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**INTRODUCTION**

Burnout syndrome has emerged as a major occupational concern in diverse work sectors. Once considered a phenomenon limited to healthcare professionals, burnout is now recognized as a widespread psychosocial hazard affecting many occupational groups, including high-risk professions such as firefighting. Prolonged exposure to

**Relationship of Workload and Work-Life Balance with  
Burnout Syndrome in Surabaya Firefighters**

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**ABSTRACT**

**Introduction:** Burnout syndrome is anticipated to arise when there is an excessive workload that is not counterbalanced by adequate work-life balance. Nevertheless, the precise connection among these three factors remains unclear. This research sought to explore the link between workload, work-life balance, and burnout syndrome in firefighters. **Method:** This was a correlational study with a cross-sectional approach. The sample consisted of 263 participants from the Surabaya Fire Department. The sampling technique used was non-probability sampling with purposive sampling. The independent variables in this study were workload and work-life balance, with burnout syndrome as the dependent variable. The inclusion criteria were firefighters with a minimum of one year of service. The data were analyzed using Spearman's rho. **Results:** The findings of this research indicated that workload did not have a significant correlation with burnout syndrome ( $p=0.110$ ), whereas work-life balance was significantly related to burnout syndrome ( $p=0.00$ ). **Conclusion:** This study has implications for reducing the occurrence of burnout syndrome in terms of regulations and working conditions. Further research should examine the internal factors that can reduce the symptoms of burnout syndrome.

**Keyword:** Burnout Syndrome, Firefighters, Workload, Work-Life Balance.

occupational stressors, ranging from physical demands to emotional strain, plays a central role in the onset and progression of burnout (1). The syndrome manifests differently across individuals, influenced by personal attributes and context-specific triggers that may amplify or buffer its severity(2). Firefighters represent one of the professions most vulnerable to burnout owing to their uniquely demanding work environment. Their workload involves long and irregular shifts,

intense physical exertion, exposure to hazardous temperatures and toxic substances, and repeated encounters with traumatic events (3). These stressors not only challenge their physical capacity but also disrupt their work-life balance, as extended duty hours reduce opportunities for rest, family interaction, and personal recovery (4).

According to previous research, although the prevalence of burnout syndrome in the general population cannot be clearly described due to its multifactorial nature and is assessed subjectively in diagnosis, it is estimated that 20% of workers experience it. The incidence of burnout syndrome varies worldwide. In EU countries such as Finland, reported incidents reached up to 4.3% and up to 20.6% in Slovenia. Meanwhile, in non-EU countries, such as Albania, it reaches up to 13% and Turkey, which reaches up to 25% (5). In a study conducted on firefighters in South Korea, burnout syndrome was found to be related to job demands and the balance between effort and rewards(6). Based on research by Marshelianto (2015), out of 203 firefighters in DKI Jakarta, 96 were detected to have low burnout syndrome and the remaining 107 experienced high burnout syndrome.

Firefighters can experience very strong stress, which can eventually develop into other problems, such as burnout syndrome(7). Based on the results of previous studies, burnout syndrome tends to occur in nurses and firefighters. In addition, based on the results of direct interviews with firefighters at the Mulyorejo Fire Auxiliary Post, the resource person explained that the duties carried out by firefighters can affect mental condition due to the condition of the task, which is often life-threatening. The severity of burnout syndrome can be reduced by personal applications or changes in the organization where the task is performed (8). The change in personal application here is a change in the internal factors of the firefighter, such as changes in the character of neuroticism and in personal coping strategies. Meanwhile, changes in organizational

applications, such as changes in policies, should pay more attention to the physical and mental health of firefighters (9).

Based on a theoretical review by Sergio Edu-Valsania et al. (2022), the solution to burnout syndrome can be an organizational intervention aimed at work structure, an intervention promoted by the organization aimed at employees, an individual-focused intervention promoted by the individual, and individually driven, work-focused intervention(10). App-based medicine has also been developed to reduce psychological distress and burnout in firefighters(11). Changes in the external environment, such as organizations, tasks, or the individual themselves, can be a solution as an intervention for burnout syndrome. Given the high-stress nature of firefighting and the potential impact of workload and work-life balance on psychological outcomes, further research is needed to better understand these relationships, particularly in Indonesia. Therefore, this study aimed to analyze the relationship between workload and work-life balance with burnout syndrome among firefighters in Surabaya.

## METHOD

This research employed a cross-sectional design. The study population comprised 767 officers from the Surabaya Fire Department, specifically from Rayon 1, Rayon 2, Rayon 3, Rayon 4, and Rayon 5, along with their auxiliary posts. A non-probability sampling method was utilized, specifically purposive sampling, resulting in a sample size of 263 individuals. Firefighters with at least one year of service were included, while those who were ill, on leave, or otherwise unable to participate, as well as non-front-line staff (such as operational staff, secretaries, and infrastructure personnel), were excluded. The NASA-TLX tool was employed to assess mental workload, focusing on parameters like mental demand (MD), physical demand (PD), temporal demand (TD), performance (P), effort (E), and frustration level (FR). This

measurement involved two stages: Paired Comparison and Event Scoring. Additionally, the Work-Life Balance Scale (WLBS) questionnaire and the Maslach Burnout Inventory Human Services (MBI-HSS) questionnaire were used to evaluate burnout syndrome. Data analysis was performed using the Spearman Rho statistical test via SPSS software, aiming to explore the relationship between workload, work-life balance, and burnout syndrome among firefighters. The study received ethical approval from the Health Ethics Commission of the Faculty of Nursing, Universitas Airlangga, under the number 3184-KEPK.

## RESULT

The results of the study showed that most of the respondents had a salary below the Surabaya UMR, which had a value of 4,725,479 rupiah. The majority of the respondents were between 20-35 years old. All respondents were men, and more than half were married. A total of 253 people were firefighters and 10 were rescuers. Most of their tenures are more than five years, and most of them are not civil servants.

Table 1 Demographic Data of Respondents in the Study of the Relationship between Workload and Work-Life Balance with Burnout Syndrome in Surabaya Firefighters

No	Respondent Characteristics	Parameter	f	(%)
1	Salary	<UMR	196	74,5
		UMR/>UMR	67	25,5
		Σ	263	100
2	Age	20-35 years old	172	65,4
		35-50 years	85	31,7
		>50 years old	6	2,2
		Σ	263	100
3	Gender	Man	263	100
		Σ	263	100
4	Marital Status	Marry	229	87,1
		Not Married / Divorced	34	12,9
		Σ	263	100
5	Tenure	1 year	6	2,3
		>1 year – 3 years	7	2,7
		>3 years – 5 years	51	19,4
		>5 years	199	75,7
6	Status Official Negeri Civil (PNS)	PNS	35	13,3
		Not a civil servant	228	86,7
		Σ	263	100
7	Position	Extinguisher	253	96,2
		Rescue	10	3,8
		Σ	263	100

Table 2 shows that the majority of respondents, as many as 47.1 percent, experienced a rather high workload, and

none of them experienced high or very high workload problems. As many as 19.8 percent of respondents experienced a low workload and 33.1 percent with a moderate workload.

Table 2 Frequency Distribution Of Workload Categories

Variabel	Category	f	(%)
Workload	Low	52	19,8
	Keep	87	33,1
	Somewhat High	124	47,1
	$\Sigma$	263	100

Based on Table 3, more than 90 percent of respondents already have a moderate level of work-life balance, six percent a high work-

life balance, and only two people (0.8%) have a low work-life balance.

Table 3 Frequency Distribution of Work-Life Balance Category

Variabel	Category	f	(%)
Work-Life Balance	Low	2	0,8
	Keep	246	93,5
	Tall	15	5,7
	$\Sigma$	263	100

As shown in Table 4, more than 90 percent of the respondents experienced low burnout syndrome, the rest experienced moderate

burnout syndrome, and none experienced high burnout syndrome.

Table 4 Frequency Distribution of Burnout Syndrome

Variabel	Category	f	(%)
Burnout Syndrome	Low	239	90,9
	Keep	24	9,1
	$\Sigma$	263	100

Based on Table 5, we can see the significance, strength, and direction of the relationship between the workload variable and burnout syndrome in Surabaya Fire Department officers. The results of the Spearman rho test showed a significance value of 0.110, which means that there is an

insignificant relationship between workload and burnout syndrome in Surabaya Fire Department officers. The value exceeds  $> 0.05$ , which is a significant relationship value for determining relationships. The relationship has a strength value of 0.099, which means that it is very weak with a parallel or positive direction.

Table 5 Analysis of the Relationship between Workload and Burnout Syndrome in Surabaya Firefighters

Variabel	Significance Relationships (p=)	The Power of Relationships	Direction of Contact
Workload => Burnout Syndrome	0,110	0,099	Positive

Referring to Table 6, we observe the importance, intensity, and direction of the connection between work-life balance factors and burnout syndrome among officers in the Surabaya Fire Department. The Spearman's rho test results indicated a significance value of 0.000, signifying a meaningful relationship

between work-life balance and burnout syndrome for these officers. This value is less than 0.05, which is the threshold for determining significant relationships. The relationship has a strength value of -0.428, indicating a moderate connection with a negative or inverse direction.

Table 6 Analysis of the Relationship between Work-Life Balance and Burnout Syndrome in Surabaya Firefighters

Variabel	Significance of Relationships (p= )	The Power of Relationships	Direction of Contact
Work-Life Balance => Burnout Syndrome	0.000	-0.428	Negative

## DISCUSSION

### The Relationship between Workload and Burnout Syndrome in Surabaya Firefighters

The findings of this study indicate that neither workload nor work pressure was significantly associated with burnout syndrome among Surabaya Fire Service officers. These results are consistent with previous research that reported no significant relationship between workload and burnout symptoms (12). Similarly, a study by Samsudin et al. (2021) found that workload was not correlated with the psychological well-being of Malaysian firefighters (13).

Nevertheless, these findings differ from the theoretical framework proposed by Maslach, cited in Nursalam (2016), which identifies workload as a key antecedent of burnout syndrome (8). They are also inconsistent with the study by Lin et al. (2019), who emphasized that reducing the level of workload, both in terms of quantity and time available to complete tasks, is essential for mitigating burnout among firefighters (14).

The inconsistency between theoretical expectations, prior empirical findings, and the present study's results may be due to a combination of internal and external moderating factors. Although none of the participants in this study were categorized as

having high or very high overall workload levels, some specific workload dimensions, particularly those related to physical demands, showed high scores. In this dimension, 58 personnel reported high physical demand, and an additional nine reported very high demand. Physical demand reflects the degree of physical effort required to complete occupational tasks, including activities such as lifting firefighting equipment or estimating the weight and movement of victims during rescue operations (15).

Evidence from international studies suggests that strong individual coping capacity, supportive organizational conditions, and a positive work environment collectively reduce burnout risk, even among workers facing substantial workloads and exposure hazards. For example, research on infectious disease nurses demonstrates that despite heavy workloads and high occupational risks, burnout levels can remain low when workers possess effective coping mechanisms, operate in supportive organizational climates, and work in physically comfortable environments. Such protective factors may similarly buffer firefighters from experiencing severe burnout, despite encountering substantial physical job demands (16).

Several respondents with high physical demands reported low levels of burnout. This

may indicate that personal resources, such as coping strategies and perceived self-efficacy, are sufficient to buffer the negative effects of workload. External conditions may have also contributed to this. Fire stations and auxiliary posts are equipped with facilities resembling home environments, including rest rooms, kitchens, televisions, and designated recreational areas. Recreational facilities, such as billiard tables, allow firefighters to relax during idle times, potentially reducing psychological strain and lowering the risk of burnout (17).

The respondents in this study demonstrated an adequate level of work–life balance, which may serve as another protective factor against burnout despite moderate-to-high workload levels. Demographic characteristics also play a significant role. Respondents ranged from their twenties to fifties, and evidence suggests that older workers may exhibit lower susceptibility to burnout, although further investigation is required to confirm this trend (18). In addition, most respondents had more than five years of work experience in the field. Longer job tenure may facilitate adaptation to job demands, thereby reducing the risk of burnout (19).

A few respondents exhibited high burnout scores despite reporting low workload. This outcome supports the multifactorial nature of the burnout syndrome. Individual characteristics, such as personality traits, may contribute to this. For instance, individuals with high levels of neuroticism may be more vulnerable to stressors and are more likely to perceive minor challenges as overwhelming.

#### **The Relationship between Work-Life Balance and Burnout Syndrome in Officers**

The findings of this study indicate a significant association between work and life balance and burnout syndrome among the Surabaya Fire Department personnel. The negative correlation suggests that higher levels of work–life balance are associated with lower burnout, whereas reduced work–life balance is linked to increased burnout severity. These

results align with previous empirical studies demonstrating that work–life balance is a significant predictor of burnout among workers in various professional sectors (13). Similarly, Wu et al. (2019) found that work–family conflict contributed to burnout among firefighters across multiple regions in Taiwan, emphasizing the influence of interpersonal and organizational dynamics on firefighter well-being (20).

Work–life balance is widely recognized as a protective factor for burnout. This contributes to a more stable psychological environment and supports optimal job performance (21). Alblihed and Alzghaibi, as cited in Rosnaini et al. (2023), reinforce that individuals who experience burnout often exhibit disruptions in balancing their personal and professional domains. Therefore, strengthening work–life balance can serve as a preventive mechanism against burnout syndrome (21). Consistent with this, the Canadian Department of Labor identifies work–life balance as a core determinant of individual well-being, enabling workers to manage responsibilities effectively in occupational, familial and community settings (22).

In the framework of Maslach’s theory, work–life balance relates to the “control” or “autonomy” dimension, where greater control over one’s work reduces vulnerability to burnout (23). Despite this, the present study found that both work–life balance and burnout levels were within moderate ranges. This pattern suggests the involvement of additional internal and external determinants, confirming the multifactorial nature of the burnout syndrome. For instance, demographic data show that most participants earn below the Surabaya Regional Minimum Wage. Salary represents an external appreciation factor, and low compensation may indicate limited recognition, which can increase the risk of burnout. However, the shift system used by the Surabaya Fire Department, which provides three consecutive days off, may help maintain an adequate work–life balance despite these financial constraints.

The concept of Quality of Nursing Work Life (QNWL) emphasizes that work-life balance plays a crucial role in maintaining the mental health and performance of professionals (24). Although the QNWL was developed in the nursing context, its underlying principles are relevant to high-risk professions such as firefighting. Previous research has shown that the work-life-home dimension significantly influences worker performance and well-being; when individuals can manage work demands without sacrificing personal needs, psychological adaptability and resilience increase. A work environment with good organizational support, moderate work design, and adequate recovery opportunities reduces the risk of burnout and increases work effectiveness. In the context of Surabaya firefighters, work-life balance is crucial because this profession involves high physical and emotional exposure, long working hours, and tasks that often threaten safety. Therefore, a good work-life balance can function as a protective factor that reduces the likelihood of burnout syndrome while also improving the preparedness and performance of officers in carrying out emergency duties (25).

Furthermore, workload, work-life balance, and burnout levels collectively influence performance outcomes and occupational safety. Within the context of occupational health (K3), maintaining psychological well-being among firefighters is essential for preventing operational errors and long-term health consequences. Although this study did not identify high levels of burnout, the potential emergence of severe burnout—particularly among new personnel who may be less adapted to demanding workloads—remains a concern for the future. Therefore, continuous health education, promotion, and monitoring by occupational health nurses are crucial for safeguarding firefighters' safety and well-being.

### CONCLUSION

The workload had no significant relationship with burnout syndrome, whereas work-life balance was clearly and significantly related,

with a good work-life balance acting as a protective factor against burnout in firefighters. This finding confirms that burnout prevention efforts should focus on improving work-life balance through more flexible schedules, providing adequate rest facilities, and strengthening psychosocial support in the workplace. Based on these implications, organizations need to strengthen policies that support personnel well-being and develop mental health education and promotion programs to create safer and healthier work environments. Further research is recommended to explore the role of internal factors such as coping, resilience, and personality, as well as external factors such as organizational culture and institutional support, to broaden the understanding of the determinants of burnout in the firefighting profession.

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