



ORIGINAL ARTICLE

The association between workload and occupational stress levels among nurses at the Medan Tuntungan Community Health Center

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ABSTRACT

Nurses, as frontline healthcare providers, are highly susceptible to occupational stress stemming from excessive workloads. In Indonesia, suboptimal nurse-to-population ratios exacerbate this, leading to high stress levels (65% moderate/severe) and increased turnover (15–20%). Preliminary observations at the Medan Tuntungan Community Health Center (Puskesmas) indicated rising patient visits without corresponding staff increases, resulting in high perceived workloads and stress symptoms. This study aimed to analyze the relationship between workload and the incidence of occupational stress among nurses at the Medan Tuntungan Community Health Center. A quantitative, cross-sectional design was employed in August 2025. A total sampling (census) technique was used, including all 30 nurses at the facility. Data were collected via a structured online questionnaire assessing workload (physical, mental, administrative) and job stress (physical, emotional, behavioral symptoms), categorized on an ordinal scale (Good, Moderate, Poor). Data analysis utilized univariate statistics and bivariate testing with the Chi-Square test or Fisher's Exact Test. Univariate analysis revealed that 90.0% of nurses perceived their workload as moderate (50.0%) or poor (40.0%). Regarding stress, 43.3% experienced moderate levels, and 30.0% experienced poor (high) levels. The bivariate analysis established a highly significant association between workload and work stress ($p < 0.001$). A clear positive correlation was observed: 75.0% of nurses with a poor workload reported poor (high) stress, while 100.0% of those with a good workload reported good (low) stress. No significant associations were found for work shift ($p = 0.091$) or length of service ($p = 0.069$). Conclusion: Workload is a significant determinant of occupational stress among nurses at the Medan Tuntungan Puskesmas. As workload perception worsens, stress levels increase. These findings underscore the urgent need for institutional interventions focused on effective workload management and staffing optimization to mitigate nurse stress and enhance well-being.

Keywords: workload, occupational stress, nurses

Introduction

The nursing profession holds a central role in healthcare services, primarily as frontline providers of direct patient care. The diverse array of responsibilities, encompassing both clinical duties and administrative tasks, renders nurses highly susceptible to excessive workload pressures. In Indonesia, the nurse-to-population ratio remains suboptimal at 1:315. This figure is substantially below the WHO-recommended standard of 1:200, resulting in many nurses managing more than 10 patients per shift—far exceeding the rational standard of 1:5 for general care wards.^{1,2}

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Such high workloads can induce occupational stress, defined as a condition where individuals experience physical or mental pressure stemming from an imbalance between job demands and personal capacity.³ Among nursing staff, occupational stress is known to adversely affect the quality of care, diminish motivation, and heighten the risk of emotional exhaustion and burnout.^{4,5} A recent study shows the prevalence of work-related stress among Indonesian nurses exceeds 50%.⁶ Consequently, the nursing turnover rate has also increased, reaching 15–20% annually in several healthcare facilities.^{7,8}

A similar situation is observed at the Medan Tuntungan Community Health Center (Puskesmas). According to the 2024 staffing report, patient visits increased by 12%; however, this was not accompanied by a corresponding increase in nursing personnel. Preliminary observations involving 15 nurses revealed that the majority reported high workloads and exhibited symptoms of stress, such as physical fatigue, insomnia, and irritability. Previous research corroborates these findings, indicating a strong association between excessive workload and elevated stress levels among nurses.^{4,9,10}

In efforts to mitigate occupational stress, identifying its primary determinants, including the perceived workload of nurses, is crucial. Appropriate workload interventions have been shown to reduce stress levels by up to 40%. Therefore, this study was conducted to further explore the relationship between workload and the incidence of stress among nurses at the Medan Tuntungan Community Health Center. The findings are intended to provide an evidence base for policy-making in workload management and initiatives to enhance the well-being of healthcare workers.

Method

This study employed a quantitative, cross-sectional design to evaluate the association between workload and job stress levels among nurses. This design facilitated the simultaneous collection of data on the independent (workload) and dependent (job stress) variables at a single point in time, providing a contemporaneous snapshot of the participant cohort. The study was conducted at the Medan Tuntungan Community Health Center, Medan, North Sumatra, Indonesia, during August 2025.

The study population comprised all nurses employed at this facility. A total sampling (census) technique was utilized, incorporating all population members who met the inclusion criteria, which resulted in a final sample of 30 respondents. This approach was selected to enhance internal validity, particularly given the small population size. The research instrument was a structured, closed-ended questionnaire developed based on established theories of workload and job stress. Workload assessment encompassed physical, mental, and administrative dimensions, as well as factors related to the work environment. Job stress was operationalized using indicators of physical, emotional, and behavioral symptoms. The resulting data were classified on an ordinal scale, with outcomes categorized as 'high', 'moderate', and 'low'.

Data were collected online via Google Forms, supplemented by brief follow-up interviews as needed to clarify participant responses. Primary data were obtained directly from participants through the questionnaire. Secondary data were gathered from institutional records and relevant literature sources to provide contextual support. Data analysis was conducted in two stages. First, univariate analysis (descriptive statistics) was performed to summarize the characteristics of each variable. Second, bivariate analysis was used to examine the association between workload and job stress. This association was tested using the Chi-Square test. In instances where the assumptions for the chi square test were not met (e.g., low expected cell counts), the Fisher's Exact Test was employed as an alternative.

Results

Table 1 presents the results of the univariate analysis. It was found that half of the respondents (50.0%) perceived their workload as moderate, followed by 40.0% who perceived it as poor. Only a minority (10.0%) rated their workload as good. Regarding the work shift variable, a substantial majority (70.0%) considered their work shift system to be good, while the remaining 30.0% assessed it as poor.

In terms of length of service (tenure), 60.0% of respondents were categorized as having good tenure, 30.0% as sufficient (moderate), and 10.0% as poor (short). Furthermore, concerning work stress levels, a plurality (43.3%) experienced moderate stress. This was followed by 30.0% reporting poor (high) stress levels and 26.7% reporting good (low) stress levels.

As detailed in Table 2, the bivariate analysis revealed a statistically significant association between workload and work stress ($p < 0.001$). A clear pattern emerged: 100.0% of respondents with a good workload also reported good (low) stress. Conversely, a large majority (75.0%) of those with a poor workload

experienced poor (high) stress. Among the moderate workload group, 66.7% reported moderate stress. This finding indicates a positive correlation: as the perceived workload worsens, the level of work stress tends to increase.

Table 1. Results of univariate analysis (n=30)

Variable	Frequency (n)	Percentage (%)
Workload		
Good	3	10
Moderate	15	50
Poor	12	40
Work Shift		
Good	21	70
Poor	9	30
Length of Service		
Good	18	60
Sufficient	9	30
Poor	3	10
Work Stress		
Good	8	26.7
Moderate	13	43.3
Poor	9	30

The association between work shift and work stress level was not statistically significant ($p = 0.091$). Descriptively, respondents who rated their work shift as poor were more likely to experience moderate (66.7%) or poor (high) (33.3%) stress. However, among those with a good work shift, stress levels were more evenly distributed across categories. This suggests that the work shift system, as categorized in this study, did not have a significant influence on work stress within this population.

Table 2. Bivariate analysis of factors associated with work stress (n=30)

Variable	Work Stress			Total n (%)	p-value
	Good n (%)	Moderate n (%)	Poor n (%)		
Workload					
Good	3 (100.0)	0 (0.0)	0 (0.0)	3 (100.0)	<0.001
Moderate	5 (33.3)	10 (66.7)	0 (0.0)	15 (100.0)	
Poor	0 (0.0)	3 (25.0)	9 (75.0)	12 (100.0)	
Work Shift					
Good	8 (38.1)	7 (33.3)	6 (28.6)	21 (100.0)	0.091
Poor	0 (0.0)	6 (66.7)	3 (33.3)	9 (100.0)	
Length of Service					
Good	6 (33.3)	9 (50.0)	3 (16.7)	18 (100.0)	0.069
Sufficient	1 (11.1)	2 (22.2)	6 (66.7)	9 (100.0)	
Poor	1 (33.3)	2 (66.7)	0 (0.0)	3 (100.0)	

Similarly, the analysis of length of service (tenure) and work stress yielded no statistically significant relationship ($p = 0.069$). Respondents with good (long) tenure most commonly reported moderate (50.0%) or good (low) (33.3%) stress. Conversely, those with sufficient (moderate) and poor (short) tenure demonstrated a higher propensity for poor (high) work stress. Thus, length of service was not identified as a significant predictor of work stress in this research.

Discussion

This study's findings reveal a pronounced and statistically significant association between workload and the level of occupational stress. The data indicates a strong, positive correlation: as the perceived workload worsens, the level of work stress tends to increase. This is starkly illustrated by the results where 75.0% of respondents reporting a "poor" workload also experienced "poor" (high) stress. This result corroborates a vast body of literature, particularly within Indonesia. Research by Muhajirin et al.¹¹ conducted in a similar *Puskesmas* setting, also found a highly significant positive correlation between workload and nurse stress. Other studies, such as one analyzing mental workload, confirmed a significant relationship, noting that high physical and mental demands are direct contributors to psychological distress.¹² The

consensus is that excessive patient assignments and administrative duties—which characterize the "poor" workload perceived by 40% of our respondents—are primary drivers of emotional exhaustion and burnout.

In contrast, the analysis did not find a statistically significant association between the work shift system and occupational stress. This is an interesting finding, as it contrasts with numerous studies that identify shift work as a major stressor. Research consistently links rotating and night shifts to increased anxiety, depression, burnout, and disruptions in circadian rhythm.¹³ However, our finding may suggest that when workload is overwhelmingly high, as evidenced by 90% of our sample, it becomes the dominant stressor, superseding the impact of shift schedules. It is plausible that the "good" rating (70.0%) of the shift system reflects satisfaction with its predictability, but the stress itself is driven by the sheer volume of work *during* the shift, regardless of the time of day.

Similarly, length of service (tenure) did not exhibit a statistically significant relationship with work stress. While some studies find tenure influences job satisfaction, others report mixed or non-significant results. The descriptive trend in our data, however, is the most compelling finding: nurses with "sufficient" (moderate) tenure showed the highest prevalence of "poor" (high) stress (66.7%). This trend suggests that the relationship between experience and stress is not linear, a phenomenon supported by recent advanced analyses. Studies by Liao et al.¹⁴ and others have identified a significant non-linear or "U-shaped" relationship between years of experience and emotional exhaustion. This model posits that stress is high for new nurses, drops, and then *peaks* in mid-career (e.g., 2-5 years) before declining again as veteran nurses develop superior coping mechanisms. Our data, showing the highest stress in the "sufficient" tenure group, aligns perfectly with this non-linear model. It suggests that this group may be past the novice phase but now bears the full weight of clinical responsibility, placing them in a high-risk burnout period. This explains why a standard linear test, like the Chi-Square, would fail to find significance.

These findings collectively underscore workload as the central, actionable factor influencing occupational stress in this environment, while the impacts of shift work and tenure are more complex and likely secondary to the primary burden of the work itself.

Conclusion

Based on the research conducted at the Medan Tuntungan Community Health Center, this study concludes that there is a statistically significant and positive association between workload and the level of work stress among nurses ($p < 0.001$). The findings clearly demonstrate that a higher perceived workload—encompassing physical, mental, and administrative demands—is directly correlated with increased levels of occupational stress. Conversely, a manageable (good) workload was exclusively associated with low stress. In this specific cohort, work shift systems and length of service (tenure) were not found to be statistically significant predictors of work stress ($p = 0.091$ and $p = 0.069$, respectively). The primary limitations of this study are its cross-sectional design, which captures data at a single point in time and cannot definitively establish causality, and the small sample size ($n=30$) from a single health center, which limits the generalizability of these findings. Despite these limitations, the results provide actionable evidence for the management of the Medan Tuntungan Puskesmas. It is imperative to address the high perceived workload as the primary driver of stress. Recommendations include reviewing and optimizing nurse-to-patient ratios, streamlining administrative tasks, implementing improved shift scheduling, and providing psychosocial support for staff. Addressing these workload issues is crucial for enhancing nurse well-being, reducing the risk of burnout and turnover, and ultimately maintaining the quality and safety of patient care.

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