

SPECIAL ISSUE ARTICLE

Factors influencing nurses' intent to provide care involved in coronavirus disease 2019: Theory of planned behaviour perspectives

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Abstract

Aims and objectives: To identify the factors influencing the intent to provide care among nurses involved in coronavirus disease 2019 (COVID-19) care.

Background: COVID-19 was first reported in Wuhan, China, in 2019. In 2020, the World Health Organisation declared it a pandemic, leading to 5,827,104 deaths and 421,203,495 confirmed cases as of 19 February 2022. The high transmissibility of COVID-19 has prolonged the pandemic for over 2 years, resulting in deleterious effects on nurses' physical and mental health. The fear of infection and isolation may lead to negative experiences and perceptions among COVID-19 frontline nurses, which may ultimately degrade the quality of patient care. Thus, it is essential to identify factors influencing of nurses' intent to provide care.

Design: Cross-sectional study.

Methods: Data were collected from 169 nurses involved in direct COVID-19 care at a hospital designated for infectious disease care in Korea from August to September 2021 using an online questionnaire. STROBE checklist was followed.

Results: Nurses' intent to provide care significantly differed based on whether they lived with parents and had adequate availability of personal protection equipment. The correlation analysis indicated that the intent to provide care was significantly positively correlated with normative beliefs, control beliefs, attitude towards the behaviour, subjective norms and perceived behavioural control. Perceived behavioural control, control beliefs and attitude towards the behaviour were significant factors influencing nurses' intent to provide COVID-19 care.

Conclusion: This study showed that nurses perceived behavioural control and positive behaviour towards providing COVID-19 care fundamentally influenced their intent to provide care.

Relevance to clinical practice: In clinical practice, the safety and rights of individual nurses who participated in COVID-19-related patient care are promoted, and ultimately, the quality of patient care is improved. Furthermore, active support at the organisation and government level is needed to strengthen the capabilities necessary for nursing patients with infectious diseases.

KEYWORDS

COVID-19, intent to provide care, nurses, theory of planned behaviour

1 | INTRODUCTION

Coronavirus disease-2019 (COVID-19) was first reported in Wuhan, Hubei Province, China, in 2019. In 2020, the World Health Organisation (WHO, 2020) declared it a pandemic, affecting 223 countries worldwide and leading to 5,827,104 deaths and 421,203,495 confirmed cases as of 19 February 2022 (Johns Hopkins University, 2022). During the same period, there have been 7354 deaths and 1,858,009 confirmed cases in South Korea, with a weekly incidence of 80,544 cases; 155.98 per 100,000 population (JHU, 2022; Korea Disease Control and Prevention Agency, 2022). Although the Korean government initiated COVID-19 vaccinations from 26 February, 2021, the advent of variants and diminished compliance with social distancing and anti-infection measures provoked the fourth wave of COVID-19 on 7 July 2021. It resulted in record-high daily confirmed cases of 1168 and a weekly average of 7697 cases (Korea Disease Control and Prevention Agency, 2021). Hospitals designated for COVID-19 care in Korea treat symptomatic patients. As of 5 January, 2022, 75 hospitals have been designated for infectious disease care (Ministry of Health and Welfare, 2022). Nurses assigned to COVID-19 care primarily provide symptomatic treatment for COVID-19. They administer antipyretic medications, fluid therapy, cough suppressants, oxygen upon the onset of dyspnoea and perform mechanical ventilation or extracorporeal membrane oxygenation (ECMO) as necessary (Korea Disease Control and Prevention Agency, 2022).

In response to the surge of COVID-19 cases in Korea, a growing number of nurses work in screening clinics that test suspected patients and designated hospitals that provide care to COVID-19 patients (Ministry of Health and Welfare, 2021). However, in performing their legal and ethical responsibilities to provide healthcare, their right to a safe environment is being violated (Hwang & Kim, 2019). The pandemic has triggered a high level of anxiety among frontline nurses due to the risk of COVID-19 infection to themselves and their families (Li et al., 2021; Ohue et al., 2021). Further, nurses have reported negative emotions due to intense work, including the use of personal protection equipment (PPE) and posttraumatic stress disorder (PTSD; Ohue et al., 2021). Nurses have also experienced discomfort, depressive symptoms, stress and sleep disorders owing to isolation due to the prolonged social distancing policies (Cai et al., 2020). Sperling (2021) showed that 40.9% of nurses are afraid to provide care to COVID-19 patients, and anxiety caused by COVID-19 treatment increases psychological pain and turnover intention among nurses (Labrague & De los Santos, 2020). The prolonged COVID-19 pandemic continues to threaten nurses' physical and mental health.

2 | BACKGROUND

Intent to provide care refers to nurses' willingness to provide care for a patient (Kim et al., 2006). The rate of intent to provide care for emerging infectious diseases (EIDs), including severe

What does this paper contribute to the wider global clinical community?

- This study proposes a plan to improve the quality of nursing services while protecting the individual rights of nurses whose physical and mental health is threatened by the long-term COVID-19 pandemic.
- It emphasises the need for continuous nursing education and sufficient supply of protective equipment to reduce fear and anxiety regarding the spread of infection among nurses who were involved in COVID-19 patient care in the field.
- Through this study, recommendations can be made for increasing the ability to care for patients with infectious diseases in the field of nursing practice education that are necessary to cope with the ongoing COVID-19 pandemic as well as future infectious disease crises.

acute respiratory syndrome (SARS; Kim et al., 2006), novel influenza A (H1N1, H5N1) and Middle Eastern respiratory syndrome (MERS), ranged from 55.1% to 73.4% (Chung et al., 2015; Lee & Kang, 2020). COVID-19 is transmitted through respiratory infections; the fatality rate varies widely from 0.1% to 25% worldwide, depending on factors such as the region, age and structure of the population and state of infection (Korea Disease Control and Prevention Agency, 2022). The COVID-19 pandemic has repeatedly been undergoing a cycle of improvement and aggravation, with several new variants emerging within the last 2 years (Korea Disease Control and Prevention Agency, 2022). Further, the high transmissibility of COVID-19 has prolonged the pandemic for more than 2 years, resulting in deleterious effects on nurses. Thus, nurses' intent to provide care for COVID-19 patients may differ from their intent to provide care for patients with other EIDs, such as SARS, novel influenza A (H1N1, H5N1) and MERS. The fear of infection and isolation may lead to negative experiences and perceptions among COVID-19 frontline nurses. This may curtail their willingness to be involved in patient care, which can ultimately degrade the quality of patient care (Nia et al., 2021). With this perspective, it is essential to identify factors influencing nurses' intent to provide care.

The theory of planned behaviour (TPB), widely used in research across multiple disciplines, including nursing, posits that individuals' behaviours are altered by their own will or rational judgement. According to this theory, human 'behaviour' is determined by their 'intention' to engage in that behaviour, and that such 'intention' is the factor influenced by the following direct factors, including attitude towards the behaviour, subjective norms and perceived behavioural control. These direct factors are determined by the following indirect factors: behavioural belief, normative belief and control belief (Ajzen, 2005). Most studies use the TPB to identify the factors influencing behaviour. It has mainly been helpful as

a theoretical framework for factors influencing nurses' intent to provide care for patients with SARS (Kim et al., 2006), novel influenza A (H1N1, H5N1; Chung et al., 2015), EIDs (Lee & Kang, 2020) and COVID-19 (Aljohani et al., 2021; Cheng et al., 2021; Kyung & Shin, 2021; Park & Park, 2021). Most existing studies on nurses' intent to provide COVID-19 care have been limited to specific regions (Aljohani et al., 2021; Cheng et al., 2021; Kyung & Shin, 2021; Park & Park, 2021) or included nurses not directly involved in COVID-19 care (Cheng et al., 2021; Kyung & Shin, 2021; Park & Park, 2021). Thus, these findings have limited generalisability. While COVID-19 has had a global impact, its rate of transmission and patients' severity varied widely across regions. Patients are directed to hospitals in large cities, which contributes to regional gaps. In other words, if nurses' intent to provide care is investigated in a single region, the interpretation of those findings would be influenced by the incidence of COVID-19 and patients' severity in that region. Moreover, in contrast to prior studies, data are collected from nurses who have been involved in direct patient care in this study; thus, experience-based realistic data can be acquired.

This study bridges this research gap and investigates the factors influencing intent to provide care among nurses directly involved in COVID-19 care across 59 hospitals designated for infectious disease care throughout Korea. Ultimately, this study aims to present valuable data for developing measures to enhance nurses' intent to provide COVID-19 care in the preparation of the imminent COVID-19 era.

2.1 | Aims

This study aims to identify the factors influencing the intent to provide care among nurses involved in COVID-19 care. The specific objectives are as follows:

1. To examine participants' general and work-related characteristics
2. To examine participants' intent to provide COVID-19 care
3. To examine the differences in intent to provide COVID-19 care according to general and work-related characteristics
4. To examine the correlations among variables related to intent to provide COVID-19 care
5. To identify the factors influencing the intent to provide COVID-19 care

3 | METHODS

3.1 | Design

This is a cross-sectional study aiming to identify factors influencing intent to provide care among nurses directly involved in COVID-19 care in hospitals designated for infectious disease care in Korea. STROBE checklist for cross-sectional studies was followed (File S1).

3.2 | Participants

The participants of this study are nurses who have directly cared for COVID-19 patients at 59 hospitals dedicated to infectious diseases in Korea. The criteria for selecting participants are nurses who have experience in nursing COVID-19 patients in person, understand the purpose and contents of this study, and agree to participate voluntarily. The exclusion criteria are nurses who have not directly participated in the nursing of COVID-19 patients and refused to participate in this study.

The sample size was determined using the G*Power 3.1.9.4 program by Lee and Kang (2020). For multiple regression analysis with a medium effect size (f^2) of 0.15, significance (α) of 0.05, power ($1-\beta$) of 0.90 and nine factors, the minimum sample size was calculated to be 141. On considering a 20% potential withdrawal rate, 169 nurses were targeted; all 169 persons participated without any exclusion.

3.3 | Data collection

Data were collected using an online survey from August 5–30 September, 2021. First, an official request for study participation was sent to 59 hospitals designated for infectious disease care across Korea. The directors of the nursing department and infectious disease personnel at each organisation were contacted directly. The participants were working at university hospitals (four), state hospitals (10) and training hospitals (two). A total of 16 hospitals (3 in Seoul, 2 in Incheon, 2 in Gangwon, 2 in Jeonbuk, 1 in Jeonnam, 1 in Ulsan, 2 in Gyeongbuk, 2 in Gyeongnam and 1 in Jeju) granted permission to proceed with the study. With the cooperation from the director of the nursing department and infectious disease personnel of each hospital, we posted a participant recruitment poster on the bulletin board in COVID-19 wards. Additionally, we posted a participant recruitment announcement on nurses' online communities (<http://www.nurscape.net>, <http://www.nursestory.co.kr>). Nurses who provided informed consent to participate in the study were sent the link to the online questionnaire (Moa form). The participants read the information sheet upon accessing the link (<https://www.moaform.com/drafts/Wov2jY/responsive>) and were allowed to proceed with the questionnaire only if they marked a box that indicated their consent. Participants completed the questionnaire in 10–15 min. A mobile application drink coupon was provided as a token of appreciation for those who completed the questionnaire.

3.4 | Ethical considerations

This study was approved by the Institutional Review Board with PNU IRB/2021_104_HR. Participation in the study was entirely voluntary; all participants received an adequate explanation about the purpose and method of the study. The participants were informed that they had the freedom to withdraw from the study at any time without any disadvantages. The collected data were de-identified, coded and

stored in a password-protected file in the author's personal computer, and only the authors were granted access to the data.

3.5 | Data analysis

The collected data were analysed using the SPSS win 25.0 program. Participants' general and work-related characteristics were analysed using frequency with percentage or mean with standard deviation. The intent to provide COVID-19 care was analysed using mean and standard deviation. The differences in the intent to provide COVID-19 care according to participants' general and work-related characteristics were analysed using *t*-test and ANOVA, followed by Scheffe's test for post-hoc comparison. In addition, the correlations among variables related to intent to provide COVID-19 care were analysed using Pearson's correlation coefficients. Finally, the factors influencing the intent to provide COVID-19 care were analysed using hierarchical analysis.

3.6 | Validity and reliability

Permission to use all data collection instruments in this study was obtained from the corresponding developers.

3.6.1 | Participants' general and work-related characteristics

With reference to previous studies (Chung et al., 2015; Lee & Kang, 2020; Zewudie et al., 2021), we collected information about participants' age, sex, education level, cohabiting family, clinical career, job position, work unit, prior infection prevention education, prior involvement in EID care and availability of PPE.

3.6.2 | Intent to provide COVID-19 care

We used the scale developed, modified and adapted for use during an outbreak of EID by Lee and Kang (2020). It is based on the TPB after partially modifying the scale to be used in the context of COVID-19. This instrument comprises 46 items across seven domains: intent to provide care, behavioural belief, normative belief, control belief, attitude towards the behaviour, subjective norms and perceived behavioural control. Each item is rated on a seven-point Likert scale ranging from 1 (strongly disagree) to 7 (strongly agree).

Behavioural belief

The behavioural belief was assessed using 18 items, including 10 items for positive behavioural belief and 8 items for negative behavioural belief. Higher scores indicate more positive beliefs. The Cronbach's α was 0.80 in the study by Lee and Kang (2020) and 0.73 in the current study.

Normative belief

The normative belief is the expectation of others about nursing patients with infectious diseases and consists of a total of eight questions. In this study, it consists of four questions about family and friends' expectations and four questions about public expectations. The higher the average score, the higher the expectation of others who want the subject to participate in the patient care.

The Cronbach's α was 0.77 in the study by Lee and Kang (2020) and 0.88 in this study.

Control belief

Control belief was assessed using ten items, including two items for positive control belief and eight for negative control belief. Higher scores indicate a stronger positive belief that there are no difficulties in engaging in nursing practice. The Cronbach's α was 0.83 in the study by Lee and Kang (2020) and 0.79 in this study.

Attitude towards patient care

Attitude towards patient care was assessed using three items, rated on a semantic differential scale comprising four pairs of adjectives. Higher scores indicate more positive attitudes towards patient care. The Cronbach's α was 0.72 in the study by Lee and Kang (2020) and 0.86 in the current study.

Subjective norms

Subjective norms were assessed using two items. Higher scores indicate more significant social pressure for patient care. The Cronbach's α was not calculated for this domain due to the small number of items in the previous study (Lee & Kang, 2020) and the current study.

Perceived behavioural control

Perceived behavioural control was assessed using two items. Higher scores indicate greater confidence during nursing practice and the perception that one can perform the necessary nursing care without many difficulties. The Cronbach's α was not calculated for this domain due to the small number of items in the previous study (Lee & Kang, 2020) and the current study.

Intent to provide care

Intent to provide care was assessed using three items. Higher scores indicate greater intent to provide care. The Cronbach's α was 0.88 in the study by Lee and Kang (2020) and 0.91 in the current study.

4 | RESULTS

4.1 | Participants' general and work-related characteristics

Table 1 shows participants' general and work-related characteristics. Of 169 participants, 90 (53.3%) were aged 20–29 years. There were more women ($n = 155$, 91.7%) than men ($n = 14$, 8.3%). The

TABLE 1 General and work-related characteristics of nurses providing COVID-19 care (*N* = 169)

Characteristics	Categories	<i>n</i>	%
Age (years)	20–29	90	53.3
	30–39	52	30.8
	40–49	22	13.0
	≤ 50	5	3.0
Sex	Female	155	91.7
	Male	14	8.3
Education level	Associate degree	17	10.1
	Bachelor's degree	136	80.5
	Master's degree or higher	16	9.5
Cohabiting family ^a	Parents	64	37.9
	Spouse	66	39.1
	Children	42	24.9
	None (live alone)	37	21.9
	Siblings	29	17.2
Total clinical career (years)	<1	12	7.1
	1–2	28	16.6
	3–4	32	18.9
	5–9	45	26.6
	≥10	52	30.8
Position	Staff nurse	134	79.3
	Senior staff/charge	16	9.5
	Nurse manager/head nurse	19	11.2
Work unit	Ward	91	53.8
	ICU	29	17.2
	ED	31	18.3
	Other	18	10.7
Prior infection prevention education	Yes	166	98.2
	No	3	1.8
Prior involvement in EID care	Yes	81	47.9
	No	88	52.1
Adequacy of PPE supply	Very adequate	40	23.7
	Adequate	86	50.9
	Poor	43	25.4

^aMultiple responses; COVID-19, Coronavirus disease 2019.

majority had a Bachelor of Science in Nursing (*n* = 136, 80.5%). The most common cohabiting family structure was with spouse (*n* = 66, 39.1%), followed by parents (*n* = 64, 37.9%), children (*n* = 42, 24.9%) and none (*n* = 37, 21.9%).

Regarding work-related characteristics, 52 (30.8%) had at least 10 years of work experience and 134 (79.3%) were staff nurses. The most common work unit was the general ward (*n* = 91, 53.8%), followed by the emergency department (*n* = 31, 18.3%) and the intensive care unit (*n* = 29, 17.2%). A total of 166 (98.2%) participants had primary infection prevention education, and more participants had not been involved in EID care in the past compared with those

who had (52.1% vs. 47.9%). In addition, 86 (50.9%) stated that PPE supply was adequate, and 40 (23.7%) stated that PPE supply was significantly adequate.

4.2 | Intent to provide COVID-19 care

Table 2 shows the mean score for intent to provide COVID-19 care (4.71 ± 1.34 on a scale of 1–7). The scores for indirect factors (score out of 7) were 4.76 ± 0.59 for behavioural belief, 4.36 ± 1.02 for normative belief and 3.20 ± 0.78 for control belief. The scores for direct

factors (score out of 7) were 5.04 ± 1.29 for attitude towards the behaviour, 4.93 ± 0.93 for subjective norm, and 4.77 ± 1.17 for perceived behavioural control.

4.3 | Differences in the intent to provide COVID-19 care according to participants' general and work-related characteristics

Table 3 shows the differences in the intent to provide COVID-19 care according to participants' general and work-related characteristics. The intent to provide COVID-19 care significantly differed according to 'living with parents' ($t = 2.657, p < .009$) and 'adequacy of PPE supply' ($F = 11.835, p < .001$). In other words, the intent to provide COVID-19 care was low among those who lived with their parents and high among those who perceived that the PPE supply was adequate.

4.4 | Correlations among variables related to the intent to provide COVID-19 care

Table 4 shows the correlations among variables related to the intent to provide COVID-19 care. The intent to provide COVID-19 care was significantly positively correlated with normative belief ($r = .440, p < .001$), control belief ($r = .544, p < .001$), attitude towards the behaviour ($r = .445, p < .001$), subjective norms ($r = .376, p < .001$) and perceived behavioural control ($r = .760, p < .001$).

4.5 | Factors influencing intent to provide COVID-19 care

To identify factors influencing nurses' intent to provide COVID-19 care, hierarchical multiple regression was performed using variables that significantly differed in the bivariate analysis. In Model 1 of hierarchical multiple regression, 'living with parents' and 'adequacy of PPE supply' (general and work-related characteristics) were included. In Model 2, behavioural belief, normative belief and control belief were added after adjusting for general and work-related characteristics. In Model 3, attitude towards the behaviour, subjective norms and perceived behavioural control were added (Table 5).

The residuals were scattered evenly with reference to 0, confirming the linearity of the regression equation and homoscedasticity. The histogram and P-P plot of the regression standardised residuals showed that the residuals are distributed in a 45° line, confirming the normal distribution of error. The final model had a Durbin-Watson statistic of close to 2, at 1.99, confirming the absence of problems with independence of the error terms and autocorrelation. Further, the correlation coefficients for all variables remained below 0.80. Tolerance and variance inflation factor (VIF) were above 0.1 (0.57–0.94) and below 10 (1.06–1.75), respectively, confirming the lack of multicollinearity among the independent variables.

In Model 1 of hierarchical multiple regression containing general and work-related characteristics, 'living with parents' ($\beta = -0.163, p = .026$) and 'adequacy of PPE supply' (adequate: $\beta = 0.226, p = .011$; very adequate: $\beta = 0.405, p < .001$) were significant influencing factors of intent to provide COVID-19 care ($F = 9.753, p < .001$), thus explaining 13.5% of the intent to provide COVID-19 care. In Model 2, behavioural belief ($\beta = 0.212, p = .001$), normative belief ($\beta = 0.248, p < .001$) and control belief ($\beta = 0.460, p < .001$) were all influencing factors of intent to provide COVID-19 care ($F = 23.697, p < .001$), additionally explaining 31.3% of the intent to provide COVID-19 care. Model 3 contained attitude towards the behaviour, subjective norms and perceived behavioural control, in addition to those added to Models 1 and 2. General and work-related characteristics, behavioural belief and normative belief were not significant, while perceived behavioural control ($\beta = 0.525, p < .001$), control belief ($\beta = 0.241, p < .001$) and attitude towards the behaviour ($\beta = 0.178, p < .001$) were identified as significant influencing factors ($F = 23.697, p < .001$). In the final model, the influencing factors explained 69.6% of intent to provide COVID-19 care, 24.8% higher than that of Model 2 ($F = 43.668, p < .001$).

Nurses' intent to provide COVID-19 care increased with increasing perceived behavioural control, control belief and attitude towards the behaviour.

5 | DISCUSSION

This study investigated the level of intent to provide COVID-19 care and its influencing factors among nurses assigned to COVID-19 care in hospitals designated for infectious disease care. More than 80% of the participants in this study have a bachelor's degree. This is the result of Korean nursing education implementing the 4-year nursing education program in 2012, and the 4-year nursing department in junior colleges from 2011 (KABONE, 2022).

The findings are based on the TPB to devise measures to enhance nurses' intent to provide COVID-19 care. The key findings are discussed below.

In this study, the mean score for intent to provide COVID-19 care was 4.71 out of 7, slightly above average at 67.5% when converted to a 100% scale. In a Chinese study conducted in February 2020, 83.4% of nurses were willing to provide patient care in the Wuhan region (Gan et al., 2020). From November to December of the same year, 94.7% of nurses were willing to provide care for severely ill COVID-19 patients on mechanical ventilation (Cheng et al., 2021). In Korea, a study conducted in September 2020 reported a rate of 55.4% for intent to provide COVID-19 care (Kyung & Shin, 2021). This rate increased over time to 64% in December 2020 (Park & Park, 2021) and 67.5% in August 2021 in the current study, showing increasing intent to provide care over time. This trend can be attributed to the two factors. A previous study (Aljohani et al., 2021) reported that continuous nursing education that focuses on imparting knowledge about and fostering clinical competency for COVID-19 care improves nurses' intent to provide

TABLE 2 Nurses' intent to provide COVID-19 care (N = 169)

Variables	Item M ± SD	Item range	Min	Max
Intent to provide care	4.71 ± 1.34	1-7	1.00	7.00
Behavioural belief	4.76 ± 0.59	1-7	3.17	7.00
Normative belief	4.36 ± 1.02	1-7	1.00	6.63
Control belief	3.20 ± 0.78	1-7	1.40	5.50
Attitude towards the behaviour	5.04 ± 1.29	1-7	1.00	7.00
Subjective norm	4.93 ± 0.93	1-7	1.00	7.00
Perceived behavioural control	4.77 ± 1.17	1-7	1.00	7.00

Abbreviations: COVID-19, coronavirus disease 2019; SD, standard deviation.

care in Saudi Arabia. Considering these results, it can be inferred that nurses' intent to provide care increased owing to the improved COVID-19 care competency through continuous education and training for infectious disease care. In addition, another study (Garrett et al., 2009) reported that vaccinating healthcare providers on priority during an outbreak of infectious disease reduces their fear and thus improves their intent to provide care. South Korea initiated its COVID-19 vaccination campaign with priority vaccination of healthcare providers in February 2021 (Korea Disease Control and Prevention Agency, 2021), which may have contributed to nurses' increased intent to provide care. Thus, future studies should examine whether continuous nursing education and priority vaccination of healthcare providers are fundamental factors that improve nurses' intent to provide care.

In terms of general characteristics, nurses who live with their parents showed a lower intent to provide COVID-19 care. Similarly, Chung et al. (2015) also reported that intent to provide care was lower among nurses who live with their families compared with those who live alone. This may be due to the fear that their own and their family's health may be threatened. Regarding work-related characteristics, nurses who perceived an adequate supply of PPE at work demonstrated a higher intent to provide COVID-19 care. Zewudie et al.'s (2021) study on healthcare providers working in Ethiopia, Africa, indicated that nurses' intent to provide care increased with an adequate supply of PPE. These results suggest that national and organisational measures must prioritise securing an adequate supply of PPE to protect the safety of frontline health professionals battling infectious diseases. Several studies (Li et al., 2021; Ohue et al., 2021) reported that nurses exhibit a high level of fear and anxiety for potential transmission of infection when providing COVID-19 care. Thus, one practical measure to address this fear is to secure an adequate supply of PPE.

In this study, the most significant influencing factors of intent to provide COVID-19 care was perceived behavioural control. Chung et al. (2015) identified perceived behavioural control as the most significant influencing factors of intent to provide care for patients with novel influenza, suggesting that having confidence in one's control over facilitators and barriers of patient care is required to care for patients with infectious diseases. In a study on Korean nurses' intent to provide care for patients with MERS during the outbreak in 2015, Lee and Kang (2020) reported that confidence in patient care is the most crucial factor that actively engages nurses in patient care

during a fearful infectious disease crisis. In the same context, Cheng et al. (2021) reported that perceived behavioural control is the most potent influencing factor of intent to provide COVID-19 care.

In this study, control belief was also an influencing factor of intent to provide care. According to the TPB proposed by Ajzen (2005), control belief influences perceived behavioural control, impacting the intent to provide care. Chung et al. (2015) reported that nurses with prior patient care experience demonstrated a substantial control belief over novel influenza care than those without. Similar findings were observed in the current study, presumably because it was conducted on nurses directly involved in patient care. Therefore, it is necessary to develop a practical training programme in virtual reality to provide continuous education so that prior knowledge and skills in nursing patients with infectious diseases can be acquired.

Attitude towards the behaviour also influenced intent to provide COVID-19 care. The studies that examined nurses' intent to provide care amid outbreaks of EIDs, from SARS in 2003 to COVID-19 in 2019 (Aljohani et al., 2021; Kyung & Shin, 2021; Lee & Kang, 2020), show that intent to provide care increased with a more positive attitude towards the behaviour. Further, study findings show that nurses' attitude towards providing care for infectious diseases is more positive with organisation's reward and compensation system and manager's recognition (Lee & Kang, 2020), and a supportive work environment that provides more opportunities for education and training about the disease and situations and ensures an adequate supply of PPE (Aljohani et al., 2021; Kyung & Shin, 2021; Lee & Kang, 2020). A US study by Garrett et al. (2009) after the SARS outbreak reported that all healthcare providers must be paid bonuses and given additional vacation leaves for their work. This will help increase their willingness to be involved in infectious disease care upon an outbreak. In a study conducted following the avian influenza A (H5N1) outbreak, Damery et al. (2009) suggested that implementing a flexible work schedule and increasing salary can help engage healthcare providers in patient care upon a pandemic.

Therefore, amid the COVID-19 pandemic remaining active beyond 2 years, it is vital to motivate nurses to participate in infectious disease care voluntarily and actively. Looking at medical support measures in the COVID-19 situation in Korea, new or idle nurses are assigned as temporary dispatched personnel but are mainly used for simple tasks due to their lack of nursing ability for infected patients (Hankookilbo, 2021). The wage compensation system was changed to pay an additional \$31.01 per day to full-time nurses at a COVID-19

Characteristics	Categories	M ± SD	F/t	p	
Age (years)	20–29	4.56 ± 1.31	2.563	.057	
	30–39	4.66 ± 1.38			
	40–49	5.30 ± 1.21			
	≤50	5.53 ± 1.19			
Sex	Female	4.73 ± 1.32	0.554	.580	
	Male	4.52 ± 1.53			
Education level	Associate degree	4.55 ± 1.12	0.390	.681	
	Bachelor's degree	4.70 ± 1.30			
	Master's degree or higher	5.02 ± 1.82			
Live with parents	No	4.92 ± 1.21	2.657	.009	
	Yes	4.37 ± 1.47			
Live with spouse	No	4.61 ± 1.40	-1.284	.201	
	Yes	4.88 ± 1.23			
Live with children	No	4.61 ± 1.36	-1.696	.092	
	Yes	5.02 ± 1.24			
Live with siblings	No	4.70 ± 1.33	-0.247	.805	
	Yes	4.77 ± 1.39			
Live alone	No	4.64 ± 1.36	-1.382	.169	
	Yes	4.98 ± 1.23			
Total clinical career (years)	<1	4.61 ± 1.45	0.835	.505	
	1~2	4.33 ± 1.57			
	3~4	4.75 ± 1.12			
	5~9	4.74 ± 1.28			
	≥10	4.90 ± 1.36			
Position	Staff nurse	4.59 ± 1.32	2.793	.064	
	Senior staff/charge	5.10 ± 1.03			
	Nurse manager/head nurse	5.25 ± 1.54			
Work unit	Ward	4.77 ± 1.31	1.908	.130	
	ICU	4.72 ± 1.27			
	ED	4.28 ± 1.49			
	Other	5.19 ± 1.21			
Prior infection prevention education	Yes	4.71 ± 1.35	-0.228	.820	
	No	4.89 ± 1.02			
Prior involvement in EID care	Yes	4.86 ± 1.30	1.365	.174	
	No	4.58 ± 1.37			
Adequacy of PPE supply	Very adequate a	5.39 ± 1.21	11.835	<.001	
	Adequate b	4.73 ± 1.25			c < b < a
	Poor c	4.05 ± 1.31			

TABLE 3 Differences in the intent to provide COVID-19 care according to nurses' (participants) general and work-related characteristics (N = 169)

Abbreviations: COVID-19, Coronavirus disease 2019; ED, Emergency department; EID, Emerging infectious diseases; ICU, Intensive care unit; PPE, Personal protective equipment; SD, Standard deviation.

hospital, \$155.05 per day to temporary dispatched nurses and up to \$310.15 including additional allowances (YTN, 2020). In preparation for upcoming infectious diseases, the government should prepare guidelines for responding to COVID-19 by severity and disease and

provide regular workers instead of dispatching them to public hospitals. In addition, fair allowances should be paid and a system to support ordinary expenses for hospitals dedicated to COVID-19 should be prepared.

TABLE 4 Correlations among variables related to nurses' intent to provide COVID-19 care (N = 169)

Variables	Behavioural belief <i>r</i> (<i>p</i>)	Normative belief <i>r</i> (<i>p</i>)	Control belief <i>r</i> (<i>p</i>)	Attitude towards the behaviour <i>r</i> (<i>p</i>)	Subjective norms <i>r</i> (<i>p</i>)	Perceived behavioural control <i>r</i> (<i>p</i>)
Behavioural belief						
Normative belief	.043 (.575)					
Control belief	-.259 (.001)	.333 (<.001)				
Attitude towards the behaviour	.178 (.021)	.084 (.277)	.297 (<.001)			
Subjective norms	.118 (.128)	.398 (<.001)	.124 (.107)	.268 (<.001)		
Perceived behavioural control	.109 (.158)	.406 (<.001)	.407 (<.001)	.273 (<.001)	.331 (<.001)	
Intent to provide care	.118 (.127)	.440 (<.001)	.544 (<.001)	.445 (<.001)	.376 (<.001)	.760 (<.001)

Abbreviation: COVID-19, Coronavirus disease 2019.

TABLE 5 Factors influencing nurses' intent to provide COVID-19 care (N = 169)

Variables	Model 1			Model 2			Model 3		
	β	<i>t</i>	<i>p</i>	β	<i>t</i>	<i>p</i>	β	<i>t</i>	<i>p</i>
Living with parents									
Yes	-0.163	-2.240	.026	-.118	-2.018	.045	-0.077	-1.758	.081
No (Ref.)									
Adequacy of PPE supply									
Adequate	0.226	2.560	.011	.112	1.565	.120	0.044	0.820	.414
Very adequate	0.405	4.623	<.001	.206	2.802	.006	0.049	0.871	.385
Poor (Ref.)									
Behavioural belief				.212	3.499	.001	0.075	1.593	.113
Normative belief				.248	4.018	<.001	0.092	1.801	.074
Control belief				.460	6.937	<.001	0.241	4.481	<.001
Attitude towards the behaviour							0.178	3.642	<.001
Subjective norms							0.062	1.244	.215
Perceived behavioural control							0.525	9.937	<.001
R^2	.151			.467			.712		
Adj. R^2	.135			.448			.696		
<i>F</i> (<i>p</i>)	9.753 (<.001)			23.697 (<.001)			43.668 (<.001)		
Tolerance	0.66~0.97			0.61~0.97			0.57~0.94		
VIF	1.03~1.51			1.04~1.64			1.06~1.77		
Durbin-Watson							1.990		

Abbreviations: Adj. R^2 , adjusted R^2 ; COVID-19, Coronavirus disease 2019; Ref, Reference; VIF, variance inflation factor.

Specific measures should be developed to physically and mentally rejuvenate nurses exhausted from the prolonged COVID-19 pandemic for more than 2 years. Based on our findings, we recommend developing and implementing intervention programmes that help nurses assigned to COVID-19 care overcome their fear and anxiety, develop confidence and actively get involved in patient care.

To the best of our knowledge, this is the first study to examine the level of intent to provide COVID-19 care and its influencing

factors among nurses from hospitals designated for infectious disease care in Korea amid the prolonged COVID-19 pandemic.

5.1 | Limitations

This study has certain limitations. Since this study used an online questionnaire, the participation rate of young nurses with greater personal computer use and mobile accessibility may be high. In

addition, there are limitations in identifying factors not included in the questionnaire's items that may be affecting nursing intentions. Moreover, this study was cross-sectional and used an online survey; future studies should use in-depth interviews with nurses to examine the influencing factors of intent to provide care. Further studies may apply longitudinal designs and investigate how nurses' intent to provide care changes over time and whether the influencing factors change over time. To increase the generalisation of research results, we recommend a longitudinal design over adopting a cross-sectional design in the future to accurately assess the impact of time on the influencing factors of the intent to provide care.

6 | CONCLUSION

This study examined the level of intent to provide COVID-19 care and identified its influencing factors among nurses at hospitals designated for infectious disease care in Korea. Nurses' score for intent to provide COVID-19 care was slightly above average. Perceived behavioural control, control belief and attitude towards the behaviour were identified as significant influencing factors of intent to provide COVID-19 care. Increasing nurses' intent to provide COVID-19 care would require strengthening their perceived behavioural control by resolving negative control beliefs and fostering positive attitudes towards patient care. These findings highlight the need to multilaterally explore measures to bolster perceived behavioural control and cultivate positive attitudes towards patient care among nurses.

7 | RELEVANCE TO CLINICAL PRACTICE

The high transmissibility of COVID-19 has prolonged the pandemic for more than 2 years, resulting in deleterious effects on nurses. It curtails their willingness to be involved in patient care and can ultimately degrade the quality of patient care. To prevent it, ensuring the safety and rights of nurses who practice patient-centred nursing in person is main factor to be managed first of all in clinical practice. Therefore, this study identified factors influencing the intent to provide COVID-19 care among nurses at hospitals designated for infectious disease care in Korea. This study results continuous nursing education and a sufficient supply of protective equipment will help for nurses can care for patients with infectious diseases with confidence. Also, the COVID-19 pandemic remaining active beyond 2 years, it is vital to motivate nurses to participate in infectious disease care voluntarily and actively. In other words, it suggested that implementing a flexible work schedule and given additional vacation leaves for their work and increasing salary. This will be a great help increase their willingness to be involved in infectious disease care upon a pandemic.

ACKNOWLEDGEMENTS

Despite being busy with infectious diseases crisis that has lasted for more than two years, we would like to extend our sincere appreciation to the directors of the nursing department and infectious

disease personnel at the hospitals dedicated to infectious diseases in Korea who granted the required permission to conduct the study. We would also like to thank the research subjects for their active cooperation in this study.

FUNDING INFORMATION

None declared.

CONFLICT OF INTEREST

The authors declare no conflict of interest.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available on request from the corresponding author. The data are not publicly available due to privacy or ethical restrictions.

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SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.

How to cite this article: Hwang, A., & Kim, D. (2022). Factors influencing nurses' intent to provide care involved in coronavirus disease 2019: Theory of planned behaviour perspectives. *Journal of Clinical Nursing*, 00, 1–11. <https://doi.org/10.1111/jocn.16468>