


ORIGINAL ARTICLE

Using the theory of planned behaviour to explain junior nurses' and final-year student nurses' intention to care for COVID-19 patients in China: A multisite cross-sectional study

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Abstract

Aim: To explore junior nurses' and final-year student nurses' intention to care for COVID-19 patients amidst the Delta COVID-19 variant outbreak in China using the theory of planned behaviour (TPB) as a framework.

Background: The COVID-19 pandemic has intensified global nursing shortage. Junior nurses and final-year student nurses represent the backbone of the future frontline nursing workforce. The TPB is a valid theoretical model for predicting nurses' caring behaviours.

Methods: A 47-item self-administered questionnaire was disseminated online to a convenience sample of 547 junior nurses and final-year student nurses located in 13 regions across mainland China.

Results: Approximately 63.4% of the participants intended to care for COVID-19 patients voluntarily and 65.6% by non-voluntary assignment. The TPB model significantly predicted 45% of the variance in behavioural intention, subjective norms being the strongest predictor. Gender, vaccination status and ethical perceptions regarding frontline work significantly correlated with the intention to provide care.

Conclusions: Our findings highlight the importance of social, organisational and family support underpinning future junior nurses' professional commitment in times of public health crisis.

Implications for nursing management: Pandemic-tailored workplace training programmes for nurses/student nurses that emphasize on self-care and ethical issue discussions are warranted. Hospital managers should collaborate with community partners to offer additional family support for nurses in need.

KEYWORDS

China, COVID-19, intention, nurses, patient care

1 | BACKGROUND

The coronavirus (COVID-19) pandemic has placed an enormous strain on the health care systems worldwide. Nurses as the backbone of health care faced unprecedented challenges working in the resource-constrained environment of most COVID-19 frontline settings (Hu et al., 2020). Understanding factors that influence nurses' willingness to engage in frontline patient care is an important step in preparing the workforce for future waves of COVID-19. Junior nurses and final-year student nurses represent the core of the future frontline nursing workforce. Applying the theory of planned behaviour (TPB) model, this study is the first to reveal factors influencing junior nurses and senior student nurses' intention to care for COVID-19 patients across multiple sites of mainland China.

The COVID-19 disease is caused by the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) and is primarily transmitted by exposure to infectious respiratory fluids (Hu et al., 2021). The virus was first detected from an outbreak in Wuhan, China, in December 2019, which soon progressed into a pandemic (Hu et al., 2021). As of January 2022, nearly 289 million cases of infection had been confirmed globally with over 5.4 million deaths (World Health Organization, 2022a). In mainland China, despite a case surge in the initial months of the outbreak, the COVID-19 spread has been relatively well-contained compared to countries with similar population densities, owing to rigorous nationwide countermeasures (Burki, 2020; Zhang et al., 2020). As of January 2022, there have been more than 133,000 confirmed COVID-19 cases with over 5600 deaths reported in China (World Health Organization, 2022b).

The COVID-19 pandemic has intensified nursing shortage in many nations (Rosa et al., 2020). In China, multiple studies reported on the psychological distress and turnover intentions among frontline nurses in direct patient-facing roles (Hou et al., 2021; Hu et al., 2020; Nie et al., 2020). Nurses' willingness to work amidst the COVID-19 crisis has important implications in maintaining workforce stability and ensuring quality of care. This is particularly relevant to junior nurses who are perhaps the youngest and potentially healthiest of the nursing workforce. Final-year nursing students represent nursing workforce of the immediate future, and therefore, their professional commitment is also crucial. In some countries such as England (Godbold et al., 2021) and Spain (Gómez-Ibáñez et al., 2020), final-year nursing students were mobilized to COVID-19 response, assisting with frontline work on a voluntary basis. Although this has not occurred in China, such possibility should not be excluded in the future given the unpredictable pandemic trajectory.

Previous studies have revealed a multitude of personal, social and organisational factors underpinning nurses' and student nurses' intention to care for COVID-19 patients (Jeong & Kim, 2022; Ke et al., 2021; Luo et al., 2021; Sharif Nia et al., 2021; Wu et al., 2020). The identified barriers to providing frontline care included safety concerns, family-work conflict, inadequate organisational support and social stigma (Ke et al., 2021; Luo et al., 2021; Wu et al., 2020). Conversely, a strong professional identity (Cheng et al., 2021), positive psychological capital (Jeong & Kim, 2022) and job satisfaction (Sharif

Nia et al., 2021) served as enablers of nurses' work motivation. Moreover, prior qualitative research demonstrated that nurses' perceptions of ethical challenges in caring for COVID-19 patients adversely affected their willingness to engage in frontline activities (Alloubani et al., 2021; Rezaee et al., 2020).

The conceptual framework utilized in this study is based on Ajzen's TPB. The TPB postulates that the behavioural intention is jointly determined by attitudes towards the behaviour, subjective norms, and perceived behavioural control (PBC) (Ajzen, 2011). Attitudes reflect one's personal belief about potential outcomes of a performed behaviour (outcome expectancy) and desirability of those outcomes (outcome evaluation); subjective norms refer to the perceived social pressure to engage in a behaviour (normative beliefs) and willingness to comply with others' expectations (willingness to comply); The PBC is defined as the perception of the ease or difficulty of enacting a behaviour considering both internal (self-efficacy) and external (facilitating conditions) factors (Ajzen, 2011).

According to Ajzen (2011), the TPB is most appropriate for predicting behaviours that are beyond one's volitional control, as is the case of caring for patients with emerging infectious diseases. Indeed, previous studies have used this model to explain up to 55% of variance in nurses' and student nurses' intention to provide care in the contexts of COVID-19 (Cheng et al., 2021; Minuye et al., 2021; Tran et al., 2021), SARS (Ko et al., 2004), H1N1 (Jeong et al., 2015) and emerging infectious diseases (Lee & Kang, 2020).

Prior TPB-based studies on nurses' and student nurses' intention to care for COVID-19 patients were all conducted during the early stages of the COVID-19 pandemic (Cheng et al., 2021; Minuye et al., 2021; Tran et al., 2021). These research findings may not be transferable to later pandemic stages, particularly outbreaks involving the highly contagious and virulent Delta variant (Twohig et al., 2022). Further, as the pandemic progressed, a relatively improved level of protection for health care workers owing to increased personal protective equipment (PPE) supply and availability of COVID-19 vaccines (Twohig et al., 2022) may affect nurses' and student nurses' willingness to engage in frontline work. Additionally, existing literature on the intention to care for COVID-19 patients were all targeted at the entire nurse or student nurse populations. Limited data were available specifically about junior nurses and final-year student nurses who will soon become the backbone of the future frontline nursing workforce. No study to date has examined this professional community's willingness to work amidst outbreaks caused by the Delta COVID-19 variant, a distinctly more potent strain than earlier ones (Twohig et al., 2022). Understanding the willingness to respond among the youngest members of the workforce may inform strategies to address their needs and strengthen this workforce in preparation for future COVID-19 waves or other emerging infectious diseases. Our findings will also extend the current knowledge about the impact of different COVID-19 epidemic waves on nurses' emergency responsiveness.

In view of the above, the aim of this study was to explore junior nurses' and final-year student nurses' intention to care for COVID-19 patients at the height of the Delta COVID-19 variant outbreak in China using the TPB framework. It is hypothesized that nurses/

student nurses' attitudes, subjective norms, and PBC were directly associated with their intention to care for COVID-19 patients.

2 | METHODS

2.1 | Sample and settings

This study was undertaken at the height of the third wave of COVID-19 in mainland China caused by the Delta variant (Bo et al., 2022). An online survey was conducted in 36 hospitals located in different regions across mainland China, including Shandong, Jiangsu, Guangdong, Henan, Shanxi, Hubei, Hebei, Jilin, Yunnan, Guizhou provinces, and Shanghai, Tianjin, and Beijing cities, between 16 and 25 August 2021. Eligible participants included final-year nursing students enrolled in an accredited post-secondary nursing programme who were undertaking clinical placements at the time of survey and nurses with less than 5 years of clinical experience. Ethical approval for this study was obtained from the Ethics Review Board of Shandong First Medical University, China.

2.2 | Data collection

A survey invitation letter was electronically distributed by hospital managers and clinical educators to a convenience sample of eligible nurses and student nurses working in the hospitals via the WeChat platform. Potential participants were provided with a link or QR code directing them to the pre-programmed online survey developed using the Sojump (<https://www.wjx.cn/>). Instructions as to how to fill in and submit the questionnaire were provided at the beginning of the survey along with an informed consent. To prevent duplicate responses, the survey setting option that allows only one response per respondent was enabled. Participants were informed that participation was voluntary and that the confidentiality of data would be ensured. Of the 1335 questionnaires disseminated, 550 were returned. After removing records with incomplete or missing data, a total of 547 records comprised the dataset (response rate: 41%).

2.3 | Study measures

The questionnaire was developed following Ajzen's (2002) guideline for creating a TPB questionnaire and based on previous studies (Ko et al., 2004; Lee & Kang, 2020; Tran et al., 2021). The content validity of the instrument was assessed by four experts in the fields of nursing management, nursing education and infection control. The item content validity indexes ranged from 0.9 to 1. The instrument was piloted with a sample of 20 nurses and student nurses. The Cronbach's alpha ranged from .77 to .92 (Table 1).

The questionnaire consisted of five sections with a total of 47 items: demographic and occupational characteristics (13 items), behavioural intention (3 items), attitude (10 items), subjective norms (12 items) and PBC (9 items). Table 1 lists the subscale score ranges and sample items. All measures except for demographic and occupational characteristics were rated on a 5-point Likert scale (1 = *strongly disagree*, 5 = *strongly agree*). Demographic and occupational information included age, gender, identity, geographic location, marital status, level of education, work setting, vaccination status, professional and personal experience with COVID-19 patients, nursing ethics education, belief about nurses' right to refuse provision of care to certain patients, and perceptions of ethical challenges in caring for COVID-19 patients (Table 2).

Behaviour intention was assessed by participants' rating of their willingness to care for COVID-19 patients next year on a voluntary basis (one item) or by non-voluntary assignment (two items). The later situation pertains to being assigned to a COVID-19 ward in a local hospital or hospitals located in remote regions. Each participant's intention score was calculated by the sum of the three items. A higher score reflects a stronger intention towards COVID-19 patient care.

Attitude was assessed by participants' rating of the likelihood and significance of certain benefits and drawbacks of caring for COVID-19 patients. The benefits (five items) included receiving financial awards, feelings of professional fulfilment, gaining respect from the community, improving clinical knowledge and skills, and gaining nursing experience related to infectious diseases. The drawbacks (five items) included increased risk of COVID-19 infection, increased risk of spreading COVID-19 to family and community, family-work conflict, heavy workload and disrupted social life. The items associated

TABLE 1 The theory of planned behaviour scales and reliability measures

TPB constructs	Number of items	Score range	Cronbach's alpha	Sample item (1 = <i>strongly disagree</i> , 5 = <i>strongly agree</i>)
Behavioural intention	3	3–15	.87	I am willing to volunteer to care for COVID-19 patients if required next year.
Attitude	10	10–50	.77	I believe caring for COVID-19 patients would allow me to receive financial rewards and this is important to me.
Subjective norms	12	6–150	.87	My family would support my decision to care for COVID-19 patients.
Perceived behavioural control	9	9–45	.92	I am confident in my capability to work with COVID-19 patients even when there is PPE shortage.

Abbreviation: PPE, personal protective equipment.

TABLE 2 Bivariate analyses of demographic variables and the theory of planned behaviour variables ($N = 547$)

Demographic variables	Sample, N (%)	Behavioural intention		Attitude		Subjective norms		Perceived behavioural control	
		M (SD)	t/F ^a	M (SD)	t/F ^a	M (SD)	t/F ^a	M (SD)	t/F ^a
Gender									
Male	91 (16.6)	11.8 (2.6)	1.982*	31.3 (4.4)	-0.113	79.8 (34.4)	2.467*	30.0 (8.3)	3.013*
Female	456 (83.4)	11.3 (2.3)		31.3 (4.4)		70.3 (27.9)		27.3 (7.9)	
Identity									
Final-year student nurses	391 (71.5)	11.3 (2.3)	-0.840	31.4 (4.4)	0.504	71.1 (28.9)	-1.003	27.9 (8.1)	0.557
Junior nurses	156 (28.5)	11.5 (2.5)		31.2 (4.4)		73.9 (30.1)		27.4 (7.7)	
Level of education									
Associate degree	48 (8.8)	11.8 (2.1)	1.341	33.8 (5.5)	8.847**	70.6 (26.5)	1.029	29.3 (6.3)	1.151
Bachelor's degree	441 (80.6)	11.3 (2.4)		31.1 (4.1)		71.3 (29.7)		27.5 (8.1)	
Master's degree or higher	58 (10.6)	11.6 (2.3)		31.4 (4.3)		77.1 (27.6)		28.1 (8.3)	
Marital status									
Unmarried	521 (95.2)	11.3 (2.4)	-0.747	31.4 (4.3)	1.080	71.9 (29.2)	-0.346	27.8 (8.0)	0.376
Married	26 (4.8)	11.7 (2.2)		30.4 (5.6)		73.9 (28.4)		27.2 (7.9)	
Work/clinical placement setting									
ED/ICU	107 (19.6)	11.1 (2.6)	0.686	30.5 (4.1)	3.331*	70.4 (30.2)	0.258	26.9 (8.6)	1.082
Non-acute inpatient	432 (78.9)	11.4 (2.4)		31.5 (4.4)		72.3 (29.2)		27.9 (7.9)	
Outpatient	8 (1.5)	10.9 (2.2)		33.8 (4.6)		67.9 (19.8)		30.5 (5.7)	
Received at least one dose of COVID-19 vaccine									
Yes	533 (97.4)	11.4 (2.4)	2.354*	31.3 (4.4)	-0.217	72.0 (29.0)	0.668	27.8 (8.1)	1.499
No	14 (2.6)	9.9 (3.0)		31.6 (2.2)		66.7 (37.1)		24.6 (5.0)	
Professional experience with COVID-19 patients									
Yes	25 (4.6)	11.5 (3.1)	0.303	31.6 (5.6)	0.373	72.0 (34.1)	0.029	27.6 (6.6)	-0.084
No	522 (95.4)	11.3 (2.4)		31.3 (4.3)		71.9 (29.0)		27.7 (8.1)	
Personal experience with COVID-19 patients									
Yes	6 (1.1)	9.8 (4.0)	-1.550	32.2 (4.0)	0.477	57.7 (28.6)	-1.197	25.2 (8.4)	-0.789
No	541 (98.9)	11.4 (2.4)		31.3 (4.4)		72.0 (29.2)		27.8 (8.0)	
Nursing ethics education									
Yes	514 (94.0)	11.4 (2.4)	1.740	31.4 (4.4)	0.932	72.2 (29.3)	1.080	27.9 (8.1)	1.531
No	33 (6.0)	10.7 (2.9)		30.7 (3.5)		66.6 (27.8)		25.7 (6.7)	
Nurses have a right to refuse care provision to certain patients									
Yes	169 (30.9)	10.9 (2.8)	9.360**	30.2 (3.8)	9.182**	69.6 (29.4)	4.213*	26.7 (8.6)	4.980*
No	217 (39.7)	11.9 (2.1)		32.1 (4.9)		76.3 (31.3)		29.0 (8.0)	
Unsure	161 (29.4)	11.2 (2.2)		31.4 (3.9)		68.3 (25.4)		27.1 (7.1)	
Caring for COVID-19 patients presents an ethical dilemma for me									
Yes	92 (16.8)	10.4 (2.9)	17.793**	29.6 (3.9)	24.568**	64.5 (25.1)	10.81**	24.5 (8.6)	15.605**
No	291 (53.2)	11.9 (2.3)		32.5 (4.7)		77.2 (33.0)		29.4 (8.1)	
Unsure	164 (30.0)	10.9 (2.0)		30.2 (3.3)		66.6 (21.7)		26.6 (6.8)	

^at applies to two-group comparisons, and F applies to three-group comparisons.

** $p \leq .001$.

* $p < 0.05$.

with drawbacks were reversed coded. Each participant's attitude score was determined by the sum of the 10 items. A higher score indicates a more positive attitude towards caring for COVID-19 patients.

Subjective norms were measured by participants' perceived expectations from significant others (family, friends, colleagues, hospital authorities, university authorities and local community) regarding caring for COVID-19 patients (six items) and their willingness to comply with others' expectations (six items). Each participant's subjective norms score was determined by multiplying each normative belief score by the corresponding willingness to comply score and then summing across the six products. A higher score indicates greater perceived social approval or support for caring for COVID-19 patients.

PBC was measured by participants' self-rated capability of engaging in COVID-19 patient care in the presence of factors that may impede their performance. These factors (nine items) included PPE shortage, hospital bed and medical equipment shortage, discomfort of wearing PPE, spreading of new COVID-19 variants, lack of support from colleagues and managers, lack of family support, social stigma, working long hours, and no financial rewards. Each participant's PBC score was calculated by the sum of the nine items. A higher score reflects greater PBC regarding caring for COVID-19 patients.

2.4 | Statistical analysis

Statistical analysis was performed using the SPSS software (version 26). A series of univariate and bivariate analyses were carried out to examine relationships between the TPB study variables (behavioural intention, attitude, subjective norms and PBC) and their relationships with demographic variables. Independent-samples *t* tests and one-way analysis of variance (ANOVA) were used to examine the between-group differences across the TPB variables. Pearson's correlation tests were used to explore the correlations between the TPB variables. Stepwise regression analyses were conducted to estimate the strength of the associations between the TPB variables hypothesized in the theoretical framework. A 95% confidence interval was applied to determine the significance of all results.

3 | RESULTS

3.1 | Overview of sample

A total of 547 final-year student nurses ($n = 391$) and junior nurses ($n = 156$) were surveyed. The participants were aged between 18 and 39 years (mean age: 22) and were predominantly female (83.4%), unmarried (95.2%), located in Shandong province (79.5%), working in non-acute settings (80.4%), and fully or partially vaccinated against COVID-19 (97.4%). A small proportion of the nurses/student nurses had professional (4.6%) or personal (1.1%) experiences with COVID-19 patients. Most of the respondents (94.0%) had received nursing ethics education; around one third (30.9%) believed that nurses have

a right to refuse care provision to certain patients, and 16.8% considered it ethically challenging to care for COVID-19 patients.

Overall, the sample had a moderate-to-high behavioural intention (mean = 11.3, $SD = 2.4$), and moderate positive attitude (mean = 31.3, $SD = 4.4$), subjective norms (mean = 71.9; $SD = 29.2$) and PBC (mean = 27.7, $SD = 8.0$). The majority of the respondents were willing to work in a COVID-19 isolation ward if required next year, either voluntarily (63.4%) or by non-voluntary assignment (65.6%).

3.2 | Bivariate analyses of demographic variables and the TPB variables

Male participants ($t = 1.982$, $p < .05$) and those who were vaccinated against COVID-19 ($t = 2.354$, $p < .05$) exhibited significantly higher intention to care for COVID-19 patients (Table 2). Male respondents also reported significantly higher subjective norms ($t = 2.467$, $p < .05$) and PBC ($t = 3.013$, $p < .05$) towards patient care, as compared with their female counterparts. Additionally, ED/ICU nurses/student nurses demonstrated a significantly more positive attitude towards COVID-19 frontline work than those working in non-acute settings ($F = 3.331$, $p < .05$). Participants who believed that nurses have a right to refuse provision of care to certain patients had significantly lower scores in all the TPB variables (Table 2). Those who did not hold caring for COVID-19 patients as presenting an ethical dilemma had significantly higher scores in all the TPB variables (Table 2).

3.3 | Multivariate analyses of the TPB variables

All TPB independent variables (attitude, subjective norms and PBC) were significantly correlated with behavioural intention, as indicated by Pearson's correlation analyses (Table 3). Stepwise regression analyses showed that the TPB independent variables significantly predicted 45% of the variance in behavioural intention ($F = 149.685$, $p < .001$). The strongest predictor was subjective norms, explaining 35% of the variance alone ($\beta = .415$, $t = 10.955$, $p < .001$). Attitude explained a further 6% ($\beta = .213$, $t = 6.382$, $p < .001$), and this was followed by PBC (4%) ($\beta = .238$, $t = 6.137$, $p < .001$) (Table 4).

4 | DISCUSSION

This study explored factors that contributed to junior nurses' and final-year student nurses' intention to care for COVID-19 patients at the height of the Delta COVID-19 variant outbreak in China. As hypothesized, all key TBP constructs were significant predictors of behavioural intention. Other factors associated with the intention to provide care included gender, vaccination status, and ethical perceptions regarding frontline work.

Consistent with earlier research findings in the contexts of Australia (61%) (Lord et al., 2021) and Ethiopia (59.5%) (Minuye

TABLE 3 Descriptive statistics and correlation matrix of the theory of planned behaviour variables ($N = 547$)

Variable	Mean (SD)	Behavioural intention	Attitude	Subjective norms	Perceived behavioural control
Behavioural intention	11.3 (2.4)	1			
Attitude	31.3 (4.4)	.380*	1		
Subjective norms	71.9 (29.2)	.592*	.225*	1	
Perceived behavioural control	27.7 (8.0)	.528*	.306*	.543*	1

* $p \leq .001$.**TABLE 4** Stepwise regression analyses of the theory of planned behaviour variables ($N = 547$)

Independent variable/predictor	Standardized coefficient	T	R ² change	Model adjusted R ²	F
Behavioural intention (constant)		5.789			
Subjective norms	.415	10.955*	.35		
Attitude	.213	6.382*	.06		
Perceived behavioural control	.238	6.137*	.04	.45	149.685*

* $p \leq .001$.

et al., 2021), the majority of the nurses/student nurses (63.4%) in the present study would volunteer to care for COVID-19 patients. In mainland China, the proportions of nurses willing to join the COVID-19 frontline were reported as between 92% and 96% during the first wave of COVID-19 (Ke et al., 2021; Luo et al., 2021; Wu et al., 2020). It is noteworthy that these surveys in China were conducted during the very early stages of the COVID-19 pandemic (Ke et al., 2021; Luo et al., 2021; Wu et al., 2020), more than a year apart from our survey. As the pandemic evolved along an unpredictable path, a decrease in nurses' willingness to work is unsurprising. This is particularly relevant amidst the outbreak caused by the Delta variant of COVID-19 which is known to be highly transmissible and caused more severe disease than prior variants (Bo et al., 2022).

In line with Hasuike et al.'s (2021) finding regarding Japanese junior nurses, female participants in the present study demonstrated significant lower intention to engage in COVID-19 patient care than male counterparts. Similarly, previous research showed that female nurses were more susceptible to the psychological impact of the COVID-19 crisis than male nurses (De Kock et al., 2021; Shaukat et al., 2020). Women in Asian societies generally assume the role of caregivers in their extended families (Miyawaki, 2016). Female nurses/student nurses' unwillingness to work may stem from family health concerns or a lack of family and social support, which are reflected by their significantly lower subjective norms and PBC scores found in this study.

Subjective norms were the predominant predictor of nurses/student nurses' intention to provide care in this study. This is consistent with Tran et al.'s (2021) finding concerning Vietnamese nursing students' intention to serve on the COVID-19 frontline. Conversely, previous TPB-based research in the contexts of SARS (Ko et al., 2004) and emerging infectious diseases (Lee & Kang, 2020) reported PBC as being the strongest predictor of nurses' intention towards patient care. It is worth noting that our study focused on junior nurses and final-year student nurses (mean age = 22 years), the youngest and

least experienced group of the nursing workforce. It is unsurprising that these young people tend to rely on beliefs of family, peers, authorities and communities, as opposed to themselves, when making career-related decisions. Indeed, a qualitative study in Singapore revealed that family approval and peer support were primary considerations in final-year nursing students' decision to volunteer in support of the COVID-19 response (Seah et al., 2021).

Attitudes contributed minimally but significantly to the prediction of behavioural intention in this study. According to Bar-Tal (1992), the attitude-intention relationship is modulated by attitude certainty and prior direct behavioural experience with the attitude object. In the present study, most of the participants had no direct professional (95.4%) or personal (98.9%) experience with COVID-19 patients. Moreover, given the rapidly evolving COVID-19 situation, it is possible that the participants held ambivalent attitudes towards frontline work. A combination of these factors may explain the relatively weak yet significant correlation between attitudes and intention found in this study.

Interestingly, ED/ICU nurses/student nurses showed a significantly more favourable attitude towards COVID-19 patient care than those practising in non-acute fields. Acute care settings such as ED and ICU are generally associated with higher COVID-19 exposure risk but also follow more stringent infection prevention measures, in addition to being prioritized for medical resource allocation (World Health Organization, 2020). It is possible that this high level of protection offered to acute care nursing staff induced a sense of security, as opposed to those working in lower-resource non-acute settings (De Kock et al., 2021).

Ethical perceptions regarding frontline work and views about the duty to care significantly impacted on all TPB study variables in this study. Previous studies identified multiple ethical issues relating to frontline nursing care, mainly involving nurses' safety, scope of practice, resource allocation, and quality of care (Alloubani et al., 2021; Gebreheat & Teame, 2021). The results of this study support those of

prior research (Alloubani et al., 2021), that the perceived ethical challenges serve as stressors of caring roles that impede nurses' motivation to serve on the COVID-19 frontline. It bears noting that nearly one third of the respondents (29.4%) in this study held ambivalent opinions about nurses' refusal to care. The duty of care in nursing has been described as a fundamental professional value and obligation (Zhu et al., 2021). The current finding reflects the complexity of this moral decision-making against the background of COVID-19 crisis which young nurses may be burdened with.

The results of this study indicated a moderate-to-high level of preparedness among the youngest group of the Chinese future nursing workforce against future COVID-19 waves. Future research could further explore ethical dimensions of the intention towards COVID-19 patient care using a qualitative approach to allow for in-depth analysis. Additionally, as noted, this study was undertaken at the height of the Delta COVID-19 variant outbreak in China. Participants' responses to the research variables could be dynamic in time depending on different stages of the outbreak and the virulence of the SARS-CoV-2 variants causing it. A longitudinal investigation of this population's behavioural intention may reveal more factors that influence their emergency preparedness in the era of COVID-19 and beyond.

This study has potential limitations. Firstly, convenience sampling, which is a non-probability sampling method, was used for participant recruitment. This may introduce self-selection bias because the survey respondents may have a pre-existing high intention to engage in COVID-19 patient care. Secondly, the majority of the participants (79.5%) were located in Shandong province, China. This may affect generalizability of the findings outside this geographic area. Future research would benefit from stratified sampling on a geographical basis to achieve a balance of samples from different locations in China.

5 | CONCLUSION

Using the TPB as a theoretical framework, this study demonstrated a moderate-to-high intention towards COVID-19 patient care among the youngest members of the future nursing workforce at the height of the Delta COVID-19 variant outbreak in China, subjective norms being the predominant predictor. Our findings highlight the importance of social, organisational and family support underpinning future junior nurses' professional commitment in times of public health crisis.

6 | IMPLICATIONS FOR NURSING MANAGEMENT

Nurse managers and clinical educators play key roles in supporting and empowering junior nurses and senior student nurses. Nurse managers should take the initiative to engage nurses/student nurses in open and transparent discussion about ethical issues raised by the COVID-19 crisis. Educational programmes designed to provide

guidance on ethical decision-making specific to pandemic situations are warranted in the workplace and should be integrated into the nursing curriculum. Moreover, workplace training for nurses and student nurses should focus not only on imparting COVID-19-related knowledge and infection control measures but also on self-care and stress management. Such training may particularly benefit female nurses and those working in resource-poor understaffed non-acute settings. Furthermore, it is suggested that hospital managers may collaborate with community partners to offer additional family support for nurses experiencing difficulties in balancing work and family commitments.

ACKNOWLEDGEMENTS

We would like to express our sincere gratitude to our study participants and to hospital managers and clinical educators who helped with data collection. This research did not receive any specific grant from funding agencies in the public, commercial or not-for-profit sectors.

CONFLICT OF INTEREST

None declared.

ETHICAL STATEMENT

Ethical approval for this study was obtained from the Ethics Review Board of Shandong First Medical University, China. Approval number: R202110250180.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available from the corresponding author upon reasonable request.

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How to cite this article: Zhong, Y., Zhao, H., Wang, X., & Ji, J. (2022). Using the theory of planned behaviour to explain junior nurses' and final-year student nurses' intention to care for COVID-19 patients in China: A multisite cross-sectional study. *Journal of Nursing Management*, 1–9. <https://doi.org/10.1111/jonm.13639>