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Emergency nurses' attitudes, perceptions about personal protective equipment and willingness to care for COVID-19 patients: A descriptive, cross-sectional study

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Abstract

Aims: This study investigated emergency nurses' attitudes and perceptions about personal protective equipment and their association with the willingness to care for COVID-19 patients.

Background: Emergency nurses are at increased risk for COVID-19 infection as frontline workers and must wear personal protective equipment while attending suspected and confirmed COVID-19 patients.

Methods: In September 2021, 188 nurses in four emergency departments completed online questionnaires.

Results: Multivariable logistic regression demonstrated that as perceptions of COVID-19 infection risk increased by 1 point, 26% of nurses were willing to care of COVID-19 patients. The willingness to care for COVID-19 patients increased in their attitudes by 1.16 point and perceptions by 1.08 points about PPE.

Conclusions: Perceptions of the risk of infection exposure and confidence in safety of personal protective equipment are associated with nurses' willingness to care for COVID-19 patients.

Implications for Nursing Management: Nurse managers need to assess nurses' needs for safety and provide a supportive climate to mitigate their concerns regarding infection risk and encourage nurses' willingness to care for patients. Nurse managers should provide precise guidelines on correct personal protective equipment use. Repetitive training on personal protective equipment should be provided to encourage nurses' adaptation to its use.

KEYWORDS
COVID-19, emergency nursing, infection control, nurses, personal protective equipment

1 | BACKGROUND

Since the World Health Organization declared coronavirus (COVID-19) a pandemic in December 2019, it has spread rapidly worldwide, and recently, highly contagious variants of the virus have emerged, leading to increases in the number of infections (Hebbani et al., 2022). In South Korea, since Omicron became the dominant variant in January 2022, the daily new case count has continued to rise. As of 21 February 2022, South Korea has recorded more than two million confirmed COVID-19 cases with 7450 deaths (Worldometer, 2022). The pandemic, which has continued for more than 2 years, has presented serious challenges for health care workers, especially nursing working in emergency departments (ED). Emergency nurses have been required to provide care for both

infected and noninfected patients throughout the pandemic, resulting in unprecedented heavy in their workloads (Hyeon & Chae, 2021; Lockett et al., 2021). In addition, the overcrowding of ED patients with various symptoms during the pandemic without the ability to isolate suspected or confirmed cases of COVID-19 puts emergency nurses at increased risk for COVID-19 infection (González-Gil et al., 2021; Lockett et al., 2021; Mulyadi et al., 2022). One study reported that the prevalence of COVID-19 infections among ED nurses was the highest of all medical staff cases (Self et al., 2020). Consequently, the perceived risk of COVID-19 infection might be a key factor influencing emergency nurses' willingness to care for patients during the pandemic (Lockett et al., 2021).

Since emergency nurses are at high risk for COVID-19 infection due to their proximity of undiagnosed COVID-19 cases (González-Gil et al., 2021; Lockett et al., 2021; Mulyadi et al., 2022), they must wear personal protective equipment, including N95 face masks, gowns, gloves, protective eyewear (goggles) and, at times, powered air-purifying respirators while having contact with both suspected and confirmed COVID-19 patients. Accordingly, the average daily length of time that emergency nurses wear personal protective equipment is longer than other frontline nurses (Ong et al., 2020). However, donning personal protective equipment for a long period can be cumbersome and uncomfortable and result in headaches, overheating, trouble with verbal communication, impaired visibility and back pain related to powered air-purifying respirators use (Loibner et al., 2019; Ong et al., 2020). Although research has established the association between inadequate personal protective equipment use and increased risk of COVID-19 infection (Nguyen et al., 2020), perceived discomfort from personal protective equipment may discourage health care workers' willingness to work during the COVID-19 pandemic (Min et al., 2021).

In South Korea, the COVID-19 outbreak began in January 2020, earlier than in the United States and Europe (Min et al., 2021). During the early stages of the COVID-19 pandemic, the Korean government issued personal protective equipment guidelines for health care workers based on their guidelines established during the 2015 Middle East Respiratory Syndrome (MERS) coronavirus outbreak. However, inconsistencies between the guidelines were noted, with experts suggesting revisions. Accordingly, the personal protective equipment recommendations have been repeatedly updated and modified, creating confusion among frontline health care workers regarding which personal protective equipment should be used in each context (Park, 2020). Similarly, MacIntyre and Chughtai (2020) have pointed out that personal protective equipment guidelines have changed over time and across different hospitals and countries during the pandemic. For emergency nurses working on the frontline who must engage in preventative measures to protect against potential sources of COVID-19 infection, adequate personal protective equipment use and precise instruction are crucial for the safety management of COVID-19 patients (González-Gil et al., 2021; Lockett et al., 2021). Investigating emergency nurses' attitudes and perceptions about personal protective equipment could provide insight into methods of supporting their continued care during the pandemic.

Since understanding the factors influencing nurses' willingness to care for COVID-19 patients is critical for maintaining a sufficient workforce enable to cope during the pandemic, international research has examined the willingness of frontline nurses for COVID-19 patients and associated factors (Heo et al., 2021; Lord et al., 2021; Nashwan et al., 2021; Sharif Nia et al., 2021; Wu et al., 2020). However, these studies focused on all nurses within a hospital or intensive care nurses, and evidence is lacking regarding factors influencing emergency nurses' willingness to care for patients, who are frontline medical workers during the pandemic. Emergency nurses' personal protective equipment usage is critical for reducing the risk of COVID-19 infection and providing safe patient care (González-Gil et al., 2021; Lockett et al., 2021). This study aimed to investigate emergency nurses' attitudes and perceptions about personal protective equipment and its association with the willingness to care for COVID-19 patients, including their perceived risk of COVID-19 infection.

2 | METHODS

2.1 | Design

This study used a descriptive cross-sectional research design.

2.2 | Participants

Participants were nurses working in emergency departments from four hospitals selected through convenience sampling. The inclusion criteria included being a registered nurse working at emergency departments in one of the four hospitals during the COVID-19 pandemic. Nurses who were not involved in actual patient care (e.g., nurse manager) were excluded.

The sample size was determined using G* Power 3.1.9.4 program (Faul et al., 2009). For logistic regression, assuming the odds ratio of 1.6 with a significance level of .05 at a power of .80, the minimum required sample size was 182. The online surveys were distributed to 204 emergency nurses considering the possible drop-out rate. Sixteen questionnaires from respondents who did not meet the study criteria were excluded; therefore, 188 online questionnaires were analysed.

2.3 | Data collection

The researcher selected four hospitals with EDs located in one metropolitan area and three cities in South Korea and visited each nursing department in the selected hospitals to explain the study's purpose, its sample and the online survey. After receiving permission to collect data from the nursing departments and relevant hospital authorities, posters inviting study participation that described the purpose of the study and researcher's social media profiles were posted on the ED

bulletin boards. A hyperlink for the questionnaire was created through NAVER Form® and distributed to recruited participants. The written informed consent form was on the first page of the online questionnaire, and participants could access the questionnaire after agreeing to participate in this study. Each item on the online questionnaire was constructed to require a response to prevent the submission of incomplete responses. The online questionnaire took approximately 5 min to complete. Data were collected in September 2021. After 204 nurses completed the online questionnaire, the survey data were downloaded.

2.4 | Data analysis

Collected data were analysed using SPSS WIN 25.0 (IBM Corp., Armonk, NY, USA). The participants' demographic and work characteristics and their attitudes and perceptions about personal protective equipment were described using frequencies with percentages and means with standard deviations (*SD*). The relationships between participants' characteristics and willingness to care for COVID-19 patients were analysed using independent *t* tests and chi-square tests. Multivariable logistic regression was conducted, adjusting for significant variables in bivariate relationship analysis to examine the associations between attitude and perception about personal protective equipment and willingness to care for COVID-19 patients. The study variable's internal consistency was assessed using Cronbach's alpha. The significance level was .05, and odds ratio and 95% confidence interval (CI) were analysed in logistic regression.

2.5 | Measures

The online questionnaire consisted of a participants' characteristic section and variable sections. The nine questions regarding participants' demographic and work characteristics included age, gender, marital status, experiences as a nurse, position, satisfaction with salary, COVID-19 vaccination status, experience with education regarding COVID-19 and experience caring for a COVID-19 patient. The hospital characteristics included the type of hospital, having a COVID-19 screening clinic, having isolation wards for suspected COVID-19 cases and having isolation wards for confirmed COVID-19 patients. The willingness to care for COVID-19 patients was measured using the question, 'If you are asked to care of the COVID-19 suspect or patient, how would you likely to?' which was rated on a 4-point scale (1 = *very unlikely* to 4 = *very likely*).

2.6 | Perceived risk of COVID-19 infection

The perceived risk of COVID-19 infection was measured using a scale developed by Kim and Choi (2016). This scale was originally developed to measure the perceived risk of Ebola virus infection among emergency nurses; however, in this study, Ebola virus was substituted with COVID-19. An example item was, 'I am afraid of to be infected with COVID-19'. This scale consists of two items on a 4-point Likert scale (1 = *strongly disagree* to 4 = *strongly agree*). The scores are summed, with the total score ranging from 2 to 8. A higher score indicates a higher perceived risk of COVID-19 infection. The reliability of Cronbach's alpha was .71 in the previous study (Kim & Choi, 2016) and .68 in the present study.

2.7 | Attitude toward personal protective equipment

Attitude toward personal protective equipment was measured using the scale developed by Kim and Lee (2016) based on previous research (Daugherty et al., 2009; Hu et al., 2012). This scale was originally developed to measure nurses' attitude toward personal protective equipment to MERS Coronavirus; however, the phrase COVID-19 was substituted for MERS. This scale consists of five items on a 5-point Likert scale (1 = *strongly disagree* to 5 = *strongly agree*). The scores are summed, with the total score ranging from 5 to 25. Higher scores indicate that participants knew how to properly use personal protective equipment and positive attitudes regarding compliance with personal protective equipment use. The reliability of Cronbach's alpha was .78 in the previous study (Kim & Lee, 2016) and .74 in the present study.

2.8 | Perception about personal protective equipment

Perception about personal protective equipment was measured using the scale developed by Kim and Lee (2016) based on previous studies (Daugherty et al., 2009; Hu et al., 2012). This scale was originally developed to measure nurses' perceptions about personal protective equipment during the MERS outbreak; however, it was modified to refer to COVID-19 in the present study. This scale consisted of 10 items on a 5-point Likert scale (1 = *strongly disagree* to 5 = *strongly agree*). The scores are summed, with the total score ranging from 10 to 50. Higher scores indicate that participants believed personal protective equipment would protect against COVID-19 infection and no perceived inconvenience with personal protective equipment use. The reliability of Cronbach's alpha was .60 in the previous study (Kim & Lee, 2016) and .78 in the present study.

2.9 | Ethical considerations

This study was approved by G University's institutional review board (Approval No. 1044396-202107-HR-152-01). Prior to accessing the online questionnaire hyperlink, participants were informed of the purpose of the study, the guarantee of their anonymity, and that no personal data would be collected. Participants were informed that collected data would be analysed for this study and not for any other

purpose. In addition, participants also were informed that they could withdraw their participation in this study at any time if desired. All participants provided their written informed consent through online questionnaire. Below the last question on the online questionnaire, participants were informed that if they left their phone number, an online voucher would be delivered as an appreciation for their participation. The collected phone numbers were discarded immediately after delivering the online voucher.

3 | RESULTS

3.1 | Willingness to care for COVID-19 patients and attitudes and perceptions about personal protective equipment

In total, 5.9% ($n = 11$) responded that emergency nurses were very unlikely to work with COVID-19 patients, and 44.1% ($n = 83$) responded that they were unlikely to work with COVID-19 patients. Conversely, 43.6% ($n = 82$) responded that they were likely to work with COVID-19 patients, and 6.4% ($n = 12$) was responded very likely (Table 1). Willingness to care for COVID-19 patients was classified into two categories, with 50.0% ($n = 94$) having a willingness to care for COVID-19 patients (responses of *likely* and *very likely*) and 50.0% ($n = 94$) not having the willingness to care for COVID-19 patients (responses of *unlikely* and *very unlikely*).

The attitudes toward personal protective equipment had a mean score of 19.96 ($SD = 2.97$) out of 25. The item with the highest score was, 'I would use personal protective equipment whenever necessary during the pandemic'. Meanwhile, the item with the lowest score was 'I have knowledge of each level of personal protective equipment use'.

Perceptions about personal protective equipment had a mean score of 27.16 ($SD = 5.51$) out of 50. The item with the highest score was 'Personal protective equipment use will protect me from COVID-19', followed by 'Personal protective equipment use will protect my family from COVID-19'. Meanwhile, the item with the lowest score was 'Personal protective equipment use makes me stressed', followed by 'Using goggles is inconvenient when caring for patients' (Table 1).

TABLE 1 Willingness to care of COVID-19 patients and attitude, perception about personal protective equipment ($N = 188$)

Items	*M* (*SD*)	*n* (%)
Willingness to care for COVID-19 patients		
Very unlikely		11 (5.9)
Unlikely		83 (44.1)
Likely		82 (43.6)
Very likely		12 (6.4)
Attitudes	19.96 (2.97)	
I would use PPE whenever necessary during the pandemic.	4.31 (0.74)	
I know how to correctly use PPE.	4.16 (0.84)	
I can correctly wear and remove PPE.	4.03 (0.90)	
I would use PPE to keep patients from COVID-19.	3.73 (0.92)	
I have knowledge of each level of PPE use.	3.72 (0.85)	
Perception	27.16 (5.51)	
PPE use will protect me from COVID-19.	4.24 (0.67)	
PPE use will protect my family from COVID-19.	4.11 (0.81)	
PPE is readily available in emergency department.	3.73 (0.91)	
PPE use makes me stressed.[a]	1.69 (0.82)	
PPE use is inconvenient when caring for patients:		
N95 masks[a]	2.64 (1.19)	
Gowns with long sleeves[a]	2.38 (1.07)	
Gloves[a]	2.34 (1.06)	
Shield mask[a]	2.15 (1.07)	
Powered air purifying respirator (PAPR)[a]	2.10 (0.90)	
Goggles[a]	1.77 (0.85)	

Abbreviation: PPE, personal protective equipment.
[a]Reverse-coded.

3.2 | Relationships between demographic characteristics and willingness to care for COVID-19 patients

The participants' mean age was 28.9 years ($SD = 4.06$), and 79.8% were female. The nurses' mean work experience was 5.5 years, and 85.6% were staff nurses. All participants had received a COVID-19 vaccination, and 79.3% received education regarding COVID-19. Most participants had provided care to patients with COVID-19—62.8% to COVID-19 patients and 34.0% to suspected COVID-19 cases. Of them, 68.1% worked in tertiary hospitals, and 31.9% were in general hospitals. Most (94.7%) participants worked in hospitals with a COVID-19 screening clinic. Further, most worked in hospitals with isolation wards for suspected COVID-19 cases (94.7%) or isolation wards for COVID-19 patients (96.3%). Of the participants' demographic characteristics, gender was significantly related to the participants' willingness to care for COVID-19 patients ($p = .011$; Table 2).

3.3 | Main variables and relationships with willingness to care for COVID-19 patients

The perceived risk for a COVID-19 infection had a mean score of 4.89 ($SD = 1.35$) and was significantly related to the willingness to care for COVID-19 patients ($p = .001$). Attitude toward personal protective equipment ($p = .002$) and perception about personal protective equipment were both significantly related to the willingness to care for COVID-19 patients ($p < .001$; Table 3).

TABLE 2 Participants characteristics and relationships with willingness to care for COVID-19 patients ($N = 188$)

Variables		Total *n* (%) or *M* ± *SD*	Willingness to care for COVID-19 patients			
			Yes (50.0%) *n* (%) or *M* ± *SD*	No (50.0%) *n* (%) or *M* ± *SD*	χ^2 or *t*	*p*
Age (years, range 23–46)		28.9 ± 4.06	29.2 ± 4.24	28.7 ± 3.87	0.77	.441
Gender	Female	150 (79.8)	68 (45.3)	82 (54.7)	6.47	.011
	Male	38 (20.2)	28 (68.4)	12 (31.6)		
Marital status	Single	153 (81.4)	75 (49.0)	78 (51.0)	0.32	.574
	Married	35 (18.6)	19 (54.3)	16 (45.7)		
Work experience as a nurse (years, range 1–24)		5.5 ± 3.94	5.8 ± 4.49	5.2 ± 3.30	0.98	.328
Position	Staff nurse	161 (85.6)	78 (48.4)	83 (51.6)	1.08	.406
	Charge nurse	27 (14.4)	16 (59.3)	11 (40.7)		
Satisfaction with salary	Very unsatisfied	34 (18.1)	11 (32.4)	23 (67.6)	6.61	.133
	Unsatisfied	92 (48.9)	47 (51.1)	45 (48.9)		
	Somewhat	47 (25.0)	27 (57.4)	20 (42.6)		
	Satisfied	14 (7.5)	8 (57.1)	6 (42.9)		
	Very satisfied	1 (0.5)	1 (100.0)	0 (0.0)		
COVID-19 vaccination		188 (100.0)	94 (100.0)	94 (100.0)	-	-
Experience receiving education on COVID-19	Yes	149 (79.3)	72 (48.3)	77 (51.7)	0.81	.368
	No	39 (20.7)	22 (56.4)	17 (43.6)		
Experience caring for a COVID-19 case	Patient	118 (62.8)	60 (50.8)	58 (49.2)	0.95	.653
	Suspected	64 (34.0)	30 (46.9)	34 (53.1)		
	No experience	6 (3.2)	4 (66.7)	2 (33.3)		
Type of hospital	Tertiary	128 (68.1)	63 (49.2)	65 (50.8)	0.10	.876
	General	60 (31.9)	31 (51.7)	29 (48.3)		
COVID-19 screening clinic	Have	178 (94.7)	90 (50.6)	88 (49.4)	0.42	.516
	Not	10 (5.3)	4 (40.0)	6 (60.0)		
Isolation wards for suspected COVID-19 cases	Have	175 (93.1)	91 (52.0)	84 (48.0)	4.05	.081
	Not	13 (6.9)	3 (23.1)	10 (76.9)		
Isolation wards for COVID-19 patients	Have	181 (96.3)	91 (50.3)	90 (49.7)	0.15	1.00
	Not	7 (3.7)	3 (42.9)	4 (57.1)		

Abbreviation: PPE, personal protective equipment.

TABLE 3 Main variables and relationships with willingness to care for COVID-19 patients ($N = 188$)

Variables	*M* (*SD*)	Willingness to care for COVID-19 patients		*t*	*p*
		Yes (50.0%) *M* (*SD*)	No (50.0%) *M* (*SD*)		
Perceived risk of COVID-19 infection (range 2–8)	4.89 (1.35)	4.56 (1.48)	5.22 (1.12)	−3.45	.001
Attitude toward PPE (range 11–25)	19.96 (2.97)	20.63 (3.04)	19.29 (2.75)	−3.17	.002
Perception about PPE (range 14–46)	27.16 (5.51)	28.67 (5.53)	25.65 (5.07)	−3.90	<.001

Abbreviation: PPE, personal protective equipment.

3.4 | Associations of attitudes and perceptions about personal protective equipment with willingness to care for COVID-19 patients

Table 4 shows the results of the multivariable logistic regression analysing the associations of attitudes and perceptions about personal protective equipment with willingness to care for COVID-19 patients after adjusting confounding variables (i.e., gender, perceived risk of COVID-19 infection). The odds of emergency nurses who were women being willing to care for COVID-19 patients were 0.40 of male nurses (95% CI: 0.17, 0.90); thus, female nurses were 60% less likely to be willing to care for COVID-19 patients. In addition, as the

TABLE 4 Association between attitude and perception about personal protective equipment, and willingness to care for COVID-19 patients ($N = 188$)

Variables	B	SE	Wald	OR	95% CI	*p*
Gender (female)	−0.93	0.42	4.84	0.40	0.17, 0.90	.028
Perceived risk of COVID-19 infection	−0.30	0.13	5.43	0.74	0.58, 0.95	.020
Attitude toward PPE	0.15	0.06	6.86	1.16	1.04, 1.30	.009
Perception about PPE	0.08	0.03	5.69	1.08	1.01, 1.15	.017

Note: Model parameters: chi-square = 32.697, $p < .001$, Cox and Snell's $R^2 = 16.0\%$, Nagelkerke's $R^2 = 21.3\%$.
Abbreviations: CI, confidence interval; PPE, personal protective equipment.

perception of COVID-19 infection risk increased by 1 point, nurses' willingness to care for COVID-19 patients were 0.74 times lower (95% CI: 0.58, 0.95). In other words, nurses were 26% less likely to be willing to care for COVID-19 patients when the perception of COVID-19 infection risk increased by 1 point. The willingness to care for COVID-19 patients was 1.16 times higher as the attitude toward personal protective equipment increased by 1 point (95% CI: 1.04, 1.30) and 1.08 times higher as perception about personal protective equipment increased by 1 point (95% CI: 1.01, 1.15).

4 | DISCUSSION

This study found that half of the emergency nurses reported being willing to care for patients with COVID-19, differing from previous studies. A study of nurses in intensive care units found that 61% of nurses were willing to care for COVID-19 patients (Lord et al., 2021), along with 88.1% of a general sample of nurses (Nashwan et al., 2021). Emergency nurses work on the frontline, where they are more likely to encounter patients with suspected or confirmed COVID-19 infections (González-Gil et al., 2021; Lockett et al., 2021; Mulyadi et al., 2022). Most emergency nurses in this study reported working with COVID-19 cases. Emergency nurses are frequently exposed to COVID-19 patients during the pandemic and could be anxious about infection, influencing their willingness to care for COVID-19 patients. While emergency nurses' efforts and contributions during pandemic has been recognized, in South Korea, they have not received special compensation (Jang et al., 2021). To maintain emergency nurses' willingness to care for COVID-19 patients, government and hospitals organisations should make an effort to supply nurses with sufficient prevention measures and provide support systems as an incentive for working in a hazardous environment.

During the pandemic, emergency nurses must work while wearing personal protective equipment as protection from exposure to COVID-19. In this study, emergency nurses had generally positive attitudes toward wearing personal protective equipment and thought they knew how to use it correctly. Meanwhile, knowledge regarding each level of personal protective equipment use and attitude regarding using personal protective equipment to protect patients from COVID-19 were low. These results are consistent with previous research conducted in 2016 during the MERS outbreak in South Korea (Kim & Lee, 2016). Although the pandemic has been ongoing for more than 2 years, most nurses only received a brief training on personal protective equipment in their own specific department (Noh et al., 2021). Emergency nurses also have been primarily trained on personal protective equipment Levels C and D, which have been typically used in South Korean emergency departments during the pandemic (Korea Disease Control and Prevention Agency, 2021) and involved wearing four-item sets of a long-sleeved gown, gloves, a face shield or goggles and N95 mask or powered air-purifying respirators. Comprehensive training for emergency nurses on all personal protective equipment levels needs to be a part of continuing education to protect both nurses and patients.

Regarding perceptions about personal protective equipment, emergency nurses positively perceived that personal protective equipment use could protect them from COVID-19 infection, and personal protective equipment was readily available in ED. Meanwhile, they experienced stress and discomfort regarding personal protective equipment use. Among the personal protective equipment, nurses perceived goggles as creating the most discomfort. In a previous study (Min et al., 2021), more than half of frontline nurses reported discomfort from wearing goggles and did not help prevent COVID-19 infection. Goggles created discomfort when working with patients due to obscured vision from its fogging, which was stressful for nurses (Kim & Lee, 2016). PPE guidelines should be up-to-date and reflect feedback from emergency nurses to reduce personal protective equipment discomfort and enhance compliance.

The female nurses were less likely to care for COVID-19 patients, consistent with a previous study conducted with Korean nurses (Heo et al., 2021). Other studies did not identify any association between gender and frontline nurses' willingness to provide care during the COVID-19 pandemic (Luo et al., 2021; Wu et al., 2020). Although nurses have traditionally been predominantly women, gender should be included as a confounding variable in future research on nurses' willingness to care for patients with emerging infections.

As shown in a previous study (Luo et al., 2021), emergency nurses' perceived risk of COVID-19 infection was associated with their willingness to care for COVID-19 patients. The emergency

nurses may perceive the risks from newly emerging infectious disease and the consequences of infection, which could be a barrier for suspected or infected patients care. In other studies (González-Gil et al., 2021; Lockett et al., 2021; Sperling, 2021), most frontline nurses have reported fear related to caring for patients with COVID-19, and they also believed they were inadequately protected. Nurses have been reported to have higher COVID-19 infection risks than other health care workers (Jang et al., 2021; Self et al., 2020). Therefore, nurses' managers need to genuinely understand nurses' safety concerns about possible COVID-19 infections and monitor their safety requirements. Along with assessing nurses' need for safety, they need to be provided with a supportive and protective climate so their feelings regarding infection risks can be mitigated, potentially contributing to nurses' willingness to care for COVID-19 patients.

Emergency nurses work on the frontline caring for patients and depend on personal protective equipment to prevent COVID-19 infection. We found that the emergency nurses' attitudes and perceptions on personal protective equipment were associated with the willingness to care for COVID-19 patients. The results indicated that the more nurses know about using personal protective equipment, the more they believe in its usefulness as infection control, and the less they perceive discomfort related to wearing personal protective equipment, the higher their willingness to care for COVID-19 patients in EDs. Therefore, hospitals need to supply adequate personal protective equipment at the request of emergency nurses and provide precise guidelines according to the type of personal protective equipment. Furthermore, it is necessary to provide sufficient, recurring training on personal protective equipment use adapted to nurses even amidst the pandemic.

4.1 | Limitations and recommendations

There were several limitations in this study. First, other factors that were not examined might be related to the nurses' willingness to care for COVID-19 patients; however, this study could not include all possible confounding variables influencing the study results. Second, the participants were from four EDs in South Korea, meaning that the results are unlikely to generalize to all emergency nurses' perceptions and attitudes. Finally, a validated scale measuring the nurses' willingness to care for patients was not available; thus, a single item was used to assess this construct, which was divided into a dichotomous response. A standardized scale that measures nurses' willingness to care for patients with emerging infectious diseases should be developed in future research.

5 | CONCLUSIONS

Among the nurses working during the COVID-19 pandemic, emergency nurses are working at the very front of the frontline medical workers. This study examined the associations between attitude and perception about personal protective equipment and the willingness to care for COVID-19 patients after adjusting for confounding variables among a sample of emergency nurses. The results highlight emergency nurses' willingness to care for COVID-19 patients amidst the pandemic and its associations with attitudes and perceptions about personal protective equipment. The perceptions of the risk for exposure to COVID-19 and emergency nurses' confidence in the safety of personal protective equipment was found to be important factors associated with nurses' willingness to care for COVID-19 patients amid the ongoing COVID-19 pandemic.

6 | IMPLICATIONS FOR NURSING MANAGEMENT

During the COVID-19 pandemic, hospital organisations and nurse managers must make an effort to maintain the emergency nurse workforce as they work on the frontline against COVID-19. This study indicated that efforts to ensure emergency nurses' safety from COVID-19 infections are necessary to alleviate their perception of the risk of COVID-19 infection. Hospitals should frequently monitor and respond to emergency nurses' safety concerns and prioritize creating a visible safety environment to minimize infection risks. Nurse managers should assess nurses' needs for safety and provide a climate designed to mitigate their concerns about infection risks, which could contribute to supporting nurses' willingness to care for COVID-19 patients. Furthermore, nurse managers need to assess nurses' attitudes and perceptions about personal protective equipment and provide precise guidelines and instructions for using and selecting personal protective equipment. In addition, nurse managers should ensure that their hospitals provide updated and adequate personal protective equipment to nurses upon request. Ongoing training programs on personal protective equipment use should be adapted and provided to nurses, particularly those assigned to work with patients during the pandemic.

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CONFLICT OF INTEREST

The author reports no conflicts of interest relevant to this article.

ETHICS STATEMENT

This study was approved by Gachon University's institutional review board (Approval No. 1044396-202107-HR-152-01).

DATA AVAILABILITY STATEMENT

Authors do not wish to share the data.

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