

# Nurses' willingness to participate in public health emergency: A qualitative study in China

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## Abstract

Along with the increasing of infections of COVID-19, nurses are needed more in caring patients with COVID-19. The aim of this study is to explore the real intention and influencing factors of the nurses' willingness to participate in public health emergency in facing the COVID-19. A total of 10 nurses who volunteered to care patients with COVID-19 were selected. Data were collected by semi-structured interviews and analyzed by content analysis method based on the theory of planned behavior. Three main categories were attitude, subjective norms and perceived behavior control. Under the first category, two subcategories were included: nurses' personal and professional value expectation, patriotism. Two subcategories were yielded for the second category: support from family and friends, role model impact of important people. In addition, three subcategories were identified for the third category: physical condition, professional knowledge and skills, national measures and incentive policies. Nurses with high willingness have seven features: high value expectation, patriotism, generous family support, good physical condition, experienced professional knowledge and skills, awareness of national measures and incentive policies. Combined with our previous quantitative study, developing tailored training programs to improve nurses' professional value expectation, knowledge and skills in coping with unwilling attitude and weak perceived behavior control are effective ways.

## KEYWORDS

COVID-19, nurse, public health emergencies, semi-structured interview, theory of planned behavior, willingness

## 1 | INTRODUCTION

WHO announced that Coronavirus Disease 2019 (COVID-19) outbreak was an international public health emergency.<sup>1</sup> The epidemic

has broken out all over the world now. It is a new type of virus that is highly infectious, generally susceptible to the population, and has no specific treatment drugs.<sup>2</sup> In China, COVID-19 has been included in category B infectious diseases but managed as category A.<sup>3</sup> It is mainly disseminated via droplet respiratory particles, close contact and aerosols.<sup>4,5</sup> To contained the disease transmission and reduce

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social risks effectively, the central government in China quickly waged a joint defense mechanism, concentrated the top-quality medical resources in China to support Hubei, and jointly responded to this public health emergency. On January 24, 2020, the central government launched counterpart assistance and required 29 provinces (including autonomous regions or municipalities) to form medical aid teams to Wuhan and Huanggang (The data are compiled from the official website of the Health Commission of each province [region, city]). On January 28, more than 5600 people from 49 medical teams from 26 provinces (including autonomous regions or municipalities) rushed to support Hubei (The data are compiled from the official website of the Health Commission of each province [region, city]). To win the fight against the epidemic resolutely, the central government has also coordinated and arranged 19 provinces to aid 16 cities in Hubei Province besides Wuhan (The data are compiled from the official website of the National Health Commission).

In the critical moments of unexpected disasters, medical staff always goes to the front line to participate in rescue.<sup>6</sup> As the backbone of the rescue team, nurses have been playing a critical role in maintaining close contact with patients, providing direct care, and even performing some invasive nursing procedures, all of which can put nurses at high risk for infection.

Due to the insufficient understanding of the causes, protective measures, and treatment regimens of public health emergencies like the COVID-19, it is easy to cause fear, anxiety and other physical and mental health distress among frontline healthcare professionals. Researches had been indicated that some medical staff will refuse to participate in frontline work or even leave their jobs due to high risk of virus infection, threat of death and not yet psychologically prepared.<sup>7,8</sup> Our quantitative research found that surgical nurses and high positive professional perception nurses were more willing to participate in the care of COVID-19 patients.<sup>9</sup> Lee found the nation's capacity to respond to public health events was affected a lot by medical staffs' willingness to involved in the treatment and care of infected patients, which can even determine the effectiveness of saving.<sup>10</sup> In addition to the investigation of nurses' willingness to take part in the care of COVID-19 patients,<sup>9</sup> we also need more comprehensive and further understanding of the underlying reasons and influencing factors of nurses willingness by qualitative research.<sup>11</sup>

The theory of planned behavior (TPB) proposed by Ajzen in 1988, puts forward that the decision-making process of individual behavior is related to information processing and expectancy-value.<sup>12</sup> TPB has a good explanation and predictive power for predicting and analyzing behavioral willingness,<sup>13</sup> which mainly includes three variables: attitude, subjective norm, perceived behavior control, it is suitable for the situation where people think they cannot completely control their behavior<sup>14</sup> as might occur in nurses' willingness to care for COVID-19 patients. The TPB is based on the hypothesis that our human is always rational, use the existing information systematically, and consider the meaning of a behavior before engaging in it. The possibility of a person performing a behavior depends on the intensity of the intention.<sup>15</sup>

This study uses TPB theory as conceptual framework, include a quality study design by using semi-structured interviews among 10 registered nurses who have been actively signing up for taking care

of COVID-19 patients. This study aimed to intensively explore the intention and influence factors of nurses' willingness to participate in responding to public health emergencies like the COVID-19.

## 2 | METHODS

This study adopted phenomenological method which is one of the most widely research approaches used in nursing and other human science research areas.<sup>16</sup> Converse (2012) defined phenomenology as "a philosophical perspective that helps researchers explore and understand everyday experiences without presupposing knowledge of those experiences".<sup>17</sup> We conducted one-to-one interviews using a semi-structured interview outline from January to February 2020 in Jiangsu Cancer Hospital. A total of 15 nurses who were actively engaged with taking care of patients with COVID-19 were volunteered to take part in our research. Finally, 10 nurses were involved because the content reached a saturation level. Interview location were chosen by participants including conference room and nurse's lounge, interviews lasted 21 to 40 min.

### 2.1 | Research team

Our team included 10 experienced in qualitative research researchers. A, B and C (first-line nurses) completed the literature review. Researcher A and B conducted one-to-one interviews. Researchers A, B, C, E and F (nursing managers) collected and analyzed the data, and extracted themes from the data together. Researchers F, G and H (nursing managers) checked the themes found about the interpretation and consistency. Researcher I (nursing manager) guides the research process. Researcher A, B and D (teacher of a nursing college) written the manuscript. In addition, critical revisions for important intellectual content were conducted by researcher A, D, I and J (nursing manager). All researchers were uniformly trained to ensure that the participants' experiences were described without bias.

### 2.2 | Participants

This study is part of a larger program of research using both quantitative<sup>9</sup> and qualitative methodologies to explore nurses' willingness to participate in taking care of COVID-19 patients. Purposive sampling was used to selected participants from volunteers who (a) has been employed as nurses in China, (b) have applied more than twice to take care of COVID-19 patients as frontline nurses, and (c) were willing to participate in the study to share their experiences and provide informed consent. The maximum variation sampling technique was used to recruit heterogeneous nurses to get the most widely information.<sup>18</sup> The individual participant characteristics for each interview are presented in Table 1. Seven of the participants were female, and three were male. Participants had worked between 3 and 37 years, and age between 26 and 55 years old. In particular, five interviewees have their family members who are healthcare professionals.

## 2.3 | Data collection

Under the guidance of phenomenological methods of qualitative research, we conducted interview by the guided of interviews outline. Two clinical nurses were interviewed before the formal research interview; this process was set up to push researchers familiar with the research process and to improve the analysis of the research.

The interview outline is drawn up by the whole research team around the theme of willingness to participate in public health emergencies. An interview guide was used starting with question such as, (1) "In what situation are you sign up for participating in care of patients with COVID-19?" This was followed by (2) "Why did you applied again to join the first-line work? (3) What your opinion about the supporting of first-line work? And, what kind of factors did you think that prompted you to sign up? At the end of the interview, the subjects were asked whether they have something else to share or tell to confirm that the intact information has been collected. During the interview, effective communication skills were fully used to encourage the interviewees to express their thoughts and feelings, researchers carefully observed the nonverbal behaviors of the interviewees, listen to the contents of the interview, and record the thoughts, feelings, responses and other information generated during the interview in time, so as to restore the phenomenon during the data analysis. Interviews were audio-recorded. Within 24 h after the interview, the voice data were checked and transcribed. To avoid any possible misunderstandings, the research results were sent to the interviewees for clarification and confirmation.

## 2.4 | Ethical considerations

Ethical approval was granted by the Institutional Review Board of Jiangsu Cancer Hospital in China (NO. 2019/007). Before the interview started, the participates were introduced the research objectives,

methods, the basic steps of the interview, confidentiality principles and their right to withdraw at any time, then signed the consent form. Codes were used to protect anonymity and confidentiality. There were no dual role conflicts between the researchers and the participants.

## 2.5 | Data analysis

The collation and analysis of the data were carried out at the same time.<sup>19</sup> According to the four steps (①Reading the written materials of the interview repeatedly, grasp the experience description text intuitively and gain a sense of the whole; ②Refining the meaning unit from a professional perspective, focusing on the phenomenon under study; ③Transforming the daily language of the research phenomenon into professional language, focusing on the research object; ④Integrate the meaning unit after language conversion into a coherent description.) proposed by Giorgi 20, the data collation and analysis were completed through coding, classifying, explaining the essence and meaning of the phenomenon, and refining themes and elements. The recordings were transcribed verbatim within 24h after each interview, and the transcription of each interview and the interview notes were coded in sequence according to N1, N2... N10. During the interview and transcription process, the researchers constantly discussed the problems and solutions in the interview with the research team. To minimize researchers' bias during analysis, two researchers independently analyzed the data and refined the theme. When they had different opinions, the research team checked the original materials and determined the final theme through group discussion. Themes were identified deductively guided by TPB that contents three variables of behavior attitude, subjective norms, and perceived behavior control and cognitive basis.<sup>12</sup> Themes and subthemes were not determined until researchers achieved consensus in the research team meeting.<sup>21</sup>

**TABLE 1** Summary of profile data of study participants (P)

Number	Gender	Age	Working experience (Years)	Marital and childbearing status	Education background	Professional title	Level	Job	Family members engaged in medical work
N1	Female	32	11	Married/0	Undergraduate	Nurse Practitioner	N2	Clinical Nurse	Yes (Husband)
N2	Female	31	5	Unmarried/0	Postgraduate	Nurse-in-charge	N1	Specialist nurse	No
N3	Female	55	37	Married /1	Junior College	Nurse-in-charge	N3	Group Leader and Specialist nurse	Yes (Father)
N4	Female	35	11	Unmarried /0	Undergraduate	Nurse-in-charge	N3	Group Leader	No
N5	Male	32	7	Married /2	Undergraduate	Nurse Practitioner	N2	Teacher	No
N6	Female	41	22	Married /1	Postgraduate	Nurse-in-charge	N3	Specialist nurse	Yes (Husband)
N7	Male	26	3	Married /0	Undergraduate	Nurse Practitioner	N1	Clinical Nurse	Yes (Wife)
N8	Female	26	4	Unmarried /0	Undergraduate	Nurse Practitioner	N1	Clinical Nurse	No
N9	Male	26	3	Married /0	Undergraduate	Nurse Practitioner	N1	Clinical Nurse	Yes (Wife)
N10	Female	35	16	Married /1	Undergraduate	Associate Professor of Nursing	N3	Nurse manager	No

### 3 | FINDINGS

Through coding, classifying, explaining, and extracting the transcripts of the interview data of 10 nursing staffs who actively signed up for taking care of COVID-19 patients, the research team synthesized 3 themes and 7 subthemes guided by TPB. The influence factors of nurses' willingness to participate in public health emergency are presented in Figure 1.

#### 3.1 | Nurses' attitudes toward participating in public health emergency support

##### 3.1.1 | Nurses' personal and professional value expectation

Almost all the subjects in this study mentioned self-value expectations and their passion for nursing work. While expressing a strong sense of nursing professional value and pride, they hope that the society can change the perception of the value of nurses and improve the status of nurses.

"I applied to fight SARS at 2008. I think the value of medical staff could be best reflected at this special time. The whole society needs us." (N2)

"The most important factor for me to sign up is my professional ideals. I want to save people's life since I was a child, I feel that saving one life counts can directly show our professional value." (N4)

"We are medical staff, it's our duty to guard people's health. It's time to contribute our capacities" (N8)

"I'd like to realize self-value no matter how hard I work and I will stick to it... I think we (nurses) may have been aggrieved in front of doctors and society. I just want to prove it to them. Actually, our nurses can do a lot!" (N1)

##### 3.1.2 | Patriotism

During the interview, three male nurses expressed strong patriotism many times. Though they knew the danger of infection and sacrifice, they were willing to participate in this public health emergency.

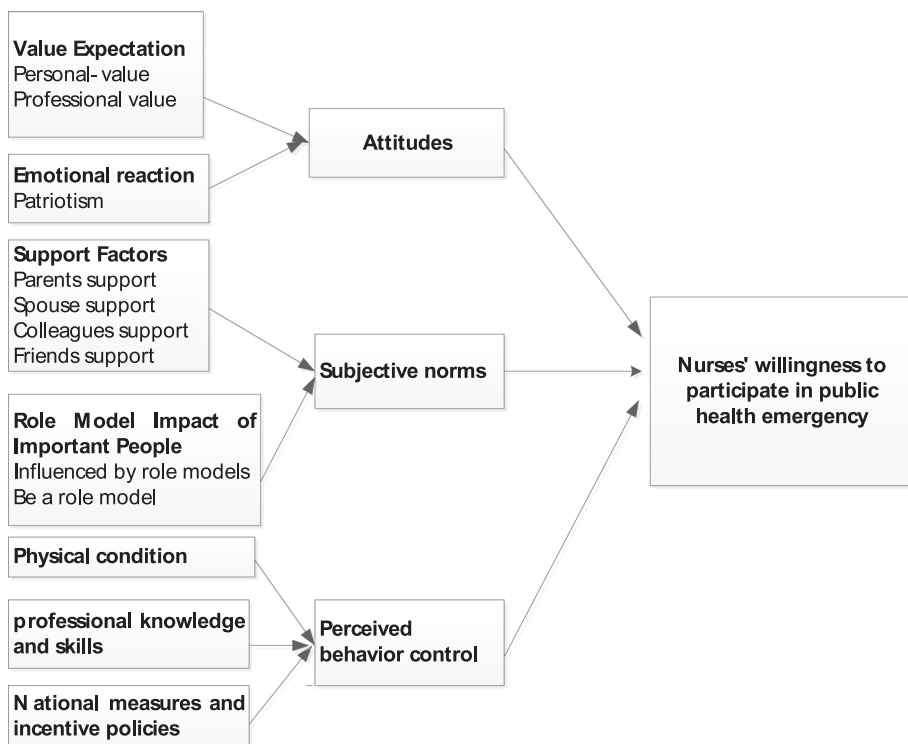
"The country faces risks, it is necessary for me to step forward. When disaster struck, help came from all sides. Although we are not from Hubei province, we should support the COVID-19 fight in there." (N7)

"I really want to contribute to my motherland, which encourages me to apply for the frontline fight." (N5)

#### 3.2 | Subjective norms

##### 3.2.1 | Family support

All the interviewees took family members into consideration when making decision to signed up for taking care of COVID-19 patients.



**FIGURE 1** The influencing factors model of nurses' willingness to participate in public health emergency

No family issues, got expectations and support from family members urged them to participate in the frontline.

“We live apart for a long time (note: the interviewee's husband is a military doctor and works in Tibet). My parents live apart from me, either. I have less concerns.” (N1)

“My husband (a school doctor) wants to go to the frontline a long time ago. Unfortunately, he doesn't have the chance. He encourages me to go to frontline. He shows 100% support.” (N6)

### 3.2.2 | Role model impact of important people

Although the willingness to support is the interviewees' own thoughts, some important people such as family members, classmates and colleagues have a great impact on their decision-makings.

“My daughter (5 years old) said, “Dad, uncles and aunts on TV are nurses. They are all saving lives in Wuhan. You are a nurse too. Will you go to save lives there?” At that time, I was thinking I should actively sign up and be the role model of my daughter.” (N5)

“My father told me to put work in the first place. My family education has a great influence on me...numerous medical staff go to Hubei province to support the first-line and many things shows on TV that touched me.” (N3)

“My three classmates have already gone to the first-line. Therefore, I'd like to support too. My wife is a nurse too. We both apply to support the frontline.” (N7)

## 3.3 | Perceived behavior control

### 3.3.1 | Physical condition

Taking care of COVID-19 patients is very stressful to nurses. The interviewees thought that physical condition was an important factor that influenced their willingness to go to the frontline.

“I have kept exercising since I was in college, and my physical condition allows me to go to the frontline.” (N2)

“Medical staff in the first-line need to wear several layers of protective clothing for one day. It may be too hard for you girls. We men could stand it.” (N7)

At the same time, the interviewees all stated that personal characteristics will affect their willingness to participate in public health emergency, and those with compassion, kindness, and dedication are more willing to participate.

“Personal sympathy will also affect people whether to apply or not.” (N1)

“People who sign up to support the frontline are like me, very caring and compassionate.” (N2)

### 3.3.2 | Professional knowledge and skills

There is no experience for medical staffs to learn in taking care of COVID-19 patients. Even under the premise of good self-protection, it is a big challenge for nurses to take care of seriously sick patients. However, professional knowledge and corresponding skills will encourage nurses to participate in the frontline work. The skills mentioned by interviewees included venipuncture skills of intravenous therapy specialist nurse, the first aid skills of intensive care unit (ICU) nurses, and scientific research skill of research nurses.

“ICU nurses are very good at first-aid. We are definitely more familiar with the work there than other clinical nurses. I am very confident in my professional ability.” (N1)

“I am an intravenous therapy specialist nurse. We have advantages in injections and blood extraction. I am a research nurse too, I can do some research in this area.” (N6)

### 3.3.3 | National measures and incentive policies

Interviewees indicated that they pay close attention to national policies after the COVID-19 outbreak, and they can see the changes around them. The country's strong measures and incentive policies boosted interviewees' willingness to support.

“Our country is our strong back-up. When trouble occurs at one spot, help comes from all quarters, I am more and more confident that we will win the battle with COVID-19.” (N5)

“Some incentive policies concerning titles, such as get promoted priority when they come back.” (N6)

## 4 | DISCUSSION

### 4.1 | Attitudes is a significant factor for nurses' willingness to participating in public health emergency

Attitude in the TPB refers to the evaluation of the individual's preference for this behavior when doing it.<sup>12</sup> The positive attitudes of the interviewees to participating in taking care of COVID-19 patients in this study were consistent with the findings of Loke's finding in 2013<sup>22</sup> and Zhang Cuicui's study in 2020 on the

willingness of Chinese nurses to participate in public health emergencies. This study further discussed that positive attitude of the active applicants toward the event was mainly manifested in the high expected value and strong patriotism. The expectancy-value theory of motivation believes that the individual's motivation to complete various tasks is determined by the expectancies one has and the value of the goal toward, which one is working.<sup>23</sup> The interviewees in this study believed that participating in the first-line support "should be done," which could enhance self-value and realize the professional value. Then, these positive values would boost positive behaviors and attitudes.<sup>12</sup> Regarding nurses' perceived professional benefits, the cross-sectional survey conducted by our research team during the same period also showed that nurses had scores of  $28.50 \pm 4.2$  on the dimension of "positive professional perception" and  $25.76 \pm 3.34$  on the dimension of "sense of team belonging."<sup>9</sup> Both were higher than the score of nurses' perceived professional benefits during the period when COVID-19 did not outbreak, which indicated that when a public health emergency occurred, the nurses' perceived professional benefits were advanced. The three male interviewees in this study repeatedly emphasized the responsibilities of citizens, expressing love for the motherland and people. Besides, they believed that the country would definitely win the battle with COVID-19. These beliefs in professional values and national capabilities contributed to the attitudes of actively participating in public emergencies.<sup>24</sup> Positive attitudes that can affect behavioral intentions have also been proved in this nurse management research area, which was in line with many other studies in the fields of business administration, transportation, health policy and management.<sup>25,26</sup> Bandura's self-efficacy theory clarifies that motivated actions could confront and solve the problems encountered in order to achieve expected goals,<sup>27</sup> which suggested that it is possible to improve the self-efficacy of nursing staff to change the behaviors and attitudes in order to raise the willingness to participate in public health emergency support.

#### 4.2 | Family support and role model of important people accelerate willingness to participate in public health emergency support

Subjective norms in the TPB refer to the individual's perception of expectations or pressures from the outside world when deciding to do something, which reflects the influence of important people or groups, normative beliefs and obedience motivations on individual behavior.<sup>12</sup> In this study, the subjective norms of the interviewees were impacted by their spouses, parents, children, classmates and colleagues, and interviewees can feel those people's expectations to them. Relevant research also showed that family support was one of the significant factors that influences nurses' willingness to support the COVID-19 frontline. In this study, almost all the interviewees assessed the physical condition, care needs and attitude toward COVID-19 support of their family members—especially their spouses and parents—before signing up for the frontline

support work. Family support, role models of their parents and being role models of their children advanced nurses' behavioral intentions. Interviewees were also influenced by the Chinese traditional family culture. Chinese have a deep affection for the family-bond and value the opinions of family members.<sup>28</sup> The starting point for the development of individual morality is the family, and the good way of parents' teaching is closely related to personal growth. In this study, half of the interviewees' parents or spouses were medical staffs, and their opinions about social responsibilities of medical workers and values impacted the interviewees' decision making to a certain extent. The background of this research was that China quickly responded to the sudden outbreak of COVID-19 in 2020.<sup>1</sup> Medical staffs at all levels across the country actively support Wuhan to participate in the treatment and care of COVID-19 patients, but not all the applicants have the opportunity to join the frontline. The interviewees' hospital selected two batches of nurses from self-application to assist Wuhan to participate in patient care within 2 weeks. During that period, a total of 421 nurses volunteered to sign up, accounting for 50.4% of all the nurses in the hospital. At the same time, our research team conducted a survey of 36 domestic hospitals<sup>9</sup> showed that 92.8% of nurses expressed their positive willingness to join in the frontline work, which was much higher than the survey results of other countries.<sup>29,30</sup> Against such backdrop, the interviewees regarded their friends or colleagues who have successfully participated in COVID-19 rescue as role models. While being encouraged by role models, they would feel certain expectations and pressure. It indicated that accelerating the transmission and dissemination of positive information, creating a positive social environment of public trust and solidarity<sup>31</sup> and strengthening individual subjective norms could boost nurses' willingness to participate in public health emergencies.

#### 4.3 | Physical condition, professional knowledge and skills, national measures and incentive policies could predict support willingness and behavior

Perceived behavior control in the TPB refers to a person's expectancy that performance of the behavior is easy or difficult, which is affected by two factors, control beliefs and perceived power.<sup>32</sup> The interviewees' perceived behavior control in this study was mainly reflected in three aspects, the first one was good physical condition to tolerate the frontline work. The second was professional knowledge and skills, such as intravenous treatment, intensive care, research capabilities. The third was the national investment in preventing and controlling the epidemic, the safety guarantees and incentive policies. The reason for the above analysis was that COVID-19 is an acute respiratory infectious illness with rapid onset, strong infectivity and rapid course change,<sup>33</sup> while nurses had the closest contact with patients for the longest time. They should equip themselves with excellent professional knowledge skills<sup>34</sup> to undertake heavy routine nursing, professional airway management, extracorporeal membrane oxygenation nursing and other therapeutic nursing while risking their own lives. Relevant research revealed that professional knowledge and skills were important indicators that impact nursing work and willingness to

care of patients. Nurses' professional skills had a great influence on their willingness to take care of patients with infectious diseases.<sup>8</sup> Good professional skills to respond to public health emergencies will enhance the control beliefs and perception power of nurses. In addition, China has invested a huge amount of prevention and control materials, scientific and technical support and policies to guarantee security of medical staff in epidemic prevention and control, which has strengthened their confidence in reacting to COVID-19.<sup>35</sup> Perceived behavior control has also been regarded as the most important predictor of willing behaviors.<sup>10</sup> Therefore, to prepare human resources for responding to public health emergencies, nurse managers should pay attention to the health of nurses in their daily work and strengthen professional skills training. Moreover, at the departmental management level, relevant policies should also be developed to encourage nurses to support public health emergencies.

## 5 | CONCLUSION

The outbreak of the COVID-19 is a national health threats, and many provinces in China have initiated a level I response to major public health emergencies. In this severe situation of the nation's anti-epidemic, medical stuffs in the frontline of COVID-19 treatment retrograde in adventure, which the task is arduous. This study explored nurses' willingness to participate in the public health emergency in China based on TPB. The main influencing factors were attitudes, subjective norms and perceived behavior control. Besides, having high value expectation, patriotism, family support, good physical condition, experienced professional knowledge and skills, awareness of national measures and incentive policies were the positive factors to promote the willingness. The study findings may provide important implications for future research and practice in developing tailored training programs to improve the willingness of nursing staff to participate in public health emergencies. The study findings can also be utilized as a good reference for human resource management and capacity building of nursing staff in response to public health emergencies.

## 6 | LIMITATIONS

As it was challenging to recruit nurses who did not want to participate in take care of COVID-19 patients, this study only included nurses who actively applied for public health emergencies support. This limitation makes it impossible to obtain and analyze the obstacles of the low willingness to support. In addition, the fist-line nurses were busy with their job, as well as considered the telephone interviews may offer limited nonverbal communication, the first-line nurses were not included in the study sample as well. To probe greater understanding of nurses' willingness to participate in the public health emergency, future research should involve fist-line nurses.

## 7 | IMPLICATIONS FOR NURSING MANAGEMENT

To properly respond to public health emergencies, guarantee the first-line nurses' physical and psychological well-being, hospital management departments should pay more attention to create a supportive working atmosphere and develop benefit-finding education to cultivate medical stuffs' positive working attitudes, reduce workload to improve the physical and mental health of nurses. Nurse managers can carry out training on improving professional value expectation, professional knowledge and skills.

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### CONFLICT OF INTEREST

No conflict of interest has been declared by the authors.

### AUTHOR CONTRIBUTIONS

*Study design:* Zhu Ping, Wu Bing, Wu Bainv, Tan Jing-Yu (Benjamin), Cheng Fang, Wang Meixiang, Zhi Xiaoxu, Zhao Yun, Zhang Liuliu, Meng Aifeng. *Literature review and manuscript drafting:* Zhu Ping, Wu Bing, Wu Bainv. *Ethics approval:* Zhang Liuliu, Meng Aifeng.

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### ETHICS STATEMENT

The study was reviewed and approved by the Medical Ethics Committee of Cancer Hospital Affiliated with Nanjing Medical University (approval number: 2019007).

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