

Research Article

**Workload and Stress Incidents Among Production Workers
at PT. X, Bekasi, West Java, 2025****Indah Restiaty¹, Burhan Muslim², Rojali³, Suci Ratu Masyeni⁴, Bina Rachma
Permatasari⁵**Poltekkes Kemenkes Jakarta 2, Indonesia ^{1,3,4,5}Poltekkes Kemenkes Padang, Indonesia ²Corresponding Author, Email: indah.restiaty@poltekkesjkt2.ac.id**Abstract**

An imbalance between workload and individual capacity may lead to work stress, which negatively impacts both employees' health and company productivity. This study aims to analyze the relationship between workload and work stress among production workers at PT. X, Bekasi, West Java, in 2025. A quantitative method with an analytic cross-sectional design was applied. A total of 35 permanent production workers were selected using purposive sampling, and data were collected through questionnaires measuring workload indicators (metabolic rate and physical workload at the workplace) and work stress indicators (role ambiguity, role conflict, quantitative workload, qualitative workload, and career development). Data were analyzed using the Chi-Square test. The results showed that most workers experienced light workload, while work stress was mostly in the mild to moderate categories. The Chi-Square test produced a p-value of 0.014, indicating a significant relationship between workload and work stress. These findings highlight the importance of proper workload management, including task arrangement, job rotation, and career development strategies to reduce the risk of work stress and maintain productivity among production workers.

Keywords: Production Workers, Stress, Workload.**INTRODUCTION**

An unhealthy work environment or monotonous, repetitive jobs, along with problems rooted in social life, can lead to fatigue, certain illnesses, accidents, and work-related stress. In this case, psychological factors play a major role because psychological disturbances at work can arise from mental conflicts caused by workloads that do not match workers' abilities. According to Sartika (2023), work stress occurs when there is a mismatch between job demands and individual capacity, causing workers to respond negatively, which ultimately affects performance and productivity. In other words, working conditions filled with pressure will disrupt the physical and psychological balance of employees and may even cause chronic disorders if prolonged (Kasaga & Athoillah, 2025). To further understand the sources of such conditions, it is first necessary to examine how workload is formed and measured, since workload is often the initial factor that triggers both psychological and physical disorders among workers.

Workload can be measured in various ways, including calculating the metabolic rate as well as using questionnaires containing questions to explore the physical workload during work. Excessive workload can lead to mild, moderate, severe, or even very severe stress. Mahawati et al. (2021) explain that any workload received by workers should be balanced with their physical and cognitive abilities, since imbalance will lead to overstress, fatigue, and decreased productivity. Thus, workload analysis becomes an important step to assess the suitability between work capacity and task demands in order to prevent physical and mental disorders. When workload is uncontrolled, the most common consequence is work stress (Putri et al., 2024). Therefore, the relationship between workload and work stress has become an important concern in labor studies.

Work stress is a psychological condition experienced by individuals due to excessive pressure or demands in the workplace. Work stress can negatively impact industry, as employees' tasks may be hampered and productivity reduced. Sururin et al. (2020) emphasize that work stress creates a physical and psychological imbalance that affects emotions, thought processes, and individual motivation. The causes of work stress can stem from the work environment, individual characteristics, or existing work systems. If not addressed promptly, long-term work stress can result in both physical and psychological health problems, such as chronic fatigue, decreased concentration, and low work motivation (Khafidhoh et al., 2025). Therefore, it is important to view the emergence of work stress not only as a result of workload but also in relation to the work environment and the use of technology in production processes.

The use of technology in industry optimizes production processes. However, its use may also pose risks to occupational safety and health. Mahawati et al. (2021) add that workplace conditions—whether physical, chemical, biological, or psychological—can increase workload if not managed properly. Therefore, a safe, healthy, and ergonomic work environment is a crucial requirement to maintain workers' balance in facing job demands. Occupational hazards or work-related illnesses not only have implications for physical aspects but also affect the emotional and social conditions of workers (Siregar, 2020). Work stress arising from an imbalance between demands and individual adaptive capacity can become a major obstacle to organizational productivity.

The object of this research focuses on production workers at PT. X, Bekasi, West Java, who face high work demands on a daily basis. Production activities in the company require a fast work rhythm, high output targets, and continuous use of machine technology. This situation potentially increases both physical and mental workload, which, if not managed properly, may lead to work stress. Initial field observations have identified signs of stress such as fatigue, decreased concentration, and reduced work motivation. This makes PT. X a relevant object for study, considering the company's productivity depends heavily on employee performance.

The reason for selecting this research object is that the production department at PT. X has distinctive job characteristics, namely a combination of heavy physical workload, involvement of production technology, and strict target systems. Previous studies have mostly focused on work stress in the service sector or organizations with predominantly mental workload, while research in the production sector remains limited (Hapsari et al., 2023; Irawati et al., 2023; Siahaan, 2020). Therefore, this study presents novelty through a specific analysis of the relationship between workload and the occurrence of stress among production workers in the manufacturing industry. The novelty lies in linking ergonomic, psychological, and work environment aspects within one research context at PT. X, Bekasi, West Java.

Based on the above description, the research problem is formulated as follows: What is the relationship between workload and work stress among production workers at PT. X, Bekasi, West Java, in 2025? In line with this research problem, the objective of this study is to determine the relationship between workload and work stress among production workers at PT. X, Bekasi, West Java, in 2025. The specific objectives are: (1)

to determine the relationship between workload based on workers' metabolic rates and work stress, and (2) to determine the relationship between workplace workload among production workers and work stress. This research is expected to provide theoretical benefits in the form of contributions to the development of literature on workload and work stress, as well as practical benefits for the company in designing human resource management policies and occupational health programs. The focus of the research is limited to production workers, so other aspects such as leadership style or job satisfaction are not analyzed in detail. With these limitations, the research is expected to remain focused and provide accurate results according to the core issues.

METHOD

This study employed a quantitative method with an analytical cross-sectional design. According to Sugiyono (2020), the quantitative method is used to examine a specific population or sample using sampling techniques that are generally conducted randomly or based on certain criteria, with data analysis being statistical in nature and aimed at testing hypotheses. The cross-sectional design was chosen because it can efficiently provide an overview of the relationship between variables at a single point in time without the need for repeated long-term observations.

The study population consisted of all production workers at PT. X, Bekasi, West Java, totaling 55 individuals. The sampling technique used was purposive sampling, namely selecting samples based on specific criteria relevant to the research objectives. Out of the total population, 35 permanent workers met the criteria, as they worked daily from Monday to Friday with working hours from 07:00 to 16:00 WIB, while the remaining 20 non-permanent workers were not included in the sample.

The collected data were analyzed using descriptive statistical tests and the chi-square statistical test to determine the relationship between workload and the incidence of work stress. This test was selected because it is appropriate for categorical data and can illustrate the significance of the relationship between the studied variables within a specific period of time.

RESULT AND DISCUSSION

Workload of Production Workers

The descriptive analysis of production workers at PT. X illustrates the metabolic

rate and physical workload conditions. Frequency distribution shows variations in workload levels, both metabolically and physically, highlighting dominant patterns that may be linked to work stress.

Table 1. Metabolic Rate Load

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Rest	7	20.0	20.0	20.0
	Light	20	57.1	57.1	77.1
	Moderate	7	20.0	20.0	97.1
	Heavy	1	2.9	2.9	100.0
	Total	35	100.0	100.0	

Source: Processed Data (2025)

Table 1 shows that most workers (57.1%) fall into the light metabolic workload category, while 20.0% are in rest, 20.0% in moderate, and 2.9% in heavy categories. This indicates that production activities at PT. X generally require manageable energy, though moderate to heavy workloads still need attention to prevent long-term fatigue.

Table 2. Physical Load of the Workplace

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Mild	23	65.7	65.7	65.7
	Moderate	12	34.3	34.3	100.0
	Total	35	100.0	100.0	

Source: Processed Data (2025)

Table 2 shows that most workers (65.7%) experience light physical workload, while 34.3% fall into the moderate category, with none in the heavy category. Overall, production workers at PT. X face light workloads in both metabolic and physical aspects. However, the presence of workers in moderate to heavy categories requires attention, as it may increase the risk of work stress and reduced productivity. Regular monitoring and proper workload management are needed to maintain both worker health and production efficiency.

Occupational Stress Incidence in Production Workers

Work stress among PT. X production workers was analyzed through five dimensions: role ambiguity, role conflict, quantitative overload, qualitative overload, and career development. These dimensions reflect key psychological aspects of industrial work. Role ambiguity concerns clarity of duties, role conflict addresses conflicting demands, quantitative overload measures workload volume, qualitative overload assesses task difficulty, and career development relates to growth opportunities. Examining these provides a comprehensive view of workers’ stress and its potential impact on performance and health.

Table 3. Role Ambiguity

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Light	24	68.6	68.6	68.6
	Moderate	9	25.7	25.7	94.3
	Heavy	2	5.7	5.7	100.0
	Total	35	100.0	100.0	

Source: Processed Data (2025)

Table 3 shows that most workers (68.6%) experience low role ambiguity, indicating they generally understand their duties. However, 25.7% fall into the moderate category, facing unclear instructions or task divisions, while 5.7% experience high ambiguity. Such conditions may disrupt effectiveness and, if unmanaged, lead to anxiety, dissatisfaction, and reduced loyalty.

Table 4. Role Conflict

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Light	25	71.4	71.4	71.4
	Moderate	8	22.9	22.9	94.3
	Heavy	2	5.7	5.7	100.0
	Total	35	100.0	100.0	

Source: Processed Data (2025)

Table 4 shows that most workers (71.4%) experience low role conflict, meaning

they rarely face conflicting demands. Meanwhile, 22.9% report moderate conflict, such as balancing production targets with detailed procedures, and 5.7% experience high conflict. Unresolved role conflict can cause confusion, frustration, reduced motivation, and negatively affect both productivity and well-being.

Table 5. Quantitative Load

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Light	15	42.9	42.9	42.9
	Moderate	18	51.4	51.4	94.3
	Heavy	2	5.7	5.7	100.0
	Total	35	100.0	100.0	

Source: Processed Data (2025)

Table 5 shows a balanced distribution: 42.9% of workers report light quantitative workload, 51.4% moderate, and 5.7% heavy. Over half feel the workload is demanding in time and effort, which may cause fatigue, reduced productivity, and stress if prolonged. Those with heavy workloads face the highest risk, including time pressure and limited resources, which can lower performance and increase accident risk.

Table 6. Qualitative Load

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Light	12	34.3	34.3	34.3
	Moderate	20	57.1	57.1	91.4
	Heavy	3	8.6	8.6	100.0
	Total	35	100.0	100.0	

Source: Processed Data (2025)

Table 6 shows that 34.3% of workers face light qualitative workload, 57.1% moderate, and 8.6% heavy. Most workers encounter complex demands requiring accuracy, technical skills, or sustained focus. If skills are lacking, this can heighten stress, while those in the heavy category risk significant difficulties, reduced confidence, and frustration. Training, supervision, and proper task allocation are essential to ease these pressures.

Table 7. Career Development

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Light	17	48.6	48.6	48.6
	Moderate	15	42.9	42.9	91.4
	Heavy	3	8.6	8.6	100.0
	Total	35	100.0	100.0	

Source: Processed Data (2025)

Table 7 shows that 48.6% of workers see light career development stress, 42.9% moderate, and 8.6% heavy, reflecting concerns over limited promotion, training, or recognition. Overall, most production workers at PT. X experience mild to moderate stress, which is manageable but still significant. Clearer task division, realistic targets, skill development, and career opportunities are needed to prevent higher stress levels and sustain both well-being and productivity.

The Relationship Between Workload and Job Stress

A Chi-Square test was conducted to examine the relationship between workload and work stress among PT. X production workers. This analysis helps reveal how workload levels influence psychological conditions. Table 8 presents the Pearson Chi-Square, Likelihood Ratio, and Linear-by-Linear Association with their significance values.

Table 8. Chi Square Test

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	12.487 ^a	4	.014
Likelihood Ratio	13.022	4	.011
Linear-by-Linear Association	6.321	1	.012
N of Valid Cases	35		

a. 2 cells (22.2%) have expected count less than 5. The minimum expected count is 2.43.

Source: Processed Data (2025)

The Chi-Square test (Table 8) shows a Pearson value of 12.487, $df = 4$, and $p = 0.014$, indicating a significant relationship between workload and work stress among PT. X production workers. Higher workloads increase the likelihood of stress from role ambiguity, conflict, and overload. This confirms workload as a key factor in stress, highlighting the need for proper management to protect worker well-being and maintain productivity.

Discussion

The results of the study show that most workers experience metabolic and physical workloads in the light to moderate categories, with only a small portion in the heavy category. This indicates that workloads in PT. X's production environment are generally within reasonable limits, though variations remain that warrant serious attention. A larger proportion of workers fall into the light category, suggesting that energy and physical demands are generally tolerable. However, the presence of workers in the moderate to heavy categories highlights a group at risk of excessive strain. These findings are consistent with previous research showing that both light and moderate workloads are still associated with work stress, as each level of workload produces different psychological impacts (Ariyanto et al., 2024; Yanti & Bausad, 2024). Thus, while workloads appear manageable overall, certain groups of workers remain vulnerable and require special attention.

For workers in the moderate category, the numbers are significant and cannot be overlooked. Moderate workload suggests that task demands are beginning to exceed normal worker capacity, both in terms of volume and intensity. If sustained, this can lead to fatigue, difficulty maintaining productivity, and potential health issues (Aisyah et al., 2025). Previous studies also found that moderate workloads are significantly linked to increased work stress, affecting workers' psychological balance (Mufida & Inayah, 2024). This study emphasizes that while the heavy workload group is relatively small, the moderate group is more critical to monitor due to its larger size and higher risk of escalating into a heavy workload.

On the other hand, the dominance of light workload does not imply the absence of risk. Light physical activities carried out continuously over long periods can lead to cumulative fatigue, eventually triggering work stress. Workers with light workloads are often assumed to face little risk, yet repetitive tasks without adequate rest may have

effects comparable to moderate workloads (Rahmadani et al., 2024). Other studies also show that continuous light workloads can cause stress through accumulated physical and psychological strain, highlighting the need for proper workload management even at lower levels (Hapsari et al., 2023). This finding reminds us that workload management should not only focus on moderate and heavy categories but also on light workloads to prevent long-term problems.

In addition, the findings underline the importance of supporting factors such as work scheduling, organizational support, and skill development in reducing workload-related stress. Even workers with light workloads require job rotation, adequate breaks, and relevant training to cope effectively with job demands. Previous research confirms that organizational interventions such as balanced job engagement, planned task rotation, and continuous training programs can ease work pressures even under moderate workloads (Salsabil et al., 2024). This highlights that workload impacts are influenced not only by intensity but also by how companies manage the overall work environment.

Overall, the study confirms a significant relationship between workload and work stress among production workers, where higher workloads increase the likelihood of stress. This pattern aligns with previous findings showing that workloads—light, moderate, or heavy—contribute to stress symptoms, though with varying intensity (Aisyah et al., 2025; Ariyanto et al., 2024; Yanti & Bausad, 2024). Thus, this study reinforces empirical evidence that effective workload management is a key factor in maintaining worker well-being while supporting optimal company productivity.

CONCLUSION

This study concludes that most PT. X production workers experience light to moderate workloads, both metabolically and physically, though a small group faces heavy workloads that may pose health risks. Analysis of five stress dimensions shows that stress levels are generally light to moderate, with the highest proportions in quantitative and qualitative demands, requiring large workloads and high-quality standards. The Chi-Square test confirms a significant link between workload and stress, indicating that higher workloads directly increase stress risk.

The study recommends proportional workload management through clear task arrangements, job rotation, sufficient rest, and tailored training. Transparent career

management is also needed to reduce career-related stress. Future research should consider additional variables such as social support, leadership style, and work environment to provide a more comprehensive view. These findings are valuable not only for PT. X but also as a reference for other industries facing similar challenges.

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