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Professional identity and supporting willingness of nurses during the COVID-19 epidemic in China

Li Li[1,2] | Xiaoyue Gao[1] | Yanbo Wang[3] | Changjuan Zeng[1] | Lili Hou[1] | Qinghong Xi[1]

[1]Department of Nursing, Shanghai Ninth People's Hospital, Shanghai Jiao Tong University School of Medicine, Shanghai, China

[2]Department of Nursing, Mental Health Center, Shanghai Jiao Tong University School of Medicine, Shanghai, China

[3]Division of Medical Humanities & Behavioral sciences, School of Medicine, Tongji University, Shanghai, China

Correspondence
Qinghong Xi and Lili Hou, Department of Nursing, Shanghai Ninth People's Hospital, Shanghai Jiao Tong University School of Medicine, 639 Zhizaoju Road, Shanghai, 200011, China.
Email: xiqinghong2021@163.com (Q. X.) and 217008@sh9hospital.org.cn (L. H.)

Abstract

Aim: To investigate the professional identities and the willingness of nurses to respond to the call for support during the COVID-19 epidemic.

Background: The COVID-19 epidemic has resulted in nearly 300 million cases worldwide, causing more than five million deaths. However, the professional identities and the willingness of nurses to provide support during the COVID-19 epidemic in China remain unclear.

Methods: A total of 1,505 eligible nurses from 120 hospitals during the COVID-19 outbreak in China were included. Questionnaires were used to evaluate the willingness of these nurses to participate in epidemic control efforts. The Nurses' Professional Identity Scale was used to measure their sense of professional identity.

Results: About 90% of the nurses were willing to lend support in Hubei Province during the epidemic. The most common reason (93.84%) was found to be their beliefs as medical personnel in helping others in need. Nearly 10% of the nurses were unwilling to go to Hubei, primarily due to family reasons. The average total score of the Professional Identity Scale for all nurses reached a moderate to high level as indication of professional identity (116–125). Nurses who were willing to go to Hubei had a significantly higher total score than those who were not.

Conclusions: The professional identity of nurses in China improved during the epidemic, and those with higher professional identities were more likely to respond to calls for support during the epidemic.

KEYWORDS
COVID-19, epidemic relief, nurses, professional identity, willingness

1 | BACKGROUND

In December 2019, the novel coronavirus pneumonia (coronavirus disease 2019, COVID-19) broke out in Wuhan City, Hubei Province, China. A few months later,

it had spread to all 34 provinces in China. On January 30, 2020, the World Health Organization (WHO) listed the novel coronavirus pneumonia epidemic as a "public health emergency of international concern" (Eurosurveillance Editorial Team, 2020). Globally, as of 7 January 2022, there have been 298,915,721 confirmed cases of COVID-19, including 5,469,303 deaths, reported to the WHO (n.d.).

Li Li, Xiaoyue Gao, Yanbo Wang contributed equally to this work

Epidemiological studies have shown that the transmission of COVID-19 is mainly through directional contact, which occurs through droplets, aerosols, and touching (Henry & Vikse, 2020; Q. Li et al., 2020). The transmission coefficient R0 is as high as 2.68 (95% CI 2.47–2.86) (J. T. Wu et al., 2020).

To stop the spread of the epidemic, the Chinese government proposed various national policies, including traffic control, home isolation, and building new hospitals for infected people. The breakout of COVID-19 caused a massive crisis to the local medical system in Hubei Province, especially in Wuhan City. Thus, the National Health Commission of China encouraged medical staff in other provinces to support the epidemic control force in Hubei, which was composed of a great number of nurses. Previous studies had reported that most nurses were willing to work during the influenza pandemic (Martin, 2011; Martin et al., 2013). However, there were still some nurses who could not work or were unwilling to work due to individual or family reasons (McNeill et al., 2020; Rebmann et al., 2020). Given the critical role of nurses in overcoming the epidemic, it is important to focus on the willingness of nurses to go to assist Hubei during this epidemic and the related risk factors.

Professional identity is a component of a person's overall identity and is augmented by their "position within society," "interactions with others," and individual "interpretations of experiences"(Johnson et al., 2012). The professional identity encompasses the nurse's perceptions, emotions, and mental states that determine their professional behavior (Alharbi et al., 2020). It is an essential element during nursing work that is affected by various factors such as official organization and social environment (Qi et al., 2021; C. Wu et al., 2020). The professional identity of nurses during the COVID-19 epidemic is unclear. Also, the relationship between the willingness of nurses to go to assist Hubei and their professional identity has not been revealed.

In this study, we investigated nurses' professional identity and willingness to support during the COVID-19 epidemic in China and evaluated the relationship between them. The results will provide a theoretical basis for national policies and professional training plans related to the epidemic.

2 | METHODS

2.1 | Study population

A cross-sectional study was conducted from February 2020 to March 2020 among nurses from more than 120 hospitals in 25 provinces of mainland China during the epidemic period. The inclusion criteria were (i) nurses who worked in teaching hospitals; and (ii) nurses who had obtained nurse qualification certificates. The exclusion criteria were (i) an unwillingness to cooperate with this study; and (ii) an insufficient level of completion of returned questionnaires.

This study was approved by the Institutional Review Board of Shanghai Ninth People's Hospital, Shanghai Jiao Tong University School of Medicine (SH9H-2020-T434-1). All participants signed an informed consent form.

2.2 | Evaluation tools

Self-designed questionnaires used in the study are shown in Table 1 and Table 2. The general information included age, gender, highest education level, working experience (years), professional title, marital status, and types of departments. The questionnaire about the willingness to participate in the epidemic relief contained 17 items, as listed in Table 2. Multiple-choice questionnaires about reasons for willingness and unwillingness to participate in the rescue were designed. The Nurses' Professional Identity Scale (PIS) used in our research was described in a previous study by Ling Liu (Liu et al., 2011; Yin et al., 2019) as consisting of five dimensions and 30 items, with 58.75% of total variance explained. Satisfactory reliability and validity were confirmed (Cronbach's α = 0.938, $\chi^2/df = 1.85$). The scale uses a five-point Likert scale, ranging from 1 = "very inconsistent" to 5 = "very consistent," with a maximum score of 150 points. A score of 30–60 was recognized as indicating very low professional identity, 61–90 as low professional identity, 91–120 as moderate professional identity, and 121–150 as high professional identity.

A web link to the online questionnaire was designed with Questionnaire Star Software and then disseminated to nurses via WeChat. The data were entered into the Web-based database by specialized investigators to ensure accuracy. A total of 1,530 nurses were asked to complete the self-reported questionnaire via WeChat, of which no response was received from ten people for reasons of being busy with work, and another 15 people returned incomplete questionnaires. Finally, 1,505 valid questionnaires on professional identity and willingness to go to Hubei were collected for further analysis.

2.3 | Statistical methods

The statistical analyses were carried out using the SPSS 21.0 software. General information was presented as means ± SD (standard deviations). One-way analysis of variance (ANOVA) was used to evaluate the professional

TABLE 1 General information of nurses involved (n = 1,505)

Variables		Number of cases	Percentage (%)
Gender	Male	30	1.99%
	Female	1,475	98.01%
Highest education	Technical degree and below	492	32.69%
	Bachelor degree	996	66.18%
	Master degree and above	17	1.13%
Job title	Primary registered nurse	346	22.99%
	Junior registered nurse	753	50.03%
	Senior registered nurse	334	22.19%
	Deputy director and chief nurse	72	4.79%
Marital status	Unmarried	423	28.11%
	Married	1,047	69.57%
	Divorced	35	2.32%
Department	Internal medicine	439	29.17%
	Surgical	405	26.91%
	Outpatient	97	6.45%
	Operating room	92	6.11%
	Emergency	63	4.19%
	ICU	56	3.72%
	Auxiliary department	32	2.13%
	Pediatrics	16	1.06%
	Women obstetrics	16	1.06%

identity of nurses among different groups. A *P*-value of less than 0.05 was considered to be statistically significant.

3 | RESULTS

3.1 | Characteristics of the nurses participating in epidemic relief

A total of 1,505 valid questionnaires were recruited in this study. The average age was 33 years (ranging from 18 to 61 years). About half of the nurses were junior registered nurses, and 66.18% of them had a bachelor's degree. They came from various departments, including inpatient, outpatient, ICU, and emergency units. Other features were shown in Table 1.

3.2 | Willingness to participate in epidemic relief

Detailed information related to participating in the epidemic relief is shown in Table 2. About 90% of the nurses

were willing to go to Hubei province during the epidemic. According to the questionnaire results, the most common reason (93.84%) was their belief as medical staff in helping others in need, followed by the reason that they could improve their clinical skill and experience. Among the 1,505 nurses, 56.23% of them believed that they could help themselves and others, even though only 6.98% of them had participated in disaster relief and 17.8% had an experience of professional disaster relief training within three years.

Nearly ten percent (157/1505) of the nurses stated they were unwilling to go to Hubei, mostly due to family reasons (66.88%), followed by the poor physical status (52.87%). Besides, 26.45% of the nurses were unwilling to join the international team, mainly because of the language barrier and family issues.

3.3 | Professional identity of nurses with different educational backgrounds and job titles

Next, we evaluated the professional identity of nurses and its work-related factors during the epidemic. The

TABLE 2 Willingness to participate in epidemic relief (n = 1505)

Questions		Number of cases	Percentage (%)
Are you willing to go to assist Hubei?	Yes	1,348	89.57%
	No	157	10.43%
Are you willing to join the international medical team to go abroad for rescue?	Yes	1,107	73.55%
	No	398	26.45%
Have you participated in disaster relief?	Yes	105	6.98%
	No	1,400	93.02%
Have you participated in professional disaster relief training within three years?	Yes	268	17.81%
	no	1,237	82.19%
It is my responsibility to respond to the call during an epidemic outbreak	Agree	13,92	98.93%
	Disagree	13	1.07%
My colleagues also respond to the call during the epidemic outbreak	Yes	1389	98.58%
	No	18	1.42%
My family supports me to participate in first-line rescue	Yes	1,042	87.12%
	No	152	12.88%
My family without me can deal with the epidemic	Agree	1,046	91.19%
	Disagree	99	8.81%
I think it is safe to participate in the frontline rescue	Agree	706	69.56%
	Disagree	308	30.44%
I think the hospital can provide personal protective equipment to me	Yes	1,320	98.21%
	No	22	1.79%
The epidemic will have a serious negative impact on people's health	Agree	841	80.01%
	Disagree	209	19.99%
If I participate in the first-line rescue, I can complete the nursing work	Agree	1,295	99.16%
	Disagree	9	0.84%
Nursing work is very important in first-line rescue	Agree	1,482	100%
	Disagree	0	0%
I think it is ethical for nursing staff not to participate in the first-line rescue	Agree	398	35.07%
	Disagree	735	64.93%

TABLE 3 The professional identity of nurses among different educational backgrounds in total score and in five dimensions of the Nurses' Professional Identity Scale

Content	Technical school	Junior college	Undergraduate	Postgraduate and above	P^a
Total score	120.62 ± 18.53	117.69 ± 19.67	116.93 ± 19.36	125.71 ± 16.54	0.193
Professional cognition evaluation	37.50 ± 5.98	36.47 ± 6.01	36.41 ± 5.94	38.59 ± 4.76	0.355
Professional social support	22.82 ± 3.82	22.63 ± 4.20	22.47 ± 4 0.25	24.41 ± 3.61	0.265
Professional social skills	24.38 ± 4.00	23.74 ± 4.19	23.60 ± 4.14	25.59 ± 3.54	0.168
Coping with professional setbacks	23.79 ± 4.43	23.28 ± 4.38	22.95 ± 4.19	24.59 ± 3.94	0.172
Professional self-reflection	12.12 ± 2.23	11.59 ± 2.26	11.49 ± 2.29	12.53 ± 2.04	0.114

[a]One-way ANOVA result.

average total score on the PIS of all the nurses ranged from about 116 to 125, reaching a moderate to high professional identity. In contrast to the previous study, the educational background and job titles did not affect professional identity, both in the total score and the five dimensions (Table 3 and Table 4).

TABLE 4 The professional identity of nurses among different job titles in total score and in five dimensions of the Nurses' Professional Identity Scale

Content	Primary nurse	Junior nurse	Senior nurse	Deputy director and chief nurse	P^a
Total score	116.32 ± 19.97	117.02 ± 19.64	119.18 ± 18.80	117.65 ± 16.77	0.308
Professional cognition evaluation	36.16 ± 6.09	36.44 ± 6.06	36.96 ± 5.56	36.31 ± 5.85	0.434
Professional social support	22.33 ± 4.25	22.45 ± 4.29	23.02 ± 4.19	22.47 ± 3.31	0.215
Professional social skills	23.49 ± 4.22	23.56 ± 4.20	24.12 ± 4.02	23.88 ± 3.67	0.223
Coping with professional setbacks	22.99 ± 4.36	23.06 ± 4.22	23.26 ± 4.30	23.10 ± 3.80	0.905
Professional self-reflection	11.35 ± 2.33	11.50 ± 2.26	11.82 ± 2.25	11.90 ± 2.03	0.014

[a]One-way ANOVA result.

TABLE 5 The relationship between the dimensions and total scores of the Nurses' Professional Identity Scale and willingness to participate in epidemic relief

Content	Domestic willing	Domestic unwilling	P^a	International willing	International unwilling	P^a
Total score	119.29 ± 18.86	100.61 ± 15.84	<0.001	121.42 ± 18.66	106.01 ± 16.84	<0.001
Professional cognition evaluation	37.10 ± 5.72	31.17 ± 5.28	<0.001	37.75 ± 5.57	32.96 ± 5.58	<0.001
Professional social support	22.94 ± 4.14	19.20 ± 3.35	<0.001	23.34 ± 4.17	20.34 ± 3.54	<0.001
Professional social skills	24.07 ± 4.06	20.38 ± 3.45	<0.001	24.51 ± 4.00	21.38 ± 3.67	<0.001
Coping with professional setbacks	23.46 ± 4.20	19.93 ± 3.28	<0.001	23.89 ± 4.17	20.86 ± 3.64	<0.001
Professional self-reflection	11.74 ± 2.22	9.93 ± 2.08	<0.001	11.93 ± 2.23	10.47 ± 2.06	<0.001

[a]Result of t test.

3.4 | The relationship between professional identity and willingness to participate in the epidemic relief

To clarify the relationship between professional identity and willingness to participate in the epidemic relief, we divided the nurses into two groups: those willing to go to Hubei and those unwilling to go. The results demonstrated that nurses who were willing to go to Hubei had a significantly higher total score of professional identity than those who were not willing to go. The analysis of five dimensions of professional identity confirmed the results (Table 5). As to international epidemic relief, the same results were observed.

4 | DISCUSSION

The results of this study showed that 89.57% of nurses were willing to go to Hubei for first-line support during the COVID-19 epidemic, which was higher than the previously reported data (Lam et al., 2018; Rebmann et al., 2020). The most common reason was their belief in helping others in need, followed by improving their clinical skill and experience. During the epidemic, most nurses had a stronger sense of social responsibility than in ordinary times, and this sense of responsibility contributed to their dedication to support disaster relief. On the other hand, the nurses' relatives and friends also supported their decision to participate in the disaster relief. The nurses themselves felt proud of the rescue work during the epidemic. In line with our results, a previous study demonstrated that belief in the physician's duty to provide care, the safety of the family, and availability of protective equipment were the three most important factors influencing disaster relief (Snipes et al., 2013). Besides, self-preparation and workplace safety had been reported to be the main factors affecting willingness to participate in disaster relief (Lam et al., 2018). As is known, the Chinese government had proposed a strict policy of personal protection and environmental sterilization at the beginning of the epidemic. All the reasons above resulted in the high percentage of willingness to support Hubei province among nurses in China.

In this study, 66.88% (105/157) of the unwillingness to support Hubei was due to family reasons. This was in line with a meta-analysis that revealed medical staff

living with children or having childcare obligations were one-third less likely to be willing to work during an epidemic compared with those without these obligations (Aoyagi et al., 2015). The other two main reasons were a lack of skills and concerns about their safety. As shown in the results, only 6.98% of the nurses had experienced disaster relief, and only 17.81% had participated in clinical training related to disaster relief. This suggested that disaster-related training should be added to the regular exercise of nursing. In summary, several measures, including organizing professional disaster-related training courses, improving nurses' language skills, providing personal protection equipment, and enhancing nurses' confidence and sense of social responsibility, can significantly increase the willingness of nurses to assist areas with a severe epidemic.

The professional identity of nurses during the COVID-19 epidemic was evaluated to be at a high level according to the criteria of the questionnaire. Nurses with different educational backgrounds and professional titles had different scores of professional identity, but the difference was not statistically significant both in the total score and in the five dimensions. The result was inconsistent with the conclusion of another study which revealed that nurses whose work experiences exceeded ten years had lower professional identities (Johnson et al., 2012; L. Li et al., 2020; Qi et al., 2021). This may be due to the better work environment during the epidemic, such as better medical equipment, more public attention, and better relationships with colleagues. A cross-sectional study suggested that the work environment, including workforce and material resources, cooperation between nurses and doctors, and salary and social status, had a significant effect on the professional identity of nurses (Qi et al., 2021). Thus, improving the work environment might have a positive effect on professional identity of nurses during the COVID-19 epidemic.

Nurses who were willing to participate in supporting Hubei had higher professional identity than those who were unwilling to go. Professional identity is a positive psychological attitude for career development(de Lasson et al., 2016; Rosenblum et al., 2016). Nurses who were willing to support showed a higher sense of professional achievement and morality. If nurses could appreciate the value of their work, receive positive social support, and have a positive attitude, they could turn these resources into a positive inner motivation and finally respond to the call. Besides, when nurses had a very positive sense of professional identity, they could even eliminate their dissatisfaction with the working environment to a certain extent, which explained that when faced with a poor working environment in the epidemic area, nurses with high professional identity were still willing to respond to

the call. Therefore, professional identity can significantly increase the work enthusiasm of nurses.

There are some limitations of this study. First, although we described the relationship between professional identity and supporting willingness, the cross-sectional nature of this study makes it impossible to infer any cause-effect relationship between them. Second, the study population only consisted of nurses from teaching hospitals, leading to a potential selection bias. Thus, the conclusions could not be applied to clinical practice in all the hospitals in China.

5 | CONCLUSION

Most Chinese nurses were willing to participate in disaster relief during the COVID-19 epidemic. The professional identity of nurses during the COVID-19 epidemic was evaluated to be at a high level, and those with higher professional identity were more likely to respond to the call. Our findings will provide a theoretical basis for making national policies and professional training plans related to the epidemic.

CONFLICT OF INTERESTS
The authors have declared that there are no potential conflicts of interest.

AUTHOR CONTRIBUTIONS
Conception and design: Qinghong Xi, Lili Hou.
Acquisition of data: Li Li, Xiaoyue Gao.
Analysis and interpretation of data: Li Li, Yanbo Wang.
Drafting the manuscript: Li Li.
Revising the manuscript for intellectual content: Lili Hou.
Final approval of the completed manuscript: Qinghong Xi.

ORCID
Qinghong Xi https://orcid.org/0000-0001-5726-2077

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