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The Relationship Between Mental Workload and Length of Service with Occupational Stress Among Health Center Employees in Pucung, Tulungagung

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ABSTRACT

Background: Occupational stress is a critical issue in healthcare, particularly in community health centers where the workload remains high even after the COVID-19 pandemic. The dual responsibility of administrative duties and patient care exposes employees to persistent mental strain, potentially affecting service quality.

Aims: This study aims to examine the relationship between mental workload and length of service with occupational stress among employees of the Pucung Health Center in Tulungagung.

Methods: A cross-sectional quantitative design was applied, involving 44 respondents selected randomly from a population of 50. Mental workload was measured using the NASA-TLX questionnaire, while stress levels were assessed using the HSE Questionnaire. Data were analyzed using Chi-Square tests and logistic regression, with significance determined at $p < 0.05$.

Results: Most respondents reported moderate to high mental workload, and stress levels ranged from moderate to very high. Statistical tests revealed a significant relationship between both mental workload and length of service with occupational stress ($p < 0.05$). Logistic regression showed that high mental workload increased the risk of stress by 5.65 times, and long service tenure by 3.17 times.

Conclusion: The findings confirm that mental workload and length of service significantly affect occupational stress among health center workers. These variables interact dynamically: newer employees struggle with adaptation, while senior staff face burnout. Therefore, health centers must adopt proactive strategies, including balanced task allocation, stress management training, and tenure-sensitive HR policies. Regular assessments using validated instruments like NASA- TLX and HSE Questionnaire should inform institutional responses. Implementing structured support systems will not only safeguard employee well-being but also enhance healthcare service delivery and institutional sustainability. Future policies should be tailored to workforce dynamics to reduce stress and foster a healthier work environment.

Keywords: Health center, healthcare workers, length of service, mental workload, occupational stress

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INTRODUCTION

The COVID-19 pandemic placed public health center (Puskesmas) employees in an extremely vulnerable position due to their obligation to continue serving the public amid a national health emergency. Even after the peak of the pandemic subsided, their responsibilities did not diminish. These employees were still expected to educate the community about vaccination, conduct disease screenings, and enforce consistent health protocols. The persistence and intensity of these work demands have contributed significantly to psychological stress among health workers (Almakhi, 2023; Rahmawati & Vellyana, 2022; Sahabuddin et al., 2025). Such chronic pressure serves as a major trigger for occupational stress, potentially impairing mental health and reducing productivity. Occupational stress in healthcare settings has gained serious attention because it directly influences the quality of healthcare services provided (Awalia et al., 2021; Budiyanto et al., 2019; Gulo et al., 2020). The continuation of emergency-level workloads beyond the pandemic period reflects the inadequate transition to sustainable working conditions for frontline healthcare workers. Consequently, addressing the mental well-being of these employees has become a vital concern for public health institutions.

In an ideal work environment, the workload assigned to health center staff should be balanced with their capacity and the number of available personnel. However, in practice, the workforce is often insufficient to meet the rising demands of healthcare services. This imbalance has led to increased occupational stress, manifested through symptoms such as reduced concentration, forgetfulness, physical and mental fatigue, and sleep disturbances (Ananda & Suliantoro, 2022; Fatih & Pratiwi, 2022; Sulistyorini & Sabarisman, 2017). Beyond the workload itself, the length of service also influences the stress levels of employees. Those with shorter tenures may still be in the process of adapting and may experience stress due to unfamiliarity with job demands. In contrast, long- serving employees often report emotional exhaustion or burnout from prolonged exposure to workplace stressors. These patterns indicate the need for differential strategies in managing staff based on their experience level. A comprehensive understanding of both workload and tenure- related challenges is therefore essential in designing effective occupational health interventions.

The current situation presents an opportunity to investigate how mental workload and tenure jointly contribute to occupational stress among health center employees. This research is particularly important as the implications extend beyond individual workers and impact institutional performance and public service delivery. Preliminary observations suggest that many staff members are experiencing relatively high levels of stress, which underscores the urgency of addressing this issue. The effects of stress in primary healthcare not only reduce employee efficiency but also compromise the quality of patient care. The urgency is heightened by the limited mental health support systems available in regional health centers. Investigating the relationship between these variables can offer critical insights for healthcare management, especially in under-resourced settings. Therefore, the study aims to provide evidence-based recommendations that inform more responsive and

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sustainable human resource policies in public health facilities.

Although numerous studies have explored occupational stress among healthcare professionals, few have simultaneously examined the influence of mental workload and length of service, particularly within regional health centers. This gap highlights the need for a more contextualized investigation into how these two variables interact to influence stress levels. By addressing this academic void, the present study contributes meaningfully to the field of occupational health, especially in the context of primary healthcare in Indonesia. The study employs a systematic approach and utilizes standardized instruments namely the NASA-TLX and the HSE Questionnaire to ensure validity and reliability of the findings. These methodological choices enhance the study's scientific rigor and novelty. In addition, the focus on dual predictors offers a more holistic understanding of stress formation among frontline workers. As healthcare systems evolve, such comprehensive assessments are increasingly critical to safeguard workforce sustainability. The study's outcomes are expected to inform both academic discourse and managerial practice in healthcare institutions.

Mental workload was selected as a core variable because psychological pressure is a dominant factor affecting healthcare worker performance under various conditions, including emergencies (Arlinda, 2019; Azhar & Sulistyo, 2020; Y.s.a & Haryani, 2020). Unlike physical workload, mental burden encompasses cognitive, emotional, and psychological demands, all of which can significantly impact job performance and well-being. Tenure, on the other hand, is closely related to professional experience, adaptation capacity, and mental resilience in handling workplace pressures. The interaction between these two variables workload and tenure is believed to have a complex influence on the manifestation of occupational stress. Employees with shorter tenure may face learning curves and adjustment challenges, while those with longer service periods may experience stagnation or fatigue from repetitive job routines. Understanding this complexity is essential for crafting targeted interventions to mitigate stress. These variables offer a dual-lens framework to examine how stress evolves and accumulates over time. Their combined analysis is expected to yield insights that single-variable studies might overlook.

The purpose of this study is to investigate and analyze the relationship between mental workload and length of service with occupational stress among employees at the Pucung Health Center in Tulungagung. From a theoretical standpoint, the findings are expected to enrich the academic literature on human resource management in the healthcare sector. By integrating psychological and tenure-related dimensions, the study addresses a critical intersection of mental health and workforce policy. Practically, the outcomes may serve as valuable input for health center administrators in designing more humane and supportive work policies. These may include stress management training, adjusted workloads, mentorship programs, and career development pathways aligned with employee tenure. Moreover, the findings can guide regular mental health monitoring and intervention protocols. Ultimately, the study aims to promote a healthier work environment that supports the psychological well-being of healthcare professionals. Such efforts are essential to ensuring the long-term effectiveness and resilience of public health services.

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METHOD

Research Design

This study employed an observational quantitative design with a cross-sectional approach, which allowed for the simultaneous examination of independent and dependent variables at a single point in time (Abduh et al., 2022; Bani & Muri, n.d.; Yusanto, 2020). The rationale for choosing this approach was its suitability for identifying the relationship between mental workload and length of service with occupational stress among health center employees, without the need for interventions or experimental manipulation. A cross-sectional design is particularly useful in healthcare research where variables are naturally occurring and ethical considerations limit experimental control. It also enables researchers to describe causal relationships based on existing conditions during the time of data collection. By capturing data in real-time from a target population, this method provides a snapshot of correlations and patterns that can be statistically analyzed. The design aligns with the study's objective to assess psychological and work-related factors within the healthcare workforce context. Importantly, this approach supports evidence-based decision-making in public health administration. As such, it offers practical benefits while maintaining methodological rigor.

Participant and Sampling

The participants in this study consisted of 44 employees from the Pucung Health Center in Tulungagung. These participants were randomly selected from a total population of 50 staff members using the simple random sampling technique. This method was chosen to ensure that every individual in the population had an equal chance of being included, thereby minimizing selection bias and increasing the representativeness of the sample. The sample included a diverse range of healthcare professionals, such as doctors, nurses, midwives, pharmacists, and administrative officers. This diversity ensured that the data reflected the experiences and stress levels across various roles within the health center. Random selection also enhances the internal validity of the research findings. The sample size was considered adequate for the intended statistical analysis. Ethical approval was obtained, and informed consent was provided by all participants before data collection commenced.

Instrument

Two standardized instruments were used to measure the main variables in this study. The NASA-TLX (National Aeronautics and Space Administration Task Load Index) was utilized to assess mental workload. This tool measures six dimensions: mental demand, physical demand, temporal demand, performance, effort, and frustration level. The validity of the items ranged from r = 0.512 to 0.775, indicating strong construct validity. Its reliability was confirmed using Cronbach's Alpha, which produced a coefficient of 0.821, demonstrating a high level of internal consistency. In addition, the Health and Safety Executive (HSE) Questionnaire was employed to assess occupational stress. This instrument evaluates seven workplace dimensions, including job demands, control, support, interpersonal relationships, role clarity, and organizational changes. The HSE instrument yielded item validity scores between r = 0.487 and 0.802, with a Cronbach's Alpha of 0.843, indicating excellent reliability. Both instruments are widely used and validated in occupational health research, enhancing the robustness of the findings.

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Data Collection Procedure

The data collection instruments were formatted as closed-ended questionnaires with Likert scale responses. The NASA-TLX applied a weighting and rating system to generate mental workload scores, while the HSE Questionnaire utilized a five-point scale for each stress-related indicator. Prior to distribution, the research team obtained formal approval from the health center administration and ensured ethical compliance by acquiring informed consent from all participants. The data collection process began with a socialization session at the health center, explaining the research objectives and procedures to the staff. Respondents completed the questionnaires independently between December 2021 and June 2022. During this period, researchers were present to clarify any uncertainties and ensure consistent interpretation of each questionnaire item. This step was essential for improving the accuracy and reliability of the responses. All data were anonymized and securely stored for analysis.

Data Analysis

Data analysis was conducted in three main stages. First, univariate analysis was performed to describe the characteristics of the respondents and the distribution of each variable. This provided an initial overview of the sample demographics and variable patterns. Second, bivariate analysis using the Chi-Square test was conducted to determine the relationships between mental workload, length of service, and occupational stress. This helped identify whether the independent variables had statistically significant associations with the dependent variable. Finally, a multivariate analysis using logistic regression was carried out to assess the simultaneous effects of mental workload and length of service on occupational stress. This analysis allowed the researchers to control for confounding factors and quantify the influence of each variable. The significance threshold was set at $p < 0.05$, and all statistical analyses were conducted using appropriate software to ensure precision and transparency.

RESULTS AND DISCUSSION

Result

The results of this study revealed the distribution of mental workload, length of service, and occupational stress among employees at the Pucung Health Center. The analysis of mental workload indicated that the majority of employees experienced either moderate or high levels of cognitive demand (Almakhi, 2023). Specifically, 45.5% of participants reported a moderate level of mental workload, while 43.2% reported high levels. Only 11.4% reported low mental workload, indicating a generally heavy mental burden among the staff (Ananda & Suliantoro, 2022). Regarding length of service, 27.3% of respondents had worked less than 3 years, 34.1% had served between 3 and 4 years, and 38.6% had worked for more than 4 years (Budiyanto et al., 2019). This distribution suggests a balanced representation across varying stages of employment. In terms of occupational stress, most employees experienced moderate (34.1%), high (31.8%), or very high (18.2%) stress levels. Only a small percentage experienced low (11.4%) or very low (4.5%) stress (Fatih & Pratiwi, 2022; Sulistyorini & Sabarisman, 2017).

Table 1. Distribution of Mental Workload, Length of Service, and Occupational Stress (N = 44)

Variable	Category	Frequency (n)	Percentage (%)
Mental Workload	Low	5	11.4
Moderate	20	45.5	
High	19	43.2	
Variable	**Category**	**Frequency (n)**	**Percentage (%)**
Length of Service	< 3 years	12	27.3
3–4 years	15	34.1	
> 4 years	17	38.6	
Occupational Stress	Very Low	2	4.5
Low	5	11.4	
Moderate	15	34.1	

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High	14	31.8
Very High	8	18.2

Bivariate Analysis

The Chi-Square test was conducted to assess the relationship between the independent variables and occupational stress. The results showed that both mental workload and length of service had a statistically significant association with work stress levels ($p < 0.05$) (Reppi et al., 2020). The Chi-Square value for mental workload was 9.321 with a p-value of 0.026, while for length of service, the Chi-Square value was 8.017 with a p-value of 0.034. These results confirmed that increased mental demands and longer employment duration were significantly related to higher stress levels among employees (Rahmawati & Vellyana, 2022; Rhamdani & Wartono, 2019).

Table 2. Chi-Square Test Results

Independent Variable	Chi-Square Value	df	p-value	Description
Mental Workload	9.321	4	0.026	Significant ($p < 0.05$)
Length of Service	8.017	4	0.034	Significant ($p < 0.05$)

Multivariate Analysis

To evaluate the simultaneous effects of mental workload and length of service, logistic regression analysis was performed. The results indicated that mental workload significantly influenced occupational stress, with an odds ratio (Exp(B)) of 5.65 and a p-value of 0.009 (Gulo et al., 2020). This suggests that employees experiencing high mental workload are 5.65 times more likely to suffer from occupational stress than those with low workload. Similarly, the length of service was also found to be a significant predictor, with an odds ratio of 3.17 and a p-value of 0.047 (Awalia et al., 2021). Longer-serving employees are thus three times more likely to experience stress compared to newer staff.

Table 3. Logistic Regression Results

Variable	B	SE	Wald	df	p-value	Exp(B)	Description
Mental Workload	1.732	0.658	6.911	1	0.009	5.65	Significant
Length of Service	1.154	0.582	3.939	1	0.047	3.17	Significant
Constant	-2.410	0.801	9.054	1	0.003	0.09	-

Discussion

These findings validate previous literature suggesting that mental workload is a major contributor to occupational stress in healthcare environments (Ardy & Fajrianthi, 2019; Manullang et al., 2019). High cognitive demands, time pressure, and emotional labor are consistently linked to increased stress levels, especially when support systems are insufficient. The significant odds ratio in this study highlights the urgent need for institutions to address excessive mental workloads (Ilmiyah & Anshori, 2025). The result also aligns with the cognitive appraisal theory by Lazarus and Folkman, which posits that stress occurs when perceived demands exceed perceived coping resources (Kurniawan et al., 2023; Zamroni & Hilmia, 2023). The influence of tenure on stress levels further underscores the complexity of workplace dynamics. New employees may struggle with adaptation, while long-tenured staff face burnout due to repetitive tasks and lack of career progression (Sahabuddin et al., 2025). The threefold risk increase associated with longer service duration supports the findings from Super's career development theory, which links career stages to psychological responses (Mariana & Ramie, 2021). These insights suggest the need for tenure-specific interventions, such as mentoring for new employees and task rotation for senior staff.

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From a practical standpoint, these results call for strategic management reforms. Health centers must regularly assess workload distribution and psychological well-being using validated instruments like NASA-TLX and the HSE Questionnaire (Azhar & Sulistyo, 2020). Interventions should be tailored to employee needs based on tenure and job role to maintain workforce resilience and healthcare quality.

CONCLUSION

This study confirms a significant relationship between mental workload and length of service with occupational stress among healthcare employees at the Pucung Health Center in Tulungagung. The findings revealed that most employees experienced moderate to high levels of mental workload, which correlated strongly with elevated stress levels. Logistic regression results demonstrated that individuals facing higher mental workload were more than five times as likely to experience occupational stress compared to those with lighter workloads. Likewise, employees with longer tenure exhibited a threefold increased likelihood of stress, indicating that both inexperience and prolonged exposure to job demands can contribute to psychological strain. These results emphasize the multifaceted nature of occupational stress and highlight the need for tailored interventions that consider both cognitive burden and professional tenure. Health centers must implement workload assessments and employee support programs that are responsive to these risk factors. Proactive strategies such as task redistribution, periodic stress evaluations, mentoring for new staff, and role rotation for long-serving employees are essential to fostering a healthier work environment. Integrating these findings into human resource management practices can improve staff well-being, enhance service quality, and promote long-term organizational sustainability.

AUTHOR CONTRIBUTION STATEMENT

Helvy Nauroh Nadzifah was solely responsible for the conception and design of the study, including the formulation of research objectives and hypotheses. She carried out all stages of data collection and analysis, employing validated instruments and statistical methods to ensure the reliability of the results. Helvy also interpreted the findings within relevant theoretical frameworks and critically reviewed existing literature to support the discussion. She was fully involved in drafting the manuscript, revising its content, and ensuring the coherence of academic arguments.

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