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An exploratory study of nursing tasks that induce physical and mental stress among hospital nurses

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ABSTRACT

Background: Nursing tasks are major contributing factors of nurses' stress. Identifying these stress-inducing tasks by hospital and department is the first step in devising practical strategies to address this issue.
Objectives: This study aimed to develop a nursing task list by categorizing nursing tasks and identifying the ones that induced physical and mental stress among hospital nurses.
Methods: This descriptive exploratory study was conducted. In the first phase, the nursing task list was formulated based on a literature review and an expert content validity verification. In the second phase, the stress-inducing (both physical and mental) nursing tasks in different departments at two types of hospitals were investigated from 775 nurses. The data were analyzed using descriptive statistics, *t*-test, χ^2 test and ANOVA performed using SPSS/WIN 26.0.
Results: The nursing task of "exercise and position change" was identified to cause the highest physical stress across all five departments in both advanced general hospitals and general hospitals. Similarly, the nursing task "explanation of patients' condition upon request from the patients' family members" induced the greatest mental stress in both advanced general hospitals and general hospitals. Finally, "substitution for physicians: prescription" was identified as the greatest mental stress-inducing nursing task in general hospitals.
Conclusion: Based on a nursing task list developed, we determined which nursing tasks induce physical and mental stress in different departments at two types of hospitals. This foundational work will be crucial for exploring practical strategies to relieve nurses' stress.

1. Introduction

1.1. Background

Hospital nurses experience stress caused by shift work, high work intensity, and a shortage of nursing personnel (D'Ettorre et al., 2020), and their stress contributes to burnout and job dissatisfaction, which affect their physical and mental health (Khamisa et al., 2015). Furthermore, the stress experienced by nurses has been the focus of extensive research as a cause of a vicious cycle that reduces work productivity and quality of care, which jeopardizes patient safety (Khamisa et al., 2015), and contributes to nurse turnover, which leads to a shortage of nursing personnel (Halter et al., 2017; Lee & Jang, 2020). Moreover, the stress experienced by hospital nurses has increased, especially since the coronavirus disease 2019 (COVID-19) pandemic (Salari et al., 2020). Therefore, research is needed that explores nurses' perceived stress in a multifaceted way and analyzes its characteristics in detail.

Nurses' stress is caused by various factors, including work overload, relationships with physicians, lack of support from managers, interpersonal factors, and shift work. Of the various factors, work overload due to an inordinate number of patients, high patient severity, use of specialized equipment, and additional duties outside of direct care are major contributing factors (Happell et al., 2013). As nursing tasks are characterized by the simultaneous performance of physically demanding nursing activities and emotional labor (Yom et al., 2016) while having the responsibility of improving patient health with limited time and resources (Khamisa et al., 2015), they induce high levels of stress. Moreover, owing to the workforce shortage in the healthcare setting, the tasks of other professions are often transferred to nurses

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(Jang, 2012). Additionally, the nursing burden increases owing to the ambiguity of the scope of work. This factor has led to several studies analyzing "non-nursing tasks" to address these issues (Bekker et al., 2014; Grosso et al., 2020; Hammad et al., 2021). A study that analyzed the factors affecting nurses' job stress showed that "work factors" were the most influential (Lim et al., 2022), suggesting the need to determine and analyze the main factor—the type of nursing work—in order to reduce nurses' stress.

Previous studies have analyzed the work of advanced practice nurses or special unit nurses (Im & Seo, 2014; Yun et al., 2020) or identified >600 nursing role behaviors (Kim et al., 2005). Furthermore, in 2004, a study was conducted to develop the 'Nurses' Roles and Nurses' Role Activities' (Chi et al., 2004). However, there are limitations to utilizing the list of nursing tasks from previous studies to conduct follow-up studies, as the list of tasks may be overly categorized or may not reflect the rapidly changing healthcare environment. Therefore, nursing tasks that reflect the current clinical nursing practice must be categorized and listed.

As hospitals become larger, more segmented, and more specialized, the nature of nursing work varies further by hospital type and department. Healthcare institutions in Korea are classified into three categories: advanced general hospitals, which have >20 medical departments and specialize in severe diseases; general hospitals, which have >100 beds; and hospitals, which have >30 beds. The departments of a healthcare institution can be broadly categorized into integrated nursing care service ward, internal medicine wards, surgical wards, emergency rooms, and intensive care units. Furthermore, the characteristics of nursing work vary depending on the hospital type, as differences exist in patient severity, disease groups, nursing workforce, and nurses' perceptions (Yi et al., 2022), and aspects such as the number of patients receiving care, disease groups, and nursing skills practiced differ by department as well. Therefore, the stressful nursing tasks as perceived by nurses are expected to vary by hospital type and department. Advanced general hospitals specialize in the treatment of severe and difficult medical conditions, and these institutions perform various nursing tasks for critically ill patients in situations where the quality of care is critical. General hospitals employ the largest number of nurses in Korea (Ministry of Health and Welfare, 2020). However, nurses in general hospitals are facing difficulties in performing their nursing duties owing to poor working environments and workforce shortages (Kim, 2022). This makes it necessary to identify and intervene in nursing tasks that contribute to stress among nurses in advanced general and general hospitals.

This study aims to determine the types of stressful nursing tasks by nursing site and based on the developed list of nursing tasks, identify the nursing tasks that induce physical and mental stress among nurses working in advanced general and general hospitals and the differences between them. Identifying the types of nursing tasks that contribute to nurses' stress, by organization and department, will be the first step in devising practical strategies to address it.

1.2. Aim of the study

This study aimed to create a list of nursing tasks by categorizing them and based on this list, identify the tasks that induce physical and mental stress among advanced general and general hospital nurses by department (integrated nursing care service ward, internal medicine ward, surgical ward, emergency room, and intensive care unit).

2. Methods

2.1. Study design

The design of descriptive exploratory study was employed to categorize and list nursing tasks and identify the ones that induce physical and mental stress, as perceived by hospital nurses.

This study was conducted in two phases. In the first phase, which aimed to develop the nursing task list, the nursing tasks and activities performed by hospital nurses were identified through a literature review, and the list of nursing tasks was developed through expert content validation. In the second phase, the specific nursing tasks that induced physical and mental stress among nurses working in advanced general and general hospitals were identified through a questionnaire based on the nursing task list developed in the first phase.

2.2. Participants and data collection

For the content validation of the list of nursing tasks developed, a total of 15 nurses were selected using a convenience sampling method, one from each type of hospital (advanced general hospital, general hospital, and hospital) and each type of department (integrated nursing care service ward, internal medicine ward, surgical ward, emergency room, and intensive care unit). All of them had >5 years of clinical experiences in each department of each types of hospital.

In the second phase, data were collected using a questionnaire based on the nursing task list developed in the first phase. An online survey was conducted using convenience sampling. The participants comprised hospital nurses with at least one year of experience working in advanced general and general hospitals. They were recruited using a recruitment notice with the participation URL posted on the hospital's bulletin board with the cooperation of the nursing department as well as on the bulletin board of an exclusive online community for nurses with the approval of the administrator. A total of 860 nurses participated in the study. Of them, 400 nurses were from advanced general hospitals and 460 were from general hospitals. Eventually, after the samples with incomplete responses were excluded, the responses of 359 nurses from advanced general hospitals and 416 nurses from general hospitals were used in the statistical analysis.

2.3. Measures

A questionnaire was formulated based on the nursing tasks list developed. It comprised 14 items to identify general characteristics, such as age, gender, education level, hospital type, department, clinical experience, and nursing care delivery method, as well as an item to select the top three nursing tasks from the list of 25 nursing tasks that induce physical and mental stress.

2.4. Statistical analysis

The general characteristics of advanced general and general hospital nurses were analyzed using descriptive statistics on the SPSS/WIN 26.0 program, and the differences in general characteristics between groups were analyzed using the *t*-test, the χ^2 test and ANOVA.

3. Results

3.1. Development of a nursing tasks list

In this study, after the tasks and activities performed by nurses in healthcare institutions were identified through a literature review, nursing tasks were extracted. Details of the reviewed literature are shown in Table 1. The 15 expert nurses reviewed those nursing tasks for content validation. Each type of hospital (advanced general hospital, general hospital, and hospital) and each type of department (integrated nursing care service ward, internal medicine ward, surgical ward, emergency room, and intensive care unit) was represented by one nurse each. Thus, a list of 25 nursing tasks with high importance and frequency was finalized through expert content validation. Table 2 presents the list of nursing tasks.

Table 1
Summary of studies.

Author (year)	Objective	Method	List of Nursing Tasks
Baik et al. (2019)	identify the type and frequency of nursing activities in emergency department	analyze hospital' electronic nursing records	4 categories and 30 nursing activities
Han et al. (2020)	identify nursing activities to explore the nursing workflow of ICU nurses	prospective, observational and time and motion study	107 nursing activities (6 categories and 20 subcategories)
Iordache et al. (2020)	develop the Workload Assessment of Nurses on Emergency tool to measure emergency nursing workload	cross-sectional, multicenter study	36 nursing tasks of direct care and 8 nursing activities sets of indirect care
Jung et al. (2020)	analyze nurse staffing according to patients' acuity and dependency by measuring nursing hours	translate and develop a Korean-adapted version of the Safety Nursing Care Tool (SNCT)	28 nursing activities across 3 domains
Kim et al. (2006)	analyze nursing tasks of emergency room	literature review and pilot study	17 nursing domains, 32 subcategories, and 246 nursing activities.
Kwon et al. (2019)	develop nursing job tool by analyzing the duties and tasks of integrated nursing and caring services units	literature review, comparing with records and expert review	14 duties and 135 nursing tasks
Lee et al. (2007)	clarify the roles of ICU nurses and critical care APNs through intensive care nursing tasks analysis	literature review and expert group discussions	181 nursing activities across 5 domains
Park et al. (2000)	identify and classify the Korean standard list of nursing activities	literature review, delphi method and pilot study	4 nursing processes, 12 nursing domains and 136 nursing activities
van den Oetelaar et al. (2018)	understand the day shift nursing tasks in the surgical ward	delphi method	4 nursing activity categories and 24 nursing activity groups
Yoon and Kim (2013)	explore the relationship between cost and revenue to estimate the relative value cost by applying reference nursing activities in general wards	a survey of nursing activities performed at least once in a year	140 nursing activities including 69 activities related to nursing management fees

ICU: Intensive Care Unit, APN: Advanced Practice Nurse.

Table 2
List of 25 nursing tasks.

Nursing tasks	Task Components
1. Respiratory care	Respiratory monitoring; Airway management; Oxygen therapy; Artificial airway management
2. Nutrition care	Nutrition management; Meal assistance; Enteral tube feeding; Parenteral nutrition
3. Excretion care	Defecation and urination care; Tube care
4. Exercise and position change	Positioning; Assisting with exercise and patients' mobility
5. Comfort care	Pain assessment; Hot/cold compresses; Ensuring privacy; Emotional support
6. Hygiene care	Oral care; Bed bathing; Linen and clothing change
7. Safety care	Isolation therapy; Dressing; Fall prevention care; Fire prevention inspections; Anti-theft training and management
8. Spiritual care	Religious support; Support for family members of dying patients
9. Counseling and education	Admission and discharge education; Education for patients and their family members
10. Medication care	Medication administration (PO, IV, IM, SC, etc.); Transfusion; Medication check and registration
11. Patient information management	Record and information management; Prescription verification; Entry and exit management
12. Supply and document management	Environmental management of supplies; Issuance of medical certificates, insurance documents, etc.
13. Measurement and observation	Monitoring vital signs; Assessing the level of consciousness; Managing various monitor lines
14. Nursing care related to medical tests	Blood sampling; Blood glucose measurement; Urine and stool analysis; Sputum collection; Medical test assistance
15. Specialized care	Death care; CPR; Bedside procedure assistance; Managing ECMO machine, CRRT machine, and ventilator
16. Education and consultation for staffs and students	Education and training for nurses, nurse assistants, and nursing students
17. Medical equipment management and repair	Medical equipment management and repair
18. Infection management	Using protective equipment; Infection control and protection
19. Caregiver access control	Taking temperatures of patients' family members; Checking visitors' relationship with patients
20. Substitution for physicians: prescription	Prescription modification and entry
21. Substitution for physicians: others	Performing invasive procedures; Obtaining informed consent for physicians
22. Support and performance of tasks for other departments	Pharmacy, hospital administration, and other departmental tasks
23. Coordination	Coordinating physician rounds; Coordinating tasks between the pharmacy, labs, paramedics, and other departments
24. Resolving issues other than illness and health	Reserving train tickets for discharged patients; Navigating insurance documentation
25. Explanation of patients' condition upon request from the patients' family members	Explaining the patient's condition through video calls, phone calls, etc.

3.2. Participants' general characteristics

Table 3 lists the participants' characteristics.

There were statistically significant differences between advanced general and general hospital nurses in terms of the department, education level, and nursing care delivery methods. The general hospital nurses in this study were more likely to work in "integrated nursing care service wards (26.8%)" ($\chi^2 = 40.09$, $p < .001$) and have a "college degree (11.5%)" ($\chi^2 = 20.806$, $p < .001$) when compared to advanced general hospital nurses ($\chi^2 = 20.806$, $p < .001$). In terms of nursing care delivery method, both advanced general and general hospital nurses were more likely to report using the "team nursing method," but a difference still existed between the two groups, as general hospital nurses were also more likely to use the "functional method" (20.9 %) ($\chi^2 = 30.972$, $p < .001$).

There were no statistically significant differences between advanced general and general hospital nurses in age, gender, position, clinical experience in the current department, or total clinical experience. The mean age of the advanced general hospital nurses was 34.45 ± 7.113

Table 3
Differences in the general characteristics between both groups.

Characteristics	Categories	Advanced General Hospital	General Hospital	$x^2(p)$ or t (p) or F(p)
		n (%) or M ± SD	n (%) or M ± SD	
Department	Integrated nursing care service ward	42(11.7)	112 (26.8)	40.09 (<0.001)
	Internal medicine ward	118(32.9)	89 (21.3)	
	Surgical ward	81(22.6)	75 (17.9)	
	Emergency room	30(8.4)	56 (13.4)	
	Intensive care unit	88(24.5)	84 (20.1)	
	Total	359	416	
Age(yr)		34.5 ± 7.47	34.1 ± 6.24	0.80 (0.427)
Gender	Female	336(93.6)	395(95)	0.66 (0.440)
	Male	23(6.4)	21(5)	
Position	Staff nurse	307(85.5)	332 (79.8)	4.47 (0.107)
	Charge nurse	22(12.3)	69(16.6)	
	etc.	8(2.2)	15(3.6)	
Education level	Associate degree	12 (3.3)	48(11.5)	20.81 (<0.001)
	Bachelor's degree	284 (79.1)	313 (75.2)	
	Master's degree	62 (17.3)	52(12.5)	
	Doctoral degree	1 (0.3)	3(0.7)	
Nursing care delivery system	Team nursing method	302(84.1)	291(70)	30.37 (<0.001)
	Functional method	26(7.2)	87(20.9)	
	Modular method	28(7.8)	32(7.7)	
	etc.	3(0.8)	6(1.4)	
Current department clinical career (month)	Integrated nursing care service ward	52.45 ± 62.81	41.64 ± 41.89	1.76 (0.078)
	Internal medicine ward	59.36 ± 56.23	45.66 ± 52.64	
	Surgical ward	43.55 ± 43.53	40.68 ± 38.88	
	Emergency room	51.18 ± 43.76	51.74 ± 45.48	
	Intensive care unit	51.86 ± 65.70	52.27 ± 54.81	
	Total	52.38 ± 56.16	45.87 ± 45.08	
Total clinical career (month)	Integrated nursing care service ward	104.57 ± 100.20	92.21 ± 70.21	0.77 (0.470)
	Internal medicine ward	99.36 ± 81.65	90.48 ± 77.11	
	Surgical ward	80.27 ± 74.41	100.77 ± 83.62	
	Emergency room	101.90 ± 81.14	74.20 ± 65.01	
	Intensive care unit	85.27 ± 92.82	79.02 ± 59.67	
	Total	92.50 ± 85.33	88.28 ± 71.95	

years, and this group comprised 336 females (93.6 %) and 23 males (6.45 %). The most common position in this group was that of staff nurse, with 307 nurses in this position (85.5 %). Additionally, the advanced general hospital nurses had a mean clinical experience of 52.38 ± 56.16 months at their current workplace and a mean total clinical experience of 92.50 ± 85.33 months. The mean age of the general hospital nurses was 34.14 ± 6.24 years, and this group comprised 395 females (95 %) and 21 males (5 %). The most common position in the group was that of staff nurse, with 332 nurses in this position (79.8 %). The general hospital nurses had a mean clinical experience of 45.87 ± 45.08 months at their current workplace and a mean total clinical experience of 88.28 ± 71.95 months.

3.3. Nursing tasks that induce physical stress among advanced general and general hospital nurses by department

Table 4 lists the nursing tasks that induce physical stress among advanced general and general hospital nurses by department.

"Exercise and position change" was the nursing task that caused the highest physical stress across all five departments in both advanced general and general hospitals. Across all five departments in advanced general hospitals, "excretion care" was the nursing task that caused the second highest level of physical stress. In integrated nursing care service wards, surgical wards, and emergency rooms, "hygiene care," including oral care, bed bathing, and linen and clothing change, was the nursing task that induced the third highest level of physical stress. The nursing tasks of "respiratory care" and "specialized care" caused the third highest level of physical stress in internal medicine wards and intensive care units of advanced general hospitals, respectively.

In all the departments of general hospitals, excluding intensive care units, "excretion care" induced the second highest level of physical stress. "Hygiene care" induced the second highest level of physical stress in intensive care units. In integrated nursing care service wards, internal medicine wards, and surgical wards, "hygiene care" induced the third highest level of physical stress, whereas "respiratory care" and "excretion care" induced the third highest level of physical stress in emergency rooms and intensive care units, respectively.

By comparing the nursing tasks that induced physical stress, as perceived by advanced general and general hospital nurses, basic nursing tasks, such as "exercise and position change," "excretion care," and "hygiene care," were commonly identified as high physical stress-inducing tasks. It was characteristic that "respiratory care" and "specialized care" were the nursing tasks inducing physical stress in internal medicine wards and intensive care units of advanced general

Table 4
Nursing tasks inducing high levels of physical stress according to departments in advanced general hospital and general hospital.

Advanced General Hospital (n = 359)					
Rank	Integrated nursing care service ward (n = 42)	Internal medicine ward (n = 118)	Surgical ward (n = 81)	Emergency room (n = 30)	Intensive care unit (n = 88)
1	Exercise & position change	Exercise & position change	Exercise & position change	Exercise & position change	Exercise & position change
2	Excretion care	Excretion care	Excretion care	Excretion care	Excretion care
3	Hygiene care	Respiratory care	Hygiene care	Hygiene care	Specialized care

General Hospital (n = 416)					
Rank	Integrated nursing care service ward (n = 112)	Internal medicine ward (n = 89)	Surgical ward (n = 75)	Emergency room (n = 56)	Intensive care unit (n = 84)
1	Exercise & position change	Exercise & position change	Exercise & position change	Exercise & position change	Exercise & position change
2	Excretion care	Excretion care	Excretion care	Excretion care	Hygiene care
3	Hygiene care	Hygiene care	Hygiene care	Respiratory care	Excretion care

hospitals, respectively, and "respiratory care" in emergency rooms of general hospitals."

3.4. Nursing tasks that induce mental stress among advanced general and general hospital nurses by department

Table 5 lists the nursing tasks that induce mental stress among advanced general and general hospital nurses by department.

Among advanced general hospital nurses, "explanation of patients' condition upon request from the patients' family members" was the nursing task that induced the greatest mental stress across all departments excluding emergency rooms. In emergency rooms, "Counseling and education" was the nursing task that induced the greatest mental stress. In integrated nursing care service wards and surgical wards, "resolving issues other than illness and health" and "Counseling and education" were the nursing tasks that induced the second and third highest levels of mental stress, respectively. In internal medicine wards, "respiratory care," a nursing task that induced high physical stress as well, was identified as inducing the second highest level of mental stress. In intensive care units, "explanation of patients' condition upon request from the patients' family members" induced the greatest mental stress, followed by "Counseling and education" and "specialized care."

Among general hospital nurses, "explanation of patients' condition upon request from the patients' family members" induced the greatest mental stress in all departments excluding intensive care units. In intensive care units "specialized care" induced the greatest mental stress. "Resolving issues other than illness and health" induced the second highest level of mental stress in integrated nursing care service wards and surgical wards and the third highest level of mental stress in internal medicine wards and emergency rooms. "Substitution for physicians: prescription" induced the second highest level of mental stress in emergency rooms and the third highest level of mental stress in surgical wards and intensive care units.

By comparing the nursing tasks that induced mental stress, as perceived by advanced general and general hospital nurses, "explanation of patients' condition upon request from the patients' family members" was commonly identified as a nursing task that induced great mental stress. However, there was a difference in that "substitution for physicians: prescription" was identified as a nursing task that induced great mental stress in the integrated nursing care service wards, emergency rooms, and intensive care units of general hospitals.

In advanced general hospitals, "resolving issues other than illness and health" was identified as a nursing task that caused great mental stress in only integrated nursing care service wards and surgical wards, but in general hospitals, it was identified to cause great mental stress in all departments excluding intensive care units.

4. Ethical considerations

This study was conducted with approval from the institutional review board of the university we affiliated (IRB: ANONYMIZED FOR REVIEW). The data collection period was from June 30, 2021, to August 10, 2021. Online form of consent was obtained from the participants. In this online consent, we provided the purpose of the study, assured anonymity and confidentiality, and informed them they could withdraw from participation at any time without penalty. The online survey was exempt from written consent, and it was stated that the data collected would be used for research purposes only. The data collected would be retained for three years from the end of the study, after which the files would be permanently deleted through two rounds of storage device formatting.

5. Discussion

This study developed a list of nursing tasks by categorizing them and identified the tasks that induced physical and mental stress among advanced general and general hospital nurses by department (integrated nursing care service ward, internal medicine ward, surgical ward, emergency room, and intensive care unit). Previous studies conducted in Korea and overseas on nursing tasks have analyzed nurses' jobs (Crossan & Ferguson, 2005; Im & Seo, 2014; Yun et al., 2020) or described various nursing interventions and activities (Kim et al., 2005; Lee, 2016). However, no studies have explored the stress experienced by nurses from each of these tasks. Against this backdrop, this study is significant because it has incorporated similar categories of interventions and identified the nursing tasks that reflect current clinical practice.

In the second phase of this study, based on the nursing task list developed in the first phase, the nursing tasks that induced high physical and mental stress were examined by department (integrated nursing

Table 5
Nursing tasks inducing high levels of mental stress according to departments in advanced general hospital and general hospital.

Advanced General Hospital (n = 359)					
Rank	Integrated nursing care service ward (n = 42)	Internal medicine ward (n = 118)	Surgical ward (n = 81)	Emergency room (n = 30)	Intensive care unit (n = 88)
1	Explanation of patients' condition upon request from the patients' family members	Explanation of patients' condition upon request from the patients' family members	Explanation of patients' condition upon request from the patients' family members	Counseling and Education	Explanation of patients' condition upon request from the patients' family members
2	Dealing with complaints not associated with patients' condition	Respiratory care	Dealing with complaints not associated with patients' condition	Explanation of patients' condition upon request from the patients' family members	Education excluding patients & patients' family members
3	Counseling and Education	Ward access control of patients' family members	Counseling and Education	Excretion care	Specialized care

General Hospital (n = 416)					
Rank	Integrated nursing care service ward (n = 112)	Internal medicine ward (n = 89)	Surgical ward (n = 75)	Emergency room (n = 56)	Intensive care unit (n = 84)
1	Explanation of patients' condition upon request from the patients' family members	Explanation of patients' condition upon request from the patients' family members	Explanation of patients' condition upon request from the patients' family members	Explanation of patients' condition upon request from the patients' family members	Specialized care
2	Resolving issues other than illness and health	Caregiver access control	Resolving issues other than illness and health	Substitution for physicians: prescription	Explanation of patients' condition upon request from the patients' family members
3	Substitution for physicians: prescription	Resolving issues other than illness and health	Caregiver access control	Resolving issues other than illness and health	Substitution for physicians: prescription

care service ward, internal medicine ward, surgical ward, emergency room, and intensive care unit). Across all five departments in both advanced general and general hospitals, "exercise and position change" induced the highest physical stress. This finding is consistent with Chappel et al. (2017), which revealed nurses engaged in moderate-intensity physical activity when repositioning patients. "Exercise and position change," "excretion care," and "hygiene care" were commonly identified as nursing tasks that induced high levels of physical stress, regardless of the hospital type and department. These are basic nursing tasks performed manually by nurses, and they are more a reflection of the nature of basic nursing tasks that require excessive force, repetitive motions, and uncomfortable postures than the nature of the healthcare institution or department. Given the findings of previous studies that heavy lifting, improper posture, and manual patient handling are the leading causes of musculoskeletal disorders among nurses (Choi, 2020; Soroush et al., 2018), there seems to be a need to educate nurses to identify risk factors that contribute to physical stress in performing basic nursing tasks and to adopt efficient body mechanics in nursing practice to reduce it. Furthermore, musculoskeletal disorders among nurses or cases of working environment improvement should be investigated to understand the current situation and discover ways to reduce physical stress. Considering that longer working hours are associated with significant differences in the symptom severity of musculoskeletal disorders in relation to the whole body, shoulders, and legs/ft of nurses, as reported in a previous study (Park, 2014), improving the working environment, for example, by ensuring suitable working hours and hiring more nursing assistants, may also be a solution.

In both advanced general and general hospitals, "explanation of patients' condition upon request from the patients' family members" was commonly identified as the nursing task that induced the greatest mental stress. Such results were in line with the findings of a previous study that analyzed nurses' job stressors (Shim et al., 2019), identifying relationships with patients or family members as the top stressor. Not only in wards with patients' family members, but also in integrated nursing care service wards or intensive care units without them, a burden seemed to be placed on nurses to explain patients' conditions to their family members frequently via video or phone calls, and nurses were required to be gentle and kind even in a busy work environment (Yom et al., 2016). This resulted in high mental stress. Therefore, hospital-wide efforts, such as designating counseling hours and devising effective education methods, are needed to facilitate communication with patients' family members and reduce the burden on nurses.

In this study, "substitution for physicians: prescription" was identified as a nursing task that induced great mental stress in general hospitals. This finding differed from that of advanced general hospitals. "Substitution for physicians: prescription" was not included in the top three nursing tasks that induced high mental stress in advanced general hospitals, but it was identified as a nursing task that induced high mental stress in the integrated nursing care service wards, emergency rooms, and intensive care units of general hospitals. In light of the findings of a previous study that general hospitals have difficulties associated with nursing tasks due to poor working environment and a healthcare workforce shortage (Kim, 2022), non-nursing tasks seem to be passed on to nurses owing to understaffing. In general hospitals, "resolving issues other than illness and health" induced great mental stress in all departments excluding intensive care units, showing a high response rate when compared with advanced general hospitals. This suggests that general hospital nurses are experiencing mental stress due to extra tasks that do not involve providing direct care to patients or solving health-related problems. As these additional tasks reduce direct care time and do not require the nurse's expertise, they must be clearly distinguished from other tasks to ensure that nurses can focus on nursing tasks.

In the internal medicine wards of advanced general hospitals, "respiratory care" was found to induce high physical and mental stress. This reflects the characteristics of the department and the nature of internal medicine diseases such as cardiovascular and respiratory diseases, which require respiratory-related interventions such as ventilator application, oxygen therapy, and endotracheal suctioning. In addition, the high risk of exposure to secretions and respiratory infections, the need to handle various complex respiratory support devices such as home ventilators and high-flow nasal cannulas, and the need to perform frequent suctions and monitoring depending on the patient's condition may have contributed to the high physical and mental stress levels. Therefore, efforts to reduce workload, such as providing adequate respiratory care training to nurses and reallocating staffing based on patient care needs, are needed as well as further research to identify specific areas of nursing activities and skills that cause stress in "respiratory care" tasks.

"Specialized care" was found to induce high physical and mental stress in the intensive care units of advanced general hospitals and high physical stress in general hospitals. "Specialty care" refers to the work of providing post-mortem care, performing cardiopulmonary resuscitation (CPR), and handling special equipment such as extracorporeal membrane oxygenation (ECMO) and continuous renal replacement therapy (CRRT) machines and ventilators. It may have caused high stress owing to the nature of intensive care units, as they require advanced skills and knowledge in handling special equipment that is directly related to patients' lives and frequently encounter emergencies, such as death or CPR. Most importantly, "specialized care" may have been stressful both physically and mentally for nurses in advanced general hospitals owing to the high patient severity and difficult medical practices. Intensive care unit nurses also experience traumatic events frequently, such as post-mortem care and exposure to high-risk diseases (Kim & Park, 2021), and suffer from high stress due to this work environment. Hence, it should be addressed and managed by nursing managers or hospitals. Furthermore, a variety of follow-up studies need to be conducted to understand the impact of "specialized care" tasks on intensive care unit nurses, not only in terms of the stress of these tasks but also in terms of nurse burnout, fatigue, and post-traumatic stress disorder (PTSD).

The nursing tasks that induced high mental stress among nurses included "explanation of patients' condition upon request from the patients' family members," "resolving issues other than illness and health," and "education and consultation" in the integrated nursing care service wards of advanced general hospitals and "explanation of patients' condition upon request from the patients' family members," "resolving issues other than illness and health," and "substitution for physicians: prescription" in general hospitals. As non-professional tasks that were once performed by patients' family members or caregivers were delegated to nurses in integrated nursing care service wards (Kim et al., 2017), a difference between these and other units was expected in tasks that induced high mental stress, but there was no significant difference. However, given the findings of previous studies that nursing performance (Ahn et al., 2018) and job stress (Kim et al., 2019) are higher in integrated nursing care service wards (Kim et al., 2019), differences may exist in stress levels and characteristics.

As this study examined nursing tasks based on the level of physical and mental stress without quantifying the workload, including the actual frequency of performing specific tasks, it was not possible to conduct an in-depth analysis based on the association with the actual performance of the tasks. However, despite this limitation, this study is significant in that it has presented basic data on the types of nursing tasks that induce stress among nurses, identified the types of nursing tasks that induce high physical and mental stress by hospital type and department based on these nursing tasks, and laid the foundation for seeking practical solutions to ease hospital nurses' stress.

6. Conclusion and suggestions

This descriptive exploratory study investigated the nursing tasks that induced high physical and mental stress among nurses in advanced general and general hospitals by developing a list of nursing tasks through a literature review and expert content validation. Thus, a list of

25 nursing tasks was developed, and nursing tasks that induced high physical and mental stress were identified and compared by department and type (advanced general and general) of hospitals. In both advanced general and general hospitals, "exercise and position change" was a nursing task that induced high physical stress across all departments, and "explanation of patients' condition upon request from the patients' family members" induced great mental stress. These findings indicate that the nursing tasks that induce physical and mental stress among nurses vary by hospital type and department, suggesting the need for tailored strategies to reduce nurses' stress. Moreover, further research will be required to reorganize nursing tasks and improve the work environment to reduce stress among hospital nurses.

CRediT authorship contribution statement

Younhee Kang: Writing – review & editing, Validation, Supervision, Resources, Project administration, Methodology, Investigation, Funding acquisition, Formal analysis, Conceptualization. **Aekyeong Jin:** Writing – original draft, Formal analysis, Data curation.

Declaration of competing interest

No conflict of interest has been declared by the authors.

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Ethical approval

This study was conducted with approval from the institutional review board of the authors' university (IRB: ewha-202106-0022-01).

Protection of the participants

Consent was obtained from the participants after we explained the purpose of the study, assured anonymity and confidentiality, and informed them they could withdraw from participation at any time without penalty. The online survey was exempt from written consent, and it was stated that the data collected would be used for research purposes only.

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