



# The relationships between workload, stress, motivation and performance of nurses' working in the emergency department of public hospitals during the COVID-19 pandemic: A cross-sectional study

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## Abstract

**Background:** Pandemic conditions increase nurses' workload, trigger stress, decrease motivation, and influence nurses' performance.

**Objectives:** This study analyzed the relationships between workload, stress, motivation, and performance of nurses working in the Emergency Department of Public Hospital during the COVID-19 pandemic.

**Methods:** This was a cross-sectional study. Closed-response questionnaires were used to collect data in this study. The sample consisted of 77 respondents. Data were processed using the chi-square test with a significance of 0.050 and the multiple logistic regression analysis.

**Results:** Nurses were primarily between 30 and 35 years old (64.9%); 70.1% were women, and 70.1% possessed a bachelor's degree. Nurses' performance was significantly associated with workload ( $P=0.015$ ) and motivation ( $P=0.019$ ). Trigger stress was not related to the nurses' performance ( $P=0.066$ ).

**Conclusion:** Workload and motivation are associated with nurses' performance. High motivation from hospital management can significantly affect the nurses' performance by 5.921 times.

**Keywords:** Workload, Motivation, Cross-Sectional Studies, Pandemic.

## Introduction

Patients with COVID-19 require special treatment from hospital health workers, especially in the Emergency Department. Hospitals must provide the best services even during a pandemic.<sup>[1]</sup> Nurses are on the forefront of caring for these patients.<sup>[2]</sup>

The nurses' workload increased during the pandemic due to the rising number of patients with Covid-19 and the limited number of nurses.

The increased workload can trigger stress among nurses, which manifests itself in fatigue, depression, anxiety, and workplace conflict.<sup>[3,4]</sup> The excessive workload and stressful situations experienced by nurses also affect their motivation.<sup>[5]</sup> The lack of motivation undoubtedly affects nurses' performance. Motivation also decreases due to low public awareness of using personal protective equipment (PPE). Authorities have made numerous efforts to overcome the problem of workload, stress, and motivation during the pandemic. These efforts included training

nurses about COVID-19 and providing facilities such as PPE, virus detection tools, compensation, bonuses, and awards that could increase nurses' motivation and work loyalty.<sup>[6]</sup>

An example is Grandmed, one of the largest and busiest public hospitals in North Sumatra Province, Indonesia. The question was whether such management interventions could affect the stress, motivation, and performance of nurses in the emergency department.

## Objectives

This study analysed the relationships between workload, stress, motivation, and performance of nurses who worked in the Emergency Department (ED) during the COVID-19 pandemic.

## Methods

### Study design and participants

The researchers conducted this cross-sectional study at

Grandmed Public Hospital, Lubuk Pakam, Indonesia, from October 2021 to March 2022. The study population included 335 nurses who worked at Grandmed Public Hospital. The researchers conducted convenient sampling and included nurses in charge of the Emergency Department, who had worked for at least three years, and were willing to be research respondents. The study sample consisted of 77 nurses who worked at ED.

### Data collection instrument

The data used in this study were primary and secondary data. Participants provided primary data by completing closed-ended questionnaires with 60 items rated on a 5-point Likert scale from 1 to 5. The researchers obtained the secondary data from the hospital's administrative documents, which contained the nurses' data. The researchers declared all questionnaire items valid and reliable because the Cronbach's Alpha value was above 0.60.

### Ethical considerations

The Institutional Review Board approved this study (Approval No. 026.D/KEP-MPL/IX/2021), and the researchers obtained written permission from the Director of Grandmed Public Hospital. The researchers received verbal and written consent from all nurses before distributing the questionnaire.

### Data analysis

Data were analyzed using SPSS software version 21 (Armonk, NY: IBM Corp). The data were processed using the chi-square test and multiple logistic regression analysis. Descriptive analysis assessed the effect of each independent and dependent variable.

### Results

Table 1 shows that 64.9% of the respondents were between 30 and 35 years old, 70.1% were women, and 70.1% had a bachelor's degree. Most respondents had a light workload, 66.2% experienced severe stress, 75.3% had high motivation, and 79.2% had good performance. The chi-square test revealed a significant relationship between workload and nurses' performance ( $P=0.015$ ). We also found a significant relationship between nurses' motivation and performance ( $P=0.019$ ). However, no significant relationship was found between stress and nurses' performance ( $P=0.066$ ) [Table 2].

Regression analysis showed that motivation had the most significant influence on nurses' performance, as shown by the Odds Ratio (OR)=5.921 (95% CI 1.265-27.718), which means that high motivation influenced nurses' performance by 5.921 times. The multiple linear logistic regression equation is as follows:  $\text{Log } p (\text{Performance}) = 0.334 + 0.684 (\text{Workload}) - 1.051 (\text{Stress}) + 1.779 (\text{Motivation})$ .

**Table 1.** Descriptive characteristics and analysis of the nurses in hospital emergency department

Variable		N (%)	Cumulative Percent
Age	24-29	24 (31.2)	31.2
	30-35	50 (64.9)	96.1
	36-41	3 (3.9)	100.0
Gender	Men	23 (29.9)	29.9
	Women	54 (70.1)	100.0
Education	Bachelor	54 (70.1)	70.1
	Diploma	23 (29.9)	100.0
Workload	Light	54 (70.1)	70.1
	Heavy	23 (29.9)	100.0
Stress	Severe	51 (66.2)	66.2
	Mild	26 (33.8)	100.0
Motivation	Low	19 (24.7)	24.7
	High	58 (75.3)	100.0
Performance	Bad	16 (20.8)	20.8
	Good	61 (79.2)	100.0

**Table 2.** Regression Analysis Relationships between Workload, Stress, and Motivation with Nurse Performance

Variable		Performance		Total <sup>a</sup>	Exact Sig. (2-sided)	B	Exp (B)	SE	p-Wald	95.0% CI	
		Bad	Good							Lower	Upper
Workload					0.015	0.684	1.982	1.027	0.505	0.265	14.829
Light	Count	7.0	47.0	54.0							
	Expected Count	11.0	42.8	54.0							
	% within Workload	13.0	87.0	100							
	% within Performance	43.8	77.0	70.1							
	% of Total	9.1	61.0	70.1							
Heavy	Count	9.0	14.0	23.0							
	Expected Count	4.8	18.2	23.0							
	% within Workload	39.1	60.9	100							
	% within Performance	56.3	23.0	29.9							
	% of Total	11.7	18.2	29.9							
Stress					0.066	-1.051	0.350	1.122	0.349	0.039	3.151
Severe	Count	7.0	44.0	51.0							
	Expected Count	10.6	40.4	51.0							
	% within Stress	13.7	86.3	100							
	% within Performance	43.8	72.1	66.2							
	% of Total	9.1	57.1	66.2							
Mild	Count	9.0	17.0	26.0							
	Expected Count	5.4	20.6	26.0							
	% within Stress	34.6	65.4	100							
	% within Performance	56.3	27.9	33.8							
	% of Total	11.7	22.1	33.8							
Motivation					0.019	1.779	5.921	0.788	0.024	1.265	27.718
Low	Count	8.0	11.0	19.0							
	Expected Count	3.9	15.1	19.0							
	% within Motivation	42.1	57.9	100							
	% within Performance	50.0	18.0	24.7							
	% of Total	10.4	14.3	24.7							
High	Count	8.0	50.0	58.0							
	Expected Count	12.1	45.9	58.0							
	% within Motivation	13.8	86.2	100							
	% within Performance	50.0	82.0	75.3							
	% of Total	10.4	64.9	75.3							

Notes: 1 cell (25.0%) has expected count less than 5. The minimum expected count is 4.78. Computed only for a 2x2 table. -2 Log likelihood = 70.407; B = constant value; Exp (B) = Odds ratio; CI = confidence interval

<sup>a</sup> The total calculated by the total count divided by 77 (total count light and count heavy=54+23), so total count light=54/77\*100=70.1, count heavy=23/77\*100=29.9, so the total is 100%.

## Discussion

In this study, 60.9% of nurses had heavy workload with good performance. Nurses' performance was good when they could complete their work on time. However, the excessive workload during this pandemic prevented many tasks from being completed adequately. The excessive workload indirectly affects nurses and increases the likelihood that they will suffer from stress. Nurses with a low workload resulted in a good performance. Previous studies have also shown that low workload leads to good-quality performance.<sup>[7,8]</sup>

The results showed that 65.4% of nurses experienced mild stress with good performance. Previous studies align with these findings.<sup>[9,10]</sup> In this study, 86.3% of nurses experienced severe stress with good performance, which contradicts the findings of previous studies,<sup>[5,6]</sup> where nurses who experienced extreme stress tended to perform poorly. Increased workload and lack of rest can lead to fatigue and stress in nurses. Mental disorders such as anxiety, depression, and excessive worry about virus transmission also caused stress for nurses, which affected nurses' performance.<sup>[9]</sup> The results aligned with previous studies, as 86.2% of nurses were highly motivated with good performance.<sup>[9,10]</sup> In this study, 57.9% of nurses had low motivation with good performance because the hospital management provided nurses with self-development training through education. High motivation can encourage nurses to continue to work effectively and provide quality care to patients despite increasing workload and stress.<sup>[5]</sup>

Intense motivation can improve nurses' performance. Our findings showed that 79.2% of nurses who worked in the ED performed well. Nurses performed well because hospital management consistently provided promotions, education on infectious diseases, training, bonuses, awards, PPE, and virus detection tools.<sup>[5]</sup>

## Conclusions

The results of the study showed that workload and motivation were related to nurses' performance. High motivation influenced nurses' performance by 5.921 times. Nurse performance can be improved through adequate compensation, promotion of outstanding nurses, provision of adequate facilities (including complete PPE and viral detection instruments), and education and training in the management of infectious diseases, such as COVID-19 virus.

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## Competing interests

There are no conflicts of interest.

## Abbreviations

personal protective equipment: PPE

Emergency Department: ED

Odds Ratio: OR

## Authors' contributions

All authors read and approved the final manuscript. All authors take responsibility for the integrity of the data and the accuracy of the data analysis.

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## Availability of data and materials

The data used in this study are available from the corresponding author on request.

## Ethics approval and consent to participate

The Institutional Review Board approved this study (Approval No. 026.D/KEP-MPL/IX/2021), and the researchers obtained written permission from the Director of Grandmed Public Hospital. The researchers received verbal and written consent from all nurses before distributing the questionnaire.

## Consent for publication

By submitting this document, the authors declare their consent for the final accepted version of the manuscript to be considered for publication.

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