducted in various regions. For example, research by Zhang et al. among Chinese construction workers found that demanding work time requirements, a lack of rewards, threats at work, work–family conflict, low social support, and poor working conditions could increase the risk of work distress [18]. In Malaysia, Fauzan et al. analyzed the relationships of gender, monthly salary, health status, smoking status, and exercise routine to work distress among

construction workers. The findings showed that gender and health status had a significant relationship with work distress [19]. Another study among construction workers in East Java Province, Indonesia, examined the relationship of exercise habits, job demands, social support, work period, and non-work activities with work distress. The research found that exercise habits and job demands had a significant relationship with work distress [20]. Despite research on work distress among construction workers in several locations, further exploration is needed to understand the relationship between other variables, such as organizational structure and climate, roles in the organization, career opportunities, and others, and work distress.

2. Materials and Methods

This study employed a quantitative analytical approach with a cross-sectional design. This research was conducted on workers within the Civil and Trackwork Division of the LRT Project at Company X, located in Bekasi City, West Java Province, Indonesia. Data collection was performed in November–December 2021. The population for this research comprised all workers in the Civil and Trackwork Division of the LRT Project at Company X, totaling 140 workers. The sample size for the study was determined to be 110 workers, calculated using Slovin’s formula (Formula (1)). Slovin’s formula is employed to calculate the sample size (n) when the population size (N) and desired margin of error (Ne) are known [36]. The inclusion criteria in this study was comprised of Civil and Trackwork Division workers who had tested positive for COVID-19, Civil and Trackwork Division workers whose nuclear family or household members had tested positive for COVID-19, and workers who were actively working during the research period.

$$n = \frac{N}{(1 + Ne^2)} \quad (1)$$

The data utilized in this research consisted of both primary and secondary data. The primary data were collected through the filling of an online questionnaire by the respondents. Additionally, face-to-face interviews were conducted with selected workers to obtain detailed insights complementing the questionnaire measurement results. The sampling technique used in filling out the questionnaires and interviews was purposive sampling. All the questions were asked to the respondents in Indonesian. The secondary data included information from the general description of Company X sourced from the company profile data.

To evaluate the level of distress, the questionnaire utilized in this study was adapted from the Pandemic-Related Perceived Stress Scale of COVID-19 (PSS-10-C) developed by Campo-Arias et al. [37]. The PSS-10-C comprises 10 items measured on a Likert 4-point scale (never, sometimes, often, or very often). All the items of the PSS-10-C are detailed in Table A1 (Appendix A). Negative items were scored from 1 to 4, while positive items were scored from 4 to 1. The Likert 4-point scale was chosen in this research to prevent the respondents from selecting a neutral option (midpoint) [38]. This approach aimed to ensure that the respondents’ answers accurately reflected their feelings during the research. The total score ranged from 10 to 40. A work distress level was considered low if the score was <20. Additionally, the work distress levels were classified as medium and high if the scores were <30 and >30, respectively. The determination of these cut-off scores was derived from the scale range formula (Formula (2)), where m represents the maximum score, n is the minimum score, and b is the number of categories [39].

$$S = \frac{(m - n)}{b} \quad (2)$$

The COVID-19 knowledge questionnaire was adapted from research by Albahri et al. [40] and consisted of 10 items that were answered as “true” or “false” (Table A2 in Appendix A). According to Albahri et al. [40], knowledge can be considered as sufficient when the

respondents could give the right answer for at least 80% of the questions. Therefore, the results of the answers would be categorized as adequate if the score was ≥ 8 and inadequate if the score was < 8 [40]. In the home factor questionnaire, there were questions about condition factors at home which were adapted from the Pittsburgh Sleep Quality Index (PSQI) Questionnaire (Table A3 in Appendix A) [41].

The variable of interaction between home and office was answered using a Likert 4-point scale (Table A4 in Appendix A) [42]. The work factor questionnaire contained questions related to workload, work duration, work environment conditions, organizational structure and climate, interpersonal relationships, role in the organization, management/leadership style, work rules, career opportunities, job satisfaction, and total income, which were also answered using a Likert 4-point scale (Table A5 in Appendix A) [42,43]. The range of the total score was 1–4. A score of 1–2.5 was considered poor. On the other hand, a score of 2.5–4 was deemed good. This cut-off score was also determined using the calculation of the scale range formula (Formula (2)).

Validity and reliability tests were conducted using SPSS 25 by IBM Corporation, New York, NY, United States of America. For the Likert scale questions, the validity was assessed based on the r value. If the r value was less than the critical r table value at a significance level of 5%, the respective question was excluded. Similarly, the validity of the multiple-choice questions was determined by examining the significance of the Pearson coefficient correlation test. Questions with non-significant values (< 0.05) were also excluded. Subsequently, a reliability test was performed on the questions that had passed the validity tests. The reliability test involved assessing the reliability coefficient value measured using Cronbach's alpha. Questions with a Cronbach's alpha value ≥ 0.6 were considered reliable [44,45].

There were 5 items in the questionnaire of knowledge regarding the risk of COVID-19 transmission that did not pass the validity test. Thus, we eliminated them and we only used 10 items (Table 1).

Table 1. Validity and reliability test.

Variables	Number of Items	Valid	Reliable	Number of Dropped Items	Dropped Items
Work stress	10	10	10	0	
Knowledge regarding the risk of COVID-19 transmission	15	10	10	5	Table A2 number 4, 7, 8, 10, 15
Sleep quality	14	14	14	0	
Interaction between home and work	4	4	4	0	
Work factor	67	67	67	0	

The data analysis involved univariate, bivariate, and multivariate tests. A univariate analysis was conducted to obtain the frequency distribution data for each variable. Bivariate tests comprised the chi-square test with a significance level of 0.05. This test was employed to examine the relationship between the independent variable (psychosocial factors) and the dependent variable (worker distress level). If the statistical calculations revealed a p -value of ≤ 0.05 , it could be inferred that a significant relationship existed between the psychosocial factors and the work distress level. In addition to the p -value, the odds ratio (OR) value was also examined to gauge the strength of the relationship between the independent variable and the dependent variable. Additionally, a multivariate test was conducted to identify the most dominant independent variable influencing the dependent variable. The multivariate test employed multiple logistic regression tests, and the data analysis for this research was performed using SPSS 25.

This study received approval from the Ethical Commission for Research and Public Health Service, Faculty of Public Health, University of Indonesia (Approval Number:

Ket-511/UN2.F10.D11/PPM.00.02/2021; Date of Approval: 9 November 2021). Informed consent was obtained from all the research participants, which was accompanied by the research questionnaire. The informed consent form was presented in the form of a digital document, using clear and accurate Indonesian language to ensure easy comprehension for the respondents. The document covered an explanation of the research objectives, confidentiality of respondent data, and included fields for the respondent’s name, age, and signature.

3. Results

3.1. Analysis of the Relationship between Individual Factors and Work Distress Levels

In Table 2, it can be observed that 47 (42.7%) of the workers reported low levels of distress, while 63 (57.3%) of the workers experienced moderate levels of distress. Table 3, however, indicates no significant relationship between the individual factors and work distress levels among the workers.

Table 2. Frequency distribution of work distress levels among workers.

Distress	Frequency (n)	Percentage (%)
Low	47	42.7
Moderate	63	57.3
High	0	0.0

Table 3. Relationship between individual factors and work distress levels among workers.

Variables	Work Distress Level		Total n (%)	OR (95% CI)	p-Value
	Low	Moderate			
	n (%)	n (%)			
Age (years)					
Early adult (<35)	21 (42.0)	29 (58.0)	50 (100)	0.947 (0.443–2.023)	0.998
Middle adult (≥35)	26 (43.3)	34 (56.7)	60 (100)		
Gender					
Male	42 (42.9)	56 (57.1)	98 (100)	1.050 (0.311–3.540)	0.998
Female	5 (41.7)	7 (58.3)	12 (100)		
Education					
High	28 (36.4)	49 (63.6)	77 (100)	2.375 (1.034–5.457)	0.064
Low	19 (56.7)	14 (42.4)	33 (100)		
Position					
Staff	31 (41.3)	44 (58.7)	75 (100)	2.800 (0.680–11.530)	0.316
Supervisor	8 (61.5)	5 (38.5)	13 (100)		
Manager	8 (36.4)	14 (63.6)	22 (100)	1.0–Ref	
Health status					
Healthy	36 (40.9)	52 (59.1)	88 (100)	0.692 (0.271–1.768)	0.447
Unhealthy	11 (50.0)	11 (50.0)	22 (100)		
Knowledge about COVID-19					
Good	31 (43.7)	40 (56.3)	71 (100)	1.114 (0.505–2.459)	0.842
Poor	16 (41.0)	23 (59.0)	39 (100)		

OR = odds ratio, CI = confidence interval.

3.2. Analysis of the Relationship between Home Factors and Work Distress Levels

Table 4 shows that there was no relationship between home factors and work distress levels among the workers.

Table 4. Relationship between home factors and work distress levels among workers.

Variables	Work Distress Level		Total <i>n</i> (%)	OR (95% CI)	<i>p</i> -Value
	Low	Moderate			
	<i>n</i> (%)	<i>n</i> (%)			
Interaction between family and work					
Good	31 (51.7)	29 (48.3)	60 (100)	2.272 (1.041–4.959)	0.053
Poor	16 (32.0)	34 (68.0)	50 (100)		
Marital status					
Single	7 (38.9)	11 (61.1)	18 (100)	0.827 (0.294–2.325)	0.798
Married	40 (43.5)	52 (56.5)	92 (100)		
Sleep quality					
Good	8 (50.0)	8 (50.0)	16 (100)	1.410 (0.487–4.080)	0.590
Poor	39 (41.5)	55 (58.5)	94 (100)		
Sleep quantity					
Good (>7 h)	11 (44.0)	14 (56.0)	25 (100)	1.069 (0.435–2.629)	0.998
Poor (≤7 h)	36 (42.4)	49 (57.3)	85 (100)		

OR = odds ratio, CI = confidence interval.

3.3. Analysis of the Relationship between Work Factors and Work Distress Levels

Table 5 shows several variables of work content that had a significant relationship with work distress, including work duration (*p*-value = 0.001), employment status (*p*-value = 0.002), and work environmental conditions (*p*-value = 0.006).

In addition, several variables of work context also had a significant relationship with work distress, including organizational structure and climate variables (*p*-value = 0.003), interpersonal relationships (*p*-value = 0.001), role in the organization (*p*-value = 0.002), management/leadership style organization (*p*-value = 0.007), career opportunities (*p*-value = 0.001), and job satisfaction (*p*-value = 0.034) (Table 6).

3.4. Analysis of the Factors Most Associated with Work Distress Levels

Based on the final model, the variable most related to the levels of work distress was work duration (*p*-value = 0.001), followed by employment status (*p*-value = 0.007) and career opportunity (*p*-value = 0.001). The results of the analysis showed that the OR value for the work duration variable was 12.100 (95% CI: 13.144–46.570). This means that the workers with a working duration of >8 h per day had levels of distress that were 12.1 times higher than the workers with a working duration of ≤8 h per day. The results of the analysis showed that the OR value for the employment status variable was 1.264 (95% CI: 0.101–0.692), meaning that the workers with a contract status had a level of distress that was 1.2 times higher than the workers with a permanent status. The results of the analysis also showed that the OR value for the career opportunity variable was 1.1 (95% CI: 0.037–0.322), meaning that the workers who had poor career opportunities were 1.1 times more at risk of experiencing work pressure than the workers who had good career opportunities (Table 7).

Table 5. Relationship between work factors (content of work) and work distress levels among workers.

Variables	Work Distress Level		Total <i>n</i> (%)	OR (95% CI)	<i>p</i> -Value
	Low	Moderate			
	<i>n</i> (%)	<i>n</i> (%)			
Workload					
Good	25 (50.0)	25 (50.0)	50 (100)	1.727 (0.805–3.707)	0.179
Poor	22 (36.7)	38 (63.3)	60 (100)		
Work period (years)					
<4	9 (42.9)	12 (57.1)	21 (100)	1.007 (0.385–2.631)	0.998
≥4	38 (42.7)	51 (57.3)	89 (100)		
Work duration (hours)					
≤8	14 (77.8)	4 (22.2)	18 (100)	6.258 (1.904–20.571)	0.001 *
>8	33 (35.5)	59 (64.1)	92 (100)		
Employment status					
Permanent	28 (60.9)	18 (39.1)	46 (100)	3.684 (1.657–8.190)	0.002 *
Contract	19 (29.7)	45 (70.3)	64 (100)		
Work rotation					
Has rotation	29 (50.9)	29 (49.1)	57 (100)	2.014 (0.932–4.349)	0.085
No rotation	18 (34.0)	35 (60.0)	53 (100)		
Work site					
Office	25 (48.1)	27 (51.9)	52 (100)	1.515 (0.709–3.239)	0.336
Field	22 (37.9)	36 (62.1)	58 (100)		
Work environmental conditions					
Good	25 (59.5)	17 (40.5)	42 (100)	3.075 (1.384–6.834)	0.006 *
Poor	22 (32.4)	46 (67.6)	68 (100)		

OR = odds ratio, CI = confidence interval, * = significant.

Table 6. Relationship between work factors (context of work) and work distress levels among workers.

Variables	Work Distress Level		Total <i>n</i> (%)	OR (95% CI)	<i>p</i> -Value
	Low	Moderate			
	<i>n</i> (%)	<i>n</i> (%)			
Structure and organization climate					
Good	34 (55.7)	27 (44.3)	61 (100)	3.487 (1.550–7.845)	0.003 *
Poor	13 (26.5)	36 (73.5)	49 (100)		
Interpersonal relationships					
Good	20 (71.4)	8 (28.6)	28 (100)	5.093 (1.988–13.042)	0.001 *
Poor	27 (32.9)	55 (67.1)	82 (100)		
Role in the organization					
Good	27 (33.8)	53 (66.3)	80 (100)	7.450 (0.105–0.620)	0.002 *
Poor	20 (66.7)	10 (33.3)	30 (100)		

Table 6. Cont.

Variables	Work Distress Level		Total <i>n</i> (%)	OR (95% CI)	<i>p</i> -Value
	Low	Moderate			
	<i>n</i> (%)	<i>n</i> (%)			
Management style					
Good	34 (54.0)	29 (46.0)	63 (100)	3.066 (1.366–6.884)	0.007 *
Poor	13 (27.7)	34 (72.3)	47 (100)		
Work rules					
Good	32 (48.5)	34 (51.5)	66 (100)	1.820 (0.827–4.003)	0.170
Poor	15 (34.1)	29 (65.9)	44 (100)		
Career opportunities					
Good	24 (30.0)	56 (70.0)	80 (100)	8.700 (0.490–0.345)	0.001 *
Poor	23 (76.7)	7 (23.)	30 (100)		
Job satisfaction					
Satisfied	19 (32.8)	39 (67.2)	58 (100)	5.820 (0.193–0.905)	0.034 *
Not satisfied	28 (53.8)	24 (46.2)	52 (100)		
Income					
Satisfied	28 (43.8)	36 (56.3)	64 (100)	1.105 (0.513–2.380)	0.847
Not satisfied	19 (41.3)	27 (58.7)	46 (100)		

OR = odds ratio, CI = confidence interval, * = significant.

Table 7. Final model of multiple logistic regression.

Variables	B	<i>p</i> -Value	OR	95% CI
Work duration	2.493	0.001	12.100	3.144–46.570
Job status	1.330	0.007	1.264	0.101–0.692
Career opportunity	2.210	0.001	1.100	0.037–0.322
Constanta	0.872	1.305	4.180	

OR = odds ratio, CI = confidence interval.

4. Discussion

4.1. Description of Work Distress Levels

The level of work distress in this research described a condition where there was a physical, emotional, behavioral, or cognitive imbalance in the workers that was influenced by various factors in their work and occurred during the COVID-19 pandemic. The level of work distress was measured subjectively through a questionnaire [37]. Hence, it did not describe a severity result based on a medical examination.

Out of the 110 respondents, there were 47 (42.7%) workers who had low levels of distress. Meanwhile, 63 (57.3%) of the workers had moderate levels of distress. In this research, no workers who had high levels of distress were found. This was possible because the data collection was executed in November 2021, during which time there were no cases of workers that were positive COVID-19 in that month according to company data. Different results may have been found if the data collection had been performed between June and July 2021, when cases of the delta variant of COVID-19 were soaring in Indonesia as well as in the company [46]. Based on the results of the interview, the stress levels were not more significant because none of the personnel had tested positive for COVID-19; therefore, there was no need for excessive worker backup.

4.2. Analysis of the Relationship between Individual Factors and Work Distress Levels

Based on the results, it can be concluded that age was not significantly related to the work distress levels experienced by the workers during the COVID-19 pandemic (p -value = 0.998). This finding contradicts the research by Yan et al., which suggested that older workers are prone to experiencing work distress [21]. However, it aligns with the findings of Almazan et al., who reported no significant relationship between age and work distress [28]. The unique context of the construction sector may contribute to this discrepancy. In the construction industry, age might not exert a significant influence on work distress during the COVID-19 pandemic, as work assignments are distributed evenly regardless of age, and there may be fewer workers over the age of 50. It is important to note that the challenges faced by older individuals in the general population during the pandemic, such as increased feelings of fear, panic, worry about death due to infection, isolation from family, loneliness, anxiety, financial impact, pre-existing health conditions, and limited physical activity, may not manifest similarly in the construction sector [47].

The relationship between gender and levels of work distress during the COVID-19 pandemic was found to be insignificant (p -value = 0.998). This finding contradicts the research by Fauzan et al. [19] and Vagni et al. [48], which reported a significant relationship between gender and work distress. However, it aligns with the findings of Almazan et al., who found no significant relationship between gender and work distress [28]. Contrary to the general trends observed in research by Pandey et al., which suggested that women might be more likely to experience distress compared to men due to differences in coping mechanisms [49,50], the construction sector presented a unique scenario. Despite women being potentially more exposed to stress in their work, the culture in the construction industry was observed to be more accommodating for female workers, possibly contributing to the insignificance of the research results.

The relationship between education and the level of work distress during the COVID-19 pandemic showed nonsignificant results (p -value = 0.064). In the Civil and Trackwork Division, some employees in staff positions had only graduated from senior high school, while other staff positions were filled by workers with diplomas or bachelor's degrees. This diversity in educational backgrounds might contribute to the insignificance of education in relation to the levels of work distress. Similar findings were reported in research by Xu et al. [51], which highlighted no significant difference in work distress between individuals with high levels of education (diploma, bachelor's, master's, and equivalent) and those with lower levels of education (high school graduates only). It is worth noting that while higher education levels may bring increased skills and knowledge, aiding in the control of work distress, workers with a higher education also tend to adapt more easily to given tasks and targets [52].

Job position did not have a significant relationship with the level of work distress experienced during the COVID-19 pandemic (p -value = 0.316). This contradicts research by Takahashi et al. which stated that non-managers were at a greater risk of suffering from work distress compared to managers [22]. The results of this analysis were supported by the statement during the interview that each level of position had different roles and responsibilities that contributed to work distress.

The relationship between health status and work distress during the COVID-19 pandemic did not show significance (p -value = 0.447). This finding differs from the results reported by Fauzan et al. [19] and Suparjiman et al. [23], both of whom indicated a significant association between health status and work distress. It is essential to note a potential bias in this study. Health status was solely obtained based on the respondents' recall during the questionnaire, lacking verification through medical data due to challenges posed by the COVID-19 pandemic. Additionally, the absence of complete medical check-up (MCU) results for the workers within the company constitutes a limitation of this research.

The variable of knowledge regarding COVID-19 did not exhibit a significant relationship (p -value = 0.842) in this study. This finding contrasts with research by Nguyen et al., which reported an association between knowledge of COVID-19 and work distress [24]. The

lack of significance in this variable may be attributed to the insufficient training provided to the workers. According to the information obtained, there was a limited availability of information regarding COVID-19, presented mainly through webinars or health talks. This lack of comprehensive awareness might have contributed to the workers' limited understanding of COVID-19 transmission and health protocols.

4.3. Analysis of the Relationships between Home Factors and Work Distress Levels

The interaction between family and work did not exhibit a significant relationship with the level of work distress during the COVID-19 pandemic (p -value = 0.053). In contrast, Putro et al. stated that the interaction between family and work was significantly related to work distress [53]. Based on the results of the interviews, it was explained that the workers' families had a sufficient understanding of how work in the construction sector was conducted before and during the COVID-19 pandemic. Workers' families were accustomed to their husbands coming home late at night. Additionally, women were not given priority to return home late at night, which helped prevent conflicts. Furthermore, since the construction sector involves field operations, workers are not required to complete work at home. Therefore, being at home represents quality time for the family.

There was no significant relationship between marital status and the level of work distress (p -value = 0.798). This research is in line with research conducted by Qiu [54] which showed that marital status did not have a significant relationship with levels of distress during the COVID-19 pandemic. The OR value was 0.827 (95% CI: 0.294–2.325). An OR < 1 means that being married for years was a protective factor. In other words, there was a negative relationship between unmarried workers and moderate work distress. This occurred because the family was considered a source of enthusiasm for work.

The variable of sleep quality did not demonstrate a significant relationship with the levels of work distress during the COVID-19 pandemic (p -value = 0.590). This finding contrasts with the research conducted by Mutifasari and Ramdhan, which asserted that workers with low-quality sleep were more likely to experience work distress compared to those with good-quality sleep [26]. This result was further investigated in interviews. Some workers reported poor sleep quality due to frequent nighttime awakenings. Conversely, other workers reported good sleep quality, as they turned off their cellphones to avoid disturbances during the night.

The variable of sleep quantity did not exhibit a significant relationship with the level of work distress experienced during the COVID-19 pandemic (p -value = 0.998). This finding contradicts the research conducted by Mutifasari and Ramdhan, which identified a six-fold increase in the risk of work distress among workers with a short sleep duration [26]. In accordance with the interviews conducted with the workers, their sleep hours were restricted due to their prolonged working duration (8–12 h). Nevertheless, the workers mentioned that they had become accustomed to this pattern, and their bodies had adapted to sleeping less than 7 h per day.

4.4. Analysis of the Relationship between Work Factors (Content of Work) and Work Distress Levels

The variable of workload did not demonstrate a significant relationship with the level of work distress during the COVID-19 pandemic (p -value = 0.179). This finding aligns with research by Sarifa [55], which similarly concluded that there was no significant relationship between physical workload and the incidence of work stress in employees. Despite being categorized for improvement, the workload was manageable and effectively handled by employees within the company. The employees were allowed to take short breaks at their discretion when feeling tired, preventing the occurrence of excessive fatigue.

The variable of work period did not exhibit a significant relationship with the level of work distress (p -value = 0.998). This finding contradicts the research conducted by Yan et al., which reported that workers with a longer work period were more likely to experience work distress [21]. Similarly, Putera and Martiana also demonstrated an insignificant relationship

between work period and work distress [20]. The lack of significance in this relationship may be attributed to the nature of the construction industry, which operates on a project-based system with specific time limits. Workers, despite having extensive experience in a company, may find themselves as newcomers in each project. Consequently, the status among employees remains the same, and they need to adapt anew to the requirements of each new project.

Based on data analysis in this study, the work duration had a significant relationship with the level of work distress (p -value = 0.001). Zhang et al. also stated that demanding work time requirements (such as long working hours) could escalate work distress levels [18]. Regulations require every entrepreneur to implement a working duration of 7 h in 1 day equal to 40 working hours in 1 week for 6 working days in 1 week. Another option for working duration which can be implemented is 8 h in a day, equal to 40 working hours in 1 week for 5 working days in 1 week. Workers from the Civil and Trackwork Division ideally worked from 9 am to 5 pm. However, in reality, they may have gone home at approximately 8 or 9 pm depending on their jobs on a given day. Alongside the long working hours, the workers received a break from 12 to 1 pm, and they were also given time for an afternoon prayer.

A prolonged work duration can lead to an imbalance between work and personal life, impacting employee health. A meta-analysis research conducted by Wong et al. [56] indicates that the length of work duration can influence a person's occupational health conditions. Concerning physiological health, an extended work duration significantly increases the risk of cardiovascular disease and metabolic syndrome. Additionally, long work hours elevate the risk of fatigue, injuries, poor-quality sleep, short sleep duration, and sleep disturbances. Furthermore, the longer an individual works, the greater the risk of psychological stress. Consequently, reducing the duration of working hours can contribute to a decrease in the level of distress.

A significant relationship was observed between the employment status variable and the level of work distress during the COVID-19 pandemic (p -value = 0.002). This finding contradicts the research by Khoirunnisa et al., which indicated that employment status was not significantly related to work distress [57]. However, it aligns with the research by Hannerz et al., stating that fixed-term contract workers were more susceptible to work distress compared to permanent workers [29]. Proportionally, there are more contract workers due to the construction project's employment system, which generally recruits workers based on the ongoing project's needs. Permanent employees are initially contract employees who, after a certain period of demonstrating good achievements, may be considered for the selection process to become permanent employees of the company.

In a pandemic situation, work becomes uncertain. If the contract related to the LRT project concludes, permanent employees would still retain their jobs and might be transferred to another section or project. In contrast, opportunities for contract employees to secure new projects are less certain. If the company no longer requires additional staff, there is a possibility that contracts may not be extended. This situation could be particularly stressful for contract workers during the COVID-19 pandemic.

Work rotation did not show a significant relationship with the level of work distress during the COVID-19 pandemic (p -value = 0.085). This result contradicts research by Hulsegge et al., which stated that shift workers who were dissatisfied with their schedule had higher level of work distress [58]. In the Civil and Trackwork Division, rotations are not always implemented. Rotations are made into two shifts, so the workers work for a duration of 12 h for one shift. Generally, these shifts are performed from morning to evening. Meanwhile, night shifts are only carried out if there is special work and not routine work. This applies both before and during the COVID-19 pandemic. This can be the basis on which bias may have occurred in the research, because rotations are not executed routinely.

The variable of work site did not show a significant relationship with the level of work distress during the COVID-19 pandemic (p -value = 0.336). This is consistent with research

by Setiawan et al., which reported that the work site did not have a significant relationship with work distress [59]. The insignificant relationship could be caused by the same feelings of anxiety. For workers who work in the field, stress can be influenced by noise, light, and high temperatures, especially during the day. For office workers, it was prohibited to use the air conditioner during the COVID-19 pandemic when cases of COVID-19 were high. This was because air circulation was poor, and air gathered inside a room. This restriction obviously created uncomfortable conditions. When the cases started to subside, working in an office also had the potential to cause work distress because the working time was spent in front of a computer screen. This caused boredom, coupled with the pandemic situation where workers were required to wear a mask and reduce their frequency and duration of talking to other people.

The work environment showed a significant relationship with the level of work distress during the COVID-19 pandemic (p -value = 0.006). The outdoor work environmental conditions for field workers in this research indicated noise, ergonomics, light, and temperature conditions. This result is in line with research by Handayani et al., which demonstrated that room temperature and noise had a significant relationship with work distress among workers [27]. Based on a site inspection, it can be seen that this LRT project was near a toll road. As a result, the field work conditions were noisy not only due to internal work but also external factors (such as vehicles). Additionally, the work was located in Bekasi City, and there were no trees around the location. This caused the temperature in the project to become hot, especially during the day.

For work environments in indoor areas, before the pandemic, AC was used to cool the room temperature. However, the use of AC was temporarily stopped during the COVID-19 pandemic because it was thought that the air in the room would gather and circulation would be bad. The priority was using a fan and opening the windows, but these could trigger hot temperatures in the room and cause discomfort.

For indoor work, there were no problems with light because the lamps worked well. However, due to the nature of the outdoor work, the workers received excessive sunlight, especially during the day. Exposure to sunlight, especially during the day for a long time, has the potential to trigger headaches, which will result in work distress.

4.5. Analysis of the Relationship between Work Factors (Context of Work) and Work Distress Levels

Based on the results, a significant relationship was identified between organizational structure and climate variables and the level of distress in workers during the COVID-19 pandemic (p -value = 0.003). In this research, organizational structure and climate refer to the respondents' perception of the values guiding them in fulfilling their duties and behaving within the organization. This is reflected in questions regarding reporting mechanisms, organizational procedures, what the company provides to workers, how workers obtain information about their work, and the company's treatment and standards regarding workers. Putro et al.'s research [53] also supports these findings, emphasizing the significant relationship between organizational structure and climate. It is crucial for companies to effectively execute organizational functions, such as providing resources to support their employees' work, including concrete counseling facilities. This is particularly important because many problems cannot be resolved at lower management levels due to issues reaching an impasse at the executive or staff level.

Interpersonal relationships demonstrated a significant association with the level of work distress experienced during the COVID-19 pandemic (p -value = 0.001). Workplace interpersonal relationships encompass three dimensions: relationships with superiors, relationships with subordinates, and relationships with co-workers [60]. Additionally, another study highlighted that respondents with poor interpersonal relationships experienced the most severe levels of distress [61]. This alignment was further supported by in-depth interviews with the workers. These findings revealed that interpersonal relationships suffered, particularly during the COVID-19 pandemic, as the situation increased

their workload. In normal circumstances, the HR and HSE departments focused solely on completing their tasks. However, during the pandemic, their workload escalated, leading to interdepartmental conflicts and responsibilities being shifted among departments.

The role in the organization exhibited a significant relationship with the level of distress experienced during the COVID-19 pandemic (p -value = 0.002). Lestari and Rizkiyah also reported that workers with unclear and insufficient roles in the organization or workplace were prone to experiencing work distress [32]. According to the research results, some workers remained confused about their responsibilities, leading to difficulties in answering questions during the interview session. This confusion is typically observed among new workers who grapple with understanding their rights and obligations. The challenges were exacerbated by the COVID-19 pandemic, which directly increased the responsibilities of the workers. The expansion of worker roles ranged from focusing on their job description to becoming COVID-19 warriors, tasked with monitoring workers' health and providing support for sick colleagues. In this context, the role of managers and higher-ups becomes crucial, especially for staff at the forefront of the company who are directly dealing with field operations. Staff-level employees face significant demands that can contribute to distress [53]. As Munandar [8] explains, when workers are given the opportunity to participate in decision-making, it not only leads to better work outcomes but also helps alleviate pressure at work that may otherwise cause distress.

The variable of organizational management/leadership style exhibited a significant relationship with the level of work distress experienced during the COVID-19 pandemic (p -value = 0.007). This finding aligns with the research by Setiawati et al. which asserted that a lack of leadership style could increase the risk of work distress among employees [33]. In this research, organizational management/leadership style refers to the respondents' perceptions regarding leader participation in decision-making, effective communication, and the implementation of policies within the company. A good management style directly influences the well-being of workers, while a poor management style can negatively impact the mental health of workers.

In the LRT Project of Company X, based on the interview results, it was found that several managers at higher levels demonstrated effectiveness in organizing their team members. However, there were still instances where some managers or leaders fell short in setting a positive example for their workers. Negative examples included irregular working hours, deviating from expected arrival and departure times, and exhibiting characteristics that were more aligned with giving orders rather than providing guidance to the workers. The manner in which a supervisor manages and directs workers is a crucial factor in determining the level of distress experienced by the workforce. Some employees expressed dissatisfaction with their superiors' communication styles, emphasizing the importance of understanding the individual characteristics of employees. These characteristics significantly contribute to determining whether a worker becomes distressed or not. Therefore, it is crucial for companies to be attentive to the leadership practices and communication styles of their managers and leaders, as these aspects can have a substantial impact on the overall well-being of the employees.

The variable of work rules did not show a significant relationship with the level of work distress experienced during the COVID-19 pandemic (p -value = 0.170). This finding contrasts with research by Pertiwi et al., which asserted that work rules had a positive and significant relationship with work distress [35]. The communication and socialization of technical rules governing work were not effectively disseminated to all workers, as these rules were known to only a limited number of people. Frequent changes to the rules were often not communicated to all relevant parties. Although rules were documented, their implementation in the field appeared lax, lacking the necessary oversight. Another aspect where clarity was lacking involved the application of rewards and punishments. While employees who violated work hours were supposed to face sanctions and receive verbal or written warnings, the enforcement only reached that stage. As a result, it did not have a sufficient deterrent effect on employees. This situation could potentially lead to social

jealousy among those who consistently arrive on time for work. Addressing these issues and enhancing the clarity and enforcement of work rules may contribute to reducing work distress among employees.

There was a significant relationship between career opportunity and the level of work distress during the COVID-19 pandemic (p -value = 0.001). This finding is consistent with research conducted by Putro et al. [53], which emphasized that the significance of the relationship between career development and levels of distress was often influenced by the worker's education level. Based on observation results in the construction sector, permanent employees tend to have more promising career opportunities compared to employees still under contract status. In the construction sector, permanent employees, after completing a project, have the potential to transition to another project with a more favorable position due to their accumulated work experience. Conversely, contract employees, upon completion of a project, face a higher likelihood of losing career opportunities, since their careers are tied to the contract's date and duration. Fewer contract employees may proceed to other jobs, and while they have the opportunity to become permanent employees, openings are limited, and participation in the selection process is required. The conditions of the COVID-19 pandemic can exacerbate concerns about career opportunities, potentially triggering work distress. The challenges posed by the pandemic, coupled with the perception of limited career prospects, may impose additional mental burdens on individuals navigating these difficult times.

The job satisfaction metric had a significant relationship with the level of work stress experienced during the COVID-19 pandemic (p -value = 0.034). This is in line with the research of Pecino et al. [31] and Xie et al. [34], which stated that job satisfaction had a significant and negative relationship with work distress. According to the demand–control–support model theory, working in the Civil and Trackwork Division can be deemed as a combination of high demands and a low level of control [62]. Thus, to make job satisfaction conditions even better, social support is needed (such as rewards to increase employee enthusiasm and satisfaction).

The relationship between income and levels of work distress was found to be insignificant (p -value = 0.847). This was not in agreement with the findings of a previous study, which concluded that there was a significant relationship between income and work distress levels experienced by online motorcycle drivers during the COVID-19 pandemic [57]. However, it aligns with the findings of research by Fauzan et al., which demonstrated that income did not have a significant relationship with work distress levels [19]. In the prevailing conditions, the reduction in the number of work requests that the workers could carry out contributed to financial challenges. Despite this, there were life demands that compelled the workers to continue seeking income [57]. In-depth statements obtained through interviews shed light on the workers' satisfaction with their income levels. The respondents mentioned that during the COVID-19 pandemic, the bonuses they used to receive were disrupted or not provided at all, as company funds were directed towards handling COVID-19 in the workplace. Despite this, the workers expressed understanding and did not view this as a significant burden causing work distress. They acknowledged the increased difficulty during the pandemic and were grateful that the LRT project, being a National Strategic Project, continued without interruptions, unlike other construction projects that might have been hampered or stopped during the COVID-19 pandemic. The absence of bonuses was not perceived as a significant factor contributing to work distress, considering the challenging circumstances of the pandemic.

4.6. Practical Recommendations

To further enhance this study's practical relevance, it is imperative to incorporate a more specific discussion of the practical implications of our findings. Specifically, we need to explore how the results can directly inform workplace policies, interventions, or support mechanisms for distressed workers. Providing concrete recommendations in this regard would significantly augment this study's applicability to real-world scenarios.

In light of this recommendation, our study underscores the importance of adequate rest and appropriate working hours as crucial factors in maintaining both physical and mental health. If altering working hours proves impractical, companies should prioritize implementing measures to ensure their employees receive sufficient rest between shifts. This not only contributes to the overall health and safety of the workforce but also enhances job satisfaction and productivity. Employers who prioritize the well-being of their employees often see positive outcomes in terms of employee morale, engagement, and long-term performance.

Additionally, our findings highlight the significance of maintaining a conducive office environment. Indoor temperatures, ideally around 24 degrees Celsius, should be regulated to ensure comfort for employees, especially considering the hot outdoor weather conditions. Providing designated shelter points for workers to briefly rest can further contribute to their well-being. Adherence to minimum lighting standards is crucial to creating a well-lit workspace, supporting productivity, and fostering a healthy work atmosphere. In cases where measurement results reveal noise levels exceeding established thresholds due to the use of heavy equipment, companies should take prompt measures to address the issue. Implementing noise reduction strategies or providing personal protective equipment can help mitigate impacts on employees' health. By attending to these aspects of the office environment, companies demonstrate a commitment to the welfare and safety of their workforce.

Furthermore, our study suggests that companies can organize webinars or training sessions on communication skills, targeting both workers and supervisors/managers. The aim is to enhance interpersonal relationships between employees and their superiors, serving as a forum for upskilling organizational leaders to improve their leadership abilities. Conducting such training at least 1–2 times a year ensures continuous improvement in communication and leadership skills.

The HR department can also play a pivotal role by undertaking comprehensive remapping of workers' job descriptions. If employees are required to perform tasks beyond their usual job scope, the company should provide clear instructions and offer commensurate rewards. This approach minimizes role ambiguity within the organization and contributes to a more transparent and efficient workflow.

To boost job satisfaction, companies can implement monthly awards for workers with outstanding performances. Assessments can be conducted by superiors or colleagues through a questionnaire, creating a positive impact as workers feel appreciated for their contributions.

In terms of career development, our study supports the establishment of a program comprising planning, direction, and development phases. The planning phase involves identifying workers' strengths and weaknesses through interviews, while the direction phase helps them turn their career plans into a reality. The development phase allows workers to demonstrate their abilities for the desired position through trial rotations, later evaluated by the branch head regarding their performance.

4.7. Limitations

This research was unable to demonstrate a causal relationship between the studied variables, since exposure and outcome were assessed simultaneously at one point in time. Additionally, due to the constraints imposed by the COVID-19 pandemic, the measurement of work stress levels among the respondents relied solely on experiences, subjective complaints, and the respondents' perceptions as indicated through questionnaire responses. Moreover, the questionnaire was distributed online, and the respondents completed it without direct assistance from the researcher. To address this limitation, the researchers sought to clarify any unclear responses and conducted interview sampling to obtain a more comprehensive understanding. Additionally, the sample size of the study was limited, which may restrict the generalizability of the results. These findings cannot be applied to other contexts or populations. Therefore, further studies with larger and more diverse samples are recommended.

5. Conclusions

In summary, this paper highlights the significant impact of COVID-19 on the psychological health of construction sector workers, particularly those in the Civil and Trackwork Division of Company X's LRT Project. The combination of dynamic work conditions, high physical demands, time constraints, and the looming threat of the pandemic contributed to increased distress among the workers. Most of the workers in the Civil and Trackwork Division experienced low to moderate distress levels. In the individual and home contexts, no variables showed significant relationships with work distress. However, in the work factor, several variables demonstrated significant relationships with work stress, including work duration, job status, work environment conditions, organizational structure and climate, interpersonal relationships, role in the organization, organizational management/leadership style, career opportunities, and job satisfaction. According to the final model, the variable most closely associated with the level of work distress was work duration, followed by employment status and career opportunities. In light of these findings, several recommendations are proposed for companies to minimize work distress, such as reviewing work duration, ensuring a conducive work environment, organizing webinars/training on communication skills, redefining workers' job descriptions, and providing rewards commensurate with work results.

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Appendix A

Table A1 consists of 10 items of the PSS-10-C which were adapted from Campo-Arias et al. [37].

Table A1. PSS-10-C.

No	Item
1	I feel influenced, as if something serious will suddenly happen related to this pandemic.
2	I feel that I am unable to control important things in my life because of the pandemic.
3	I feel anxious when working within the pandemic situation.
4	I believe that I am able to overcome personal problems related to this pandemic.
5	I feel that everything is going well in the midst of this pandemic.
6	I feel unable to do the things which I should do to control COVID-19 infection while working.
7	I feel able to control the difficulties that could occur in my life related to COVID-19 infection while working.

Table A1. *Cont.*

No	Item
8	I feel that everything is still under control in the midst of the pandemic.
9	I feel disappointed because things related to this pandemic are out of my control.
10	I feel that there are difficulties at work because of the pandemic and I am unable to deal with them.

Table A2 consists of 15 items that were adapted from Albahri et al. which were used to measure knowledge regarding the risk of COVID-19 transmission [40].

Table A2. Knowledge regarding the risk of COVID-19 transmission.

No	Item
1	Currently, there is no effective medicine for COVID-19. However, early symptomatic and supportive treatment could help the majority patients recover from the infection.
2	Not everyone with COVID-19 will evolve into a severe case. Those who are older, suffer chronic illnesses, and are obese are more likely to have severe cases.
3	People with COVID-19 cannot transmit the virus to others if they do not experience a fever.
4	COVID-19 virus spreads through respiratory droplets from infected individuals.
5	Wearing general medical masks in societies can prevent someone from contracting the COVID-19 virus.
6	Children and teenagers do not need to take action to prevent infection by the COVID-19 virus.
7	To prevent the transmission of COVID-19, individuals should avoid going to crowded places such as busses, parking lots, and public transportation.
8	Isolation and treatment of people infected with the COVID-19 virus is an effective way to reduce the spread of the virus.
9	People who have had contact with someone infected with the COVID-19 virus must immediately be isolated in an appropriate place. In general, the observation period is 28 days.
10	Diarrhea is a possible symptom of COVID-19.
11	Currently, the COVID-19 vaccine is available.
12	Workers have a higher risk of infection.
13	Early use of antibiotics shortens the duration of COVID-19 illness.
14	SARS-CoV-1 is the causative agent of COVID-19 infection.
15	Detection of viral proteins through PCR analysis of patient samples is the main way to diagnose COVID-19.

Table A3 consists of 14 items of the PSQI used to measure sleep quality [41].

Table A3. PSQI.

How Often Does This Problem Disturb Your Sleep?	
1	Not being able to fall asleep within 30 min of lying down
2	Waking up in the middle of sleep
3	Waking up to go to the bathroom
4	Difficulty breathing
5	Coughing or snoring
6	Cold when sleeping
7	Hot when sleeping
8	Having a bad dream
9	Feeling pain (having a wound)
10	How often do you use sleeping pills?
11	How often do you feel sleepy while working?
12	How enthusiastic you are in solving the problems faced?
13	How was your sleep quality during the last month?
14	How was your sleep quality during the last week?

Table A4 consists of 14 items used to measure the interactions between home and work [42].

Table A4. Interactions between home and work.

No	Item
1	I still have to take care of family needs in between office work.
2	My family feels I am too busy working.
3	I was late coming into the office because I had to take care of family needs.
4	My family does not support my work and career.

Table A5 consists of the items to measure work factors.

Table A5. Work factors.

No	Item
Workload (NIOSH Generic Job Stress, adapted from Kholifah [43])	
1	A significant workload slows down my work.
2	I need a lot of time to think and reflect. I have a large workload.
3	Many people expect me to be able to do large amounts of work.
4	It takes me a long time to finish all my work.
5	I have many demands and tasks at work.
Work Duration	
6	I feel that my work duration is too long.
7	I feel exhausted from the duration of my work every day.
8	I feel that the duration of my work interferes with my other life activities.
9	I feel that the duration of my work does not comply with the regulations, namely 8 h per day.
Work Rotation	
10	I feel comfortable with my work rotation.
11	My work rotation improves my ability to work.
12	My work rotation increases my productivity.
Work Environment Conditions (NIOSH Generic Job Stress, Adapted from Kholifah [43])	
13	I feel the air temperature at work is uncomfortable (too hot/too cold).
14	The arrangement of things in the room at work is not good.
15	I feel that the lighting in the work room is too bright/too dim.
16	I feel like my work space is noisy.
17	My work space is dusty and not clean.
18	I have to work in an uncomfortable position for a long time.
Organizational Structure and Climate	
19	I have done my best for the company, but the company is not doing its best for me.
20	I find it difficult to get information about things related to my job.
21	I don't communicate very well with my boss or co-workers.
22	I feel that the policies and regulations in the company are too rigid.
23	My boss does not assess my work results well and objectively.
24	The company's time constraints in completing work require me to always be ready, both physically and psychologically.
25	I feel that the company's standards are too high compared to the abilities of the average worker.
26	The existing work procedures in the company hinder the achievement of my work targets.
27	I have experienced confusion when solving a problem, and there was no uniform procedure.
28	I have experienced losses due to work procedures that were not properly tested.

Table A5. Cont.

No	Item
Interpersonal Relationships (Adapted from Lailasari [42])	
29	I feel there is a lack of communication between superiors and workers or between workers.
30	I feel that my co-workers' communication is not good.
31	I have experienced a lack of good cooperation between colleagues.
32	I feel a lack of social support from my coworkers and superiors.
33	I feel confused when I encounter problems in the field, and I do not know who I should ask for help.
34	I feel that my opinions or things I do are always wrong in the eyes of my colleagues, superiors and subordinates.
35	I have experienced rejection when I asked my coworkers for help.
36	I feel hurt by my colleagues or boss.
Roles in the Organization (NIOSH Generic Job Stress, Adapted from Kholifah [43])	
37	I know my rights as a worker.
38	I clearly know the plans, goals, and objectives of my work.
39	I can manage my time well while working.
40	I know my work responsibilities.
41	I know what the company expects from my work.
42	I know the tasks I have to complete during my working hours.
Management style/organizational leadership (Adapted from Lailasari [42])	
43	I feel that my boss prioritizes the interests of management over the interests of the workers.
44	I feel that the language or delivery from my superiors is not good/inappropriate.
45	I feel dissatisfied with the leadership of my superior.
46	My boss lacks attention to my welfare as a worker.
47	I feel afraid to communicate with my superiors.
48	I feel that my boss is more concerned with his personal interests which are not related to the company.
49	I am afraid to give my personal opinion in front of my superiors.
50	I feel pressured by my boss/colleagues to do my assignments.
Work Rules (Adapted from Lailasari [42])	
51	I feel the work I do is boring/there is no variety.
52	I feel the work I do lacks weight.
53	I feel like I don't have time to do the additional tasks given.
54	I feel like I'm doing an uncertain type of work.
55	I feel uncomfortable with the company's work procedures.
56	There are no exact details about the additional tasks I will have to do in the field.
57	I feel that the distribution of the number of human resources in work shifts is not balanced with the reality on the ground.
58	I feel bored more quickly when doing my work in the field.
Career Opportunity (NIOSH Generic Job Stress, Adapted from Kholifah [43])	
59	I am confident about the future of my work.
60	I am sure that I will get the opportunity to be promoted in the next few years.
61	I am confident that my work skills will be useful and valuable in the next five years.
62	I am confident about the job responsibilities that I will get over the next six months.
63	If I lose my job, I'm confident I can support myself.
Work Satisfaction (NIOSH Generic Job Stress, Adopted from Kholifah [43])	
64	If I could decide again to accept the job I have now, I would, without thinking twice, take the same job.
65	If I was free to choose whatever type of job I want, I would stay in this job.
66	If a friend told me that he was interested in working in a job like mine, I would highly recommend him because this job is very interesting and promising.
67	I am very satisfied with my job now.

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