

The Impact of Nurses' Emotional Labor, Sleep Disorder, and Company Support on Job Stress, as Revealed in Big Data

Jung Im Kim ^{1*} 

¹ Department of Nursing, Kyungdong University, Gangwondo 24695, SOUTH KOREA

*Corresponding Author: jungimkim123@gmail.com

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ABSTRACT

The purpose of this study was to investigate the effects of nurses' emotional labor, sleep disorder, and company support on job stress. The research method used raw data from the 7th Work Environment Survey (2023), a public big data of Korea. The collected data were analyzed using the IBM SPSS/WIN 28.0 statistical program. Statistical analysis used t-test, ANOVA, and Pearson's correlation coefficient. Multiple regression analysis was used to identify factors influencing the subjects' job stress. The subjects used data from 446 people who responded as "nurse" among all wage earners. The results revealed that the factors influencing the subjects' job stress were emotional labor ($t=11.97$, $p<.001$), company support ($t=2.73$, $p=.006$), and sleep disorder ($t=1.99$, $p=.047$). In conclusion, workplaces need measures to reduce nurses' sleep disorders and emotional labor to alleviate job stress, and measures to increase coworker and company support are required.

Keywords: Nurse, Job Stress, Emotional Labor, Sleep Disorder, Company Support

INTRODUCTION

As the healthcare paradigm shifts, the demand for nurses is increasing in response to societal demands. For example, infection control and patient safety have become increasingly important in medical institutions. In the community, roles such as home nursing, chronic disease management, health promotion, and health education are becoming increasingly important (Shin et al., 2020). According to 2021 OECD statistics, the total nursing workforce (nurses and nursing assistants) in Korea in 2019 was 7.9 per 1,000 people, 1.5 fewer than the OECD average of 9.4. Of the total nursing workforce, nurses account for 4.2, lower than the OECD average of 7.9 (Shin et al., 2023). In 2022, approximately 481,000 licensed nurses were expected to be registered in Korea. Of these, 254,000 (52.6%) are working in medical institutions. The overall nurse activity rate (including nursing civil servants, 119 firefighters, and those working in long-term care facilities) is approximately 73% (2023). The low number of nurses in Korea is due to factors such as excessive workloads beyond the scope of their duties, poor working conditions, and job maladjustment issues. Nearly 10,000 nurses leave clinical practice each year (2023).

As nurses' working environments deteriorated, their job stress increased. Factors related to the working environment included managerial leadership, material support, and support for nurses (Park & Shin, 2023). Nurses who work shifts, due to the nature of their work, experienced the highest levels of stress due to their relationships with caregivers and patients. They also reported high levels of stress due to conflicts with doctors and excessive workload. A significant correlation was found between these nurses' job stress and sleep quality (Shim, 2019). Nurses' sleep quality significantly impacts their health, job satisfaction, and patient safety. Due to shift work, high workload, and stress, nurses are prone to sleep disturbances, which can lead to fatigue, decreased concentration,

and safety issues. Therefore, improving nurses' sleep quality is essential not only for their personal health but also for enhancing the quality of healthcare services (Seol et al., 2018).

In Korea, 98% of nurses reported experiencing emotional labor, reporting experiencing it approximately once every two days. The sources of emotional labor include patients, caregivers, doctors, supervisors, and colleagues. Eighty percent of nurses reported intentions to leave their jobs after experiencing emotional labor (Yom et al., 2017). This emotional labor also increased nurses' job stress, while social support, including support from colleagues and within the company, was found to reduce job stress (Lee & Kim, 2019; Kim & Jung, 2022). Social support among nurses has been shown to reduce burnout (Kim & Jung, 2022).

Therefore, this study utilized raw data from the Korean Work Environment Survey to investigate nurses' emotional labor, sleep disorders, and company support, and to investigate the impact of these factors on job stress. Through this study, we aim to provide a foundation for developing workplace programs to alleviate nurses' job stress.

The specific objectives are as follows:

- First, identify the subject's general characteristics.
- Second, identify the level of job stress based on the subject's general characteristics.
- Third, identify the correlation between the subject's job stress, emotional labor, sleep disorder, and company support.
- Fourth, identify the factors influencing the subject's job stress.

RESEARCH METHOD

This study is a big data analysis study using raw data from the Occupational Safety and Health Research Institute's work environment survey. The data for this study were extracted from raw data from the 7th Work Environment Survey, approved for use by the Korea Occupational Safety and Health Agency. The Work Environment Survey was developed based on the European Union (EU) Work Environment Survey. Korea conducted the first survey in 2006 and has conducted it every three years since. The 7th survey was completed in 2023. The target population for this survey is employed individuals aged 15 or older residing in South Korea at the time of the survey. The survey explores the overall work environment, including employment status, employment type, occupation, industry, exposure to risk factors, and employment security. The raw data from the 7th Work Environment Survey can be downloaded and provided by entering your name, affiliation, and email address after agreeing to the terms and conditions of the Personal Information Collection and Use Agreement at the Occupational Safety and Health Research Institute (Ko et al., 2023).

The raw data from the 7th Work Environment Survey consisted of 50,195 items. Of the 30,073 items that responded as salaried workers, 446 items classified as "nurses" were used for the final analysis (figure 1).

Research tools were selected from raw data from the 7th Work Environment Survey. Eight general characteristics questions were used, covering age, gender, education, marital status, children, income, length of service, and the presence of an emotional labor manual. The presence of an emotional labor manual was measured as "yes" or "no" in the workplace. Job stress was measured using a 5-point Likert scale, assessing the degree of stress experienced in work situations. Respondents answered "always," "most of the time," "sometimes," "rarely," and "not at all." When converted to a reversed scale, a higher average score indicates greater job stress. Emotional labor was measured using a 5-point Likert scale, which measures the extent to which employees conceal their emotions during work situations. Responses included "Always," "Most of the time," "Sometimes," "Not really," and "Not at all." When reverse-rated, higher average scores indicate greater emotional labor. Sleep disorder was measured by three items: one item regarding the degree to which one had difficulty falling asleep over the past year, one item regarding the degree to which one had frequently woken up during the past year, and one item regarding the degree to which one had felt tired and exhausted after waking up over the past year. Measurements were made using a 5-point Likert scale with the following responses: "every day," "several times a week," "several times a month," "rarely," and "never." All items were reverse-rated, and a higher average score indicated a higher degree of sleep disturbance. Company support was measured with two items: coworker support and supervisor support. The degree to which coworkers and supervisors support and assist individuals in work situations was measured on a 5-point Likert scale. Respondents answered "Always," "Most of the time," "Sometimes," "Not really," and "Not at all." Reverse-referenced, a higher average score indicates greater company support.

The collected data were analyzed using IBM SPSS/WIN 28.0 statistical software as follows: Descriptive statistical analysis was used to determine the subjects' general characteristics. The level of job stress according to the subjects' general characteristics was analyzed using t-tests and ANOVA. The correlations among the subjects' job stress, emotional labor, sleep disorder, and company support were analyzed using Pearson's correlation coefficient. Finally, factors influencing the subjects' job stress were analyzed using multiple regression analysis.

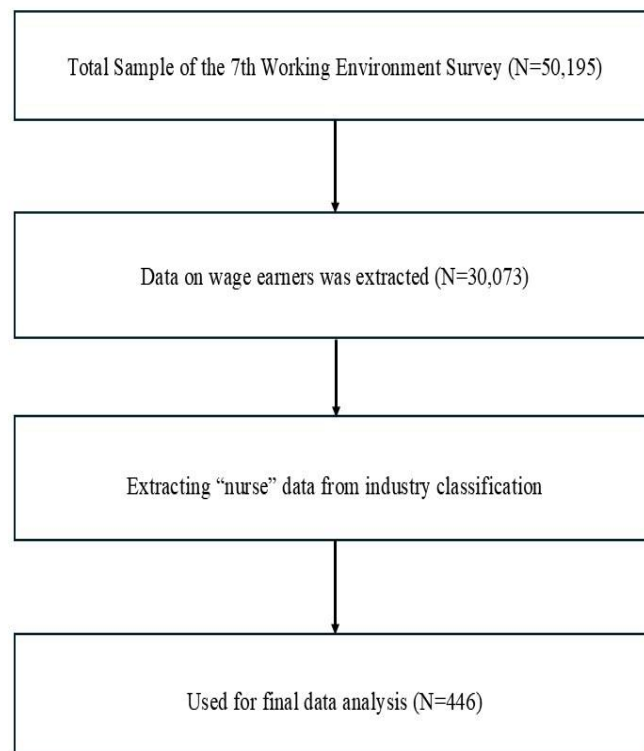


Figure 1. Flowchart of analysis targets

RESULTS

Job Stress According to the General Characteristics

The average age of the participants was 38.87 ± 0.47 , and the average career experience was 6.08 ± 5.18 . There were 429 women (96.2%) and 17 men (3.8%). Education levels included college graduates or higher (305 participants, 60.2%) and junior college graduates or lower (141 participants, 39.8%). Regarding marital status, 276 participants (61.9%) were married, while 170 participants (38.1%) were single. Regarding children, 218 participants (48.9%) answered "Have" and 228 participants (51.1%) answered "Have no". The average monthly income was 219 people (49.1%) with an income of 2 million won to less than 3 million won, 165 people (37.0%) with an income of 3 million won to less than 4 million won, 34 people (7.6%) with an income of 4 million won to less than 5 million won, and 11 people (2.5%) with an income of less than 2 million won. Job stress according to the general characteristics of the subjects showed a higher score in those who 'did not have' an emotional labor manual (3.47 ± 0.87) compared to those who 'did have' an emotional labor manual (3.29 ± 0.86) ($t=2.00$, $p=.046$) (Table 1).

Table 1. Job stress according to the general characteristics of the subjects
(N=446)

Variables	Categories	n(%) or M $\pm$ SD	Job Stress M $\pm$ SD	t(F)	p
Age(years)		38.87 $\pm$ 0.47			
Career(year)		6.08 $\pm$ 5.18			
Gender	Male	17(3.8)	3.41 $\pm$ 0.79	0.33	.742
	Female	429(96.2)	3.34 $\pm$ 0.87		
Education	$\leq$ College	141(39.8)	3.26 $\pm$ 0.88	-1.32	.186
	$\geq$ University	305(60.2)	3.38 $\pm$ 0.87		
Marital status	Married	276(61.9)	3.32 $\pm$ 0.89	-0.85	.717
	Single	170(38.1)	3.39 $\pm$ 0.83		
Children (person)	Have	218(48.9)	3.34 $\pm$ 0.89	0.23	.981
	Have no	228(51.1)	3.34 $\pm$ 0.85		

	<200	11(2.5)	3.36±0.92		
Average monthly income (10,000 won)	200 - <300	219(49.1)	3.37±0.83	1.05	.393
	300 - <400	165(37.0)	3.28±0.84		
	400 - <500	34(7.6)	3.56±0.99		
	≥500	17(3.8)	3.40±0.89		
Emotional labor manual	Yes	137(30.7)	3.29±0.86	2.00	.046
	No	309(69.3)	3.47±0.87		

Emotional Labor, Sleep Disorder, Company Support, And Job Stress

The subjects' job stress had significant positive correlations with emotional labor ($r=.52$, $p<.001$) and sleep disorder ($r=.08$, $p=.037$), and a significant negative correlation with company support ($r=-.20$, $p<.001$). The subjects' emotional labor had a significant negative correlation with company support ($r=-.20$, $p<.001$). Sleep disorder had a significant negative correlation with company support ($r=-.12$, $p=.0041$) (Table 2).

Table 2. The correlations among the subjects' emotional labor, sleep disorder company support, and job stress

Variables	M±SD	1 r(p)	2 r(p)	3 r(p)	4 r(p)
1. Job stress	3.34±0.88	1			
2. Emotional labor	3.38±0.87	.52(.000) **	1		
3. Sleep disorder	1.55±0.58	.08(.037) *	.03(.229)	1	
4. Company support	3.67±0.75	-.20(.000) **	-.20(.000) **	-.12(.004) **	1

* $p<0.05$, ** $p<0.01$

Factors Influencing the Subjects' Job Stress

To identify factors affecting the subjects' job stress, a multiple regression analysis was conducted, with emotional labor, sleep disorder, company support, and emotional labor manuals as independent variables and work stress as the dependent variable. The results showed tolerance limits ranging from 0.93 to 0.97, all values above 0.1. Variance inflation factors (VIF) were all less than 10, confirming the absence of multicollinearity. Factors affecting the subjects' job stress were emotional labor ($t=11.97$, $p<.001$), company support ($t=2.73$, $p=.006$), and sleep disorder ($t=1.99$, $p=.047$) (Table 3).

Table 3. Factors influencing the subjects' job stress

Variables	Job stress					
	B	SE	β	t	p	VIF
(Constant)	1.02	.281	-	3.56	<.001	
Emotional labor	.50	.04	.49	11.97	<.001	1.071
Sleep disorder	.12	.06	.08	1.99	.047	1.024
Company support	.13	.04	.11	2.73	.006	1.063
Emotional labor manual	-.09	.07	-.05	-.12	.903	1.030
R ² =.291 Adj.R ² =.284, F=45.21, $p<.001$						
Dubin—Watson=2.014						

DISCUSSION

This study investigated the effects of nurses' emotional labor, sleep disorder, and company support on job stress.

The study results showed no differences in job stress based on the subjects' general characteristics, such as gender, education, marital status, children, and annual salary. A study of critical care nurses (Park & Shin, 2023) also found no differences in job stress based on general characteristics. However, the results were different from those of the public health nurse study (Cho & Kim, 2019). In the public health nurse study (Cho & Kim, 2019), unmarried people showed higher job stress, and the higher the level of education, the higher the job stress.

Furthermore, the results of this study revealed that nurses working in workplaces without emotional labor manuals experienced higher levels of job stress. This is consistent with a study on job stress among social welfare service workers, which found that workers in workplaces without manuals reported 1.49 times more emotional labor experience than those in workplaces with manuals (Ma et al., 2025). This suggests that the Emotional Labor Manual serves as a social support system, increasing emotional intelligence and, consequently, reducing job stress. Therefore, the Emotional Labor Manual appears to contribute to reducing job stress by helping nurses effectively cope with emotional labor situations and manage their emotional expression.

Emotional labor was correlated with job stress, with higher emotional labor being associated with higher job stress. Previous research also found a correlation between nurses' emotional labor and job stress (Kim & Min, 2022), and both emotional labor and job stress also influenced nurses' somatization symptoms (Shin & Kang, 2011; Park et al., 2018). This, in turn, impacted their work performance (Park, Kim & Choi, 2018). It was found that nurses' communication skills had a moderating effect between nurses' emotional labor and job stress (Kim & Min, 2022). Therefore, it is believed that a communication skills training program for nurses is necessary in the workplace to alleviate job stress.

Sleep disorders were positively correlated with job stress and were a contributing factor. Irregular work patterns, such as shift work, among nurses were found to lead to sleep disorders that reduced sleep quality and quantity, thereby influencing job stress. Furthermore, this also affected turnover intentions (Yang, Choi & Kim, 2017). Furthermore, sleep quality was found to mediate the relationship between job stress and job stress responses (Kil et al., 2019). Nurses' job stress responses primarily manifest as emotional, physical, and behavioral problems. Emotionally, it can lead to feelings of depression, anxiety, and lethargy. Physically, it can lead to indigestion, headaches, and cardiovascular disease. Behaviorally, it has been shown to lead to decreased job satisfaction, decreased job engagement, shirking, and even increased intention to leave (Baek et al., 2019). Therefore, research is needed to improve treatment for nurses' stress management by establishing a work environment that ensures quality sleep, developing programs to improve sleep quality, and verifying their effectiveness.

Social support, including coworker and supervisor support, was negatively correlated with job stress and was a significant factor influencing job stress. Nurses' social support was a significant factor in reducing job stress, and support from colleagues, supervisors, and family members was found to have a positive effect on increasing job satisfaction and reducing intentions to leave (Lee & Kim, 2019). Social support has been shown to alleviate psychological burden by providing emotional support in stressful situations and to facilitate work-related problem-solving and assistance through conversation with colleagues (Choi & Park, 2023). This type of social support has been shown to have a significant impact on nurses' work-life balance (Lee & Shin, 2020). Social support has been shown to act as a buffer against job-related stressors such as excessive workload, interpersonal difficulties, and emotional labor, thereby preventing burnout and improving the quality of professional life for nurses (Shin & Joung, 2023). Furthermore, it has been shown to be effective in alleviating job-related stress by enhancing nurses' resilience (Kim & Kim, 2022). It was found that efforts are needed in the workplace to provide social support to alleviate nurses' stress, reduce burnout, and improve nurses' quality of life (Lim & Kim, 2020).

Reducing occupational stress in nurses requires both individual efforts and organizational support. Nurses should maintain healthy lifestyle habits (exercise, hobbies, and sufficient rest), recognize stressors, and cultivate supportive relationships with colleagues. Furthermore, hospitals need to prioritize appropriate staffing, provide social support, and implement psychological counseling and stress reduction programs.

In conclusion, managing nurses' job stress in the workplace can lead to increased job satisfaction, improved quality of life, and ultimately contribute to the provision of better medical services.

CONCLUSION

This study was conducted to investigate the impact of nurses' emotional labor, sleep disorder, and company support on their job stress. It was a big data analysis using raw data.

The results revealed that emotional labor, company support, and sleep disorders were the most influential factors influencing job stress.

Therefore, strategies are needed to manage nurses' stress, including programs to manage emotional labor that may arise in patient care and the work environment, improving shift work and working conditions to ensure sleep quality, and providing social support through coworker and supervisor support.

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