



PROFESSIONAL IDENTITY DURING THE COVID-19 PANDEMIC: A CROSS- SECTIONAL SURVEY OF NURSES IN CHINA

By Feifei Zhang, MSN, RN, Qiantao Zuo, BSN, RN, Jingxia Cheng, BSN, RN, Zhuyue Li, MSN, RN, Longling Zhu, BSN, RN, Yingying Li, BSN, RN, Lijuan Xuan, BSN, RN, Yu Zhou, BSN, RN, and Xiaolian Jiang, PhD, RN

Background Emergency and intensive care unit nurses are the main workforce fighting against COVID-19. Their professional identity may affect whether they can actively participate and be competent in care tasks during the pandemic.

Objective To examine the level of and changes in professional identity of Chinese emergency and intensive care unit nurses as the COVID-19 pandemic builds.

Methods A cross-sectional survey composed of the Professional Identity Scale for Nurses plus 2 open-ended questions was administered to Chinese emergency and intensive care unit nurses through an online questionnaire.

Results Emergency and intensive care unit nurses had a medium level of professional identity. Participants' total and item mean scores in 5 professional identity dimensions were higher than the professional identity norm established by Liu ($P < .001$). The greatest mean item score difference was in the dimension of professional identity evaluation (3.57 vs 2.88, $P < .001$). When asked about their feelings witnessing the COVID-19 situation and their feelings about participating in frontline work, 68.9% and 83.9%, respectively, reported positive changes in their professional identity.

Conclusions The professional identity of emergency and intensive care unit nurses greatly improved during the early stages of the COVID-19 pandemic. This finding may be attributed to more public attention and recognition of nurses' value, nurses' professional fulfillment, and nurses' feelings of being supported, motivated, respected, and valued. (*American Journal of Critical Care*. 2021;30: 203-211)

The emergency department and intensive care unit (ICU) are the most stressful work units in hospitals, have heavy workloads and high occupational risks, and require quick responses in highly technical and emergency situations.^{1,2} High turnover among nurses in these units is of great concern internationally.^{1,3} When public health events or disasters occur, emergency and ICU nurses are often the main workforce on the front line.⁴ The COVID-19 outbreak has made the emergency department and ICU working environments even more challenging.

COVID-19 is an acute respiratory infection caused by SARS-CoV-2 that is highly infectious, rapidly transmitted, and widespread.⁵ The World Health Organization first labeled the outbreak of this virus a public health emergency of international concern⁶ and then a pandemic.⁷ At the time of our study, no specific antiviral therapies were available to treat this disease.⁵ In China, 1716 health care workers had

been infected with COVID-19 and 5 had died by February 11, 2020.⁸ During this critical situation, nurses working on the front line need to wear protective clothing, perform both professional and nonprofessional tasks because of the lack of support staff, and face many unpredictable risks and challenges. A study that was

conducted during the Middle East respiratory syndrome outbreak indicated that nurses who were constantly exposed to severe working conditions showed high intention to leave.⁹ In this context, measures must be taken to support the retention of members of this workforce, who have sophisticated professional skills and a high level of resilience.^{10,11}

Professional identity (PI) is a strong predictor of job retention.^{12,13} For nurses, PI reflects their views and feelings about the nursing profession and their psychological state, which determine their professional behavior tendency.¹⁴ Development of PI is a

dynamic process that lasts a lifetime^{15,16} and can be influenced by many factors, including social status,^{17,18} social dignity,¹⁸ work environment,¹⁹ public image,^{20,21} education, culture, and values.²¹ A previous study showed that the infectiousness, severity, proximity, and complexity of new acute infectious diseases could influence nurses' understanding, experience, and behavior when participating in an epidemic event,⁴ leading to positive or negative changes in their PI.

Studies have indicated that nurses, especially those working in the emergency department and ICU, have a comparatively low level of PI.^{22,23} Previous studies of the PI of nurses were focused on status, influencing factors, and correlation with job burnout, turnover intention, and job stress. To our knowledge, studies are lacking on the PI of emergency and ICU nurses when major public health emergencies occur. The PI level of this group of nurses and whether it has changed during the COVID-19 pandemic are unknown. Therefore, we aimed to describe the PI level of emergency and ICU nurses during the COVID-19 pandemic and explore the possible effect of the pandemic on their PI changes. Our goals were to contribute to the body of knowledge on PI in nursing and provide scientific evidence to develop targeted strategies promoting PI.

Methods Design

This was a self-reported, cross-sectional study conducted from February 17 to March 2, 2020. The study was approved by the Biomedical Ethics Review Committee of West China Hospital, Sichuan University. The survey measure was first uploaded to an online questionnaire system (Wenjuanxing, <https://www.wjx.cn/>) and the questionnaire link was then posted on a large Chinese social media platform (WeChat, <https://weixin.qq.com/>). Nurses currently working in an emergency department or ICU were invited to participate in the electronic survey. Participation was anonymous, and completion of the survey was considered consent to participate. Internet protocol

Outbreaks of acute infectious diseases may affect nurses' perception of the nursing profession.

About the Authors

Feifei Zhang is a PhD candidate, West China School of Nursing/West China Hospital, Sichuan University, Chengdu, Sichuan Province, China, and a lecturer, School of Nursing, Wenzhou Medical University, Wenzhou, Zhejiang Province, China. **Qiantao Zuo, Jingxia Cheng, Yingying Li, Longling Zhu, Lijuan Xuan,** and **Yu Zhou** are MSN candidates, **Zhuyue Li** is a PhD candidate, and **Xiaolian Jiang** is a professor, West China School of Nursing/West China Hospital, Sichuan University.

Corresponding author: Xiaolian Jiang, PhD, RN, West China School of Nursing/West China Hospital, Sichuan University, No. 37, Guoxue Xiang, Wuhou District, Chengdu 610041, Sichuan Province, China (email: jiang_xiaolian@126.com).

(IP) address restriction technology was adopted to ensure that users with the same IP address could complete the questionnaire only once.

Measures

The Professional Identity Scale for Nurses (PIS) is a 30-item survey developed by Liu et al²⁴ to evaluate the PI of Chinese nurses. The instrument is a 5-point Likert scale comprising 5 dimensions:

- Professional identity evaluation: 9 items assessing nurses' views on the significance and value of nursing, their beliefs and feelings about the nursing profession, and their perceptions of person-job matching
- Professional social support: 6 items referring to recognition and support from patients, nursing and medical colleagues, managers, and significant others like family members
- Professional social proficiency: 6 items referring to sense of control in interpersonal communication and cooperation in adapting to the complex professional working environment
- Dealing with professional frustration: 6 items assessing the cognitive style and action mode adopted while encountering professional frustrations, reflecting the effectiveness and tenacity of coping with occupational stress
- Professional self-reflection: 3 items referring to self-exploration, self-correction, and critical judgment in work, a process of in-depth cognition and understanding of self and occupation

Total PIS scores range from 30 to 150, with higher scores indicating a higher PI level. Total scores of 60 or less are designated as a poor level of PI; greater than 60 through 90, a low level; greater than 90 through 120, a medium level; and greater than 120, a high level.²⁴ Confirmatory factor analysis showed that PIS has good structural validity. The internal consistency Cronbach α was 0.938 for the total scale and 0.720 to 0.911 for the 5 dimensions.²⁴ Liu et al^{14,25} also established a PI norm based on a survey of 524 clinical nurses recruited by stratified cluster sampling from 9 hospitals of different levels in Shanghai, China.

Demographic and professional data included sex, age, marital status, education level, years of nursing experience, job title, position, and work on the front line of COVID-19. We added 2 open-ended questions at the end of the questionnaire to collect a richer and more vivid description of participants' feelings and perspectives under the COVID-19 pandemic. The first question asked how each respondent felt as a nurse when witnessing the COVID-19 pandemic; the

second asked how each respondent felt if participating in frontline work.

Analysis

Demographic and professional data and responses to open-ended questions were summarized with descriptive statistics. Analysis of variance and *t* tests were used to examine differences in PIS dimensions and total mean scores among participants with different demographic and professional characteristics. These tests were also used to analyze the differences between the results of this study and the PI norm established by Liu et al.¹⁴ The Pearson χ^2 test was used to analyze the total mean score distribution differences between the results of this study and Liu's PI norm.²⁵ Data from the open-ended questions were analyzed with viewpoint extraction and coding, theme generation, and rechecking. The text was analyzed by 2 investigators independently and checked by a third investigator. Disagreements were resolved by discussion. Statistical analyses were performed using SPSS, version 22.0 (IBM), and statistical significance was set at *P* less than .05. All tests were 2-sided.

Results

Participant Characteristics

Among the 1323 complete responses, most participants were female and had a bachelor's degree or higher. The mean (SD) age was 30.2 (6.2) years (mode, 30 years; range, 16-59 years) and the mean (SD) years of nursing experience was 8.67 (7.09) years (mode, 10 years; range, 0.5-40 years). More than half of the participants worked on the front line of the COVID-19 response (Table 1).

Professional Identity

The total mean (SD) score for PI was 113.68 (23.92), at the medium level of PI according to the interpretation of Liu et al²⁴ (Table 1). In total, 1093 participants (82.6%) scored at the medium level or higher, with 537 (40.6%) scoring at the high level (see Figure). The item mean scores for the 5 PIS dimensions ranged from 3.57 to 3.96, all at an above-medium level (Table 1). In the subgroup analyses, significant differences were identified among nurses in different age groups (*P* < .05) and with or without a management position (*P* < .01) (Table 1).

The Professional Identity Scale with 2 open-ended questions was administered via an online survey.

Table 1
Participants' characteristics, total score on Professional Identity Scale for Nurses (PIS), and results of subgroup analyses (N=1323)

Variable	No. (%)	Total score, mean (SD)	Score on each dimension of PIS, mean (SD)				
			Professional social support	Dealing with professional frustration	Professional self-reflection	Professional social proficiency	Professional identity evaluation
Total sample		113.68 (23.92)	3.96 (0.84)	3.95 (0.84)	3.93 (0.88)	3.70 (0.85)	3.57 (0.92)
Sex							
Male	118 (8.9)	112.14 (24.33)	3.82 (0.82)	3.94 (0.88)	3.93 (0.91)	3.73 (0.87)	3.48 (0.96)
Female	1205 (91.1)	113.83 (23.88)	3.98 (0.84)	3.95 (0.84)	3.93 (0.88)	3.70 (0.85)	3.58 (0.92)
Age, y							
<25	220 (16.6)	115.58 (23.63) ^a	4.04 (0.81) ^a	4.01 (0.83)	4.03 (0.86)	3.72 (0.86)	3.65 (0.90) ^a
25-34	855 (64.6)	112.46 (24.19) ^b	3.91 (0.85) ^b	3.92 (0.85)	3.89 (0.89)	3.67 (0.86)	3.53 (0.92) ^b
≥35	248 (18.7)	116.19 (22.98)	4.07 (0.77)	4.02 (0.81)	3.97 (0.90)	3.80 (0.82)	3.66 (0.93)
Years of nursing experience							
≤5	509 (38.5)	112.19 (23.83)	3.89 (0.84)	3.92 (0.85)	3.90 (0.87)	3.64 (0.85)	3.53 (0.91)
6-10	447 (33.8)	114.13 (23.95)	4.00 (0.83)	3.96 (0.83)	3.95 (0.88)	3.72 (0.86)	3.58 (0.92)
>10	367 (27.7)	115.19 (23.95)	4.02 (0.83)	4.00 (0.83)	3.95 (0.91)	3.78 (0.84)	3.62 (0.93)
Marital status							
Unmarried	484 (36.6)	112.38 (23.93)	3.92 (0.82)	3.92 (0.86)	3.93 (0.88)	3.65 (0.86)	3.51 (0.92)
Married	839 (63.4)	114.42 (23.89)	3.99 (0.84)	3.98 (0.83)	3.93 (0.89)	3.73 (0.85)	3.60 (0.92)
Education level							
<Undergraduate	492 (37.2)	114.83 (24.88)	4.00 (0.85)	3.98 (0.88)	3.95 (0.92)	3.74 (0.88)	3.63 (0.94)
Undergraduate and higher	831 (62.8)	112.99 (23.32)	3.94 (0.82)	3.94 (0.82)	3.92 (0.86)	3.68 (0.84)	3.53 (0.91)
Job title							
Nurse	413 (31.2)	113.73 (24.67)	3.97 (0.84)	3.95 (0.87)	3.94 (0.90)	3.68 (0.87)	3.58 (0.94)
Senior nurse	684 (51.7)	112.99 (23.95)	3.93 (0.85)	3.94 (0.85)	3.91 (0.87)	3.69 (0.85)	3.55 (0.91)
Supervisor nurse	206 (15.6)	115.43 (22.90)	4.05 (0.80)	4.01 (0.79)	3.97 (0.90)	3.78 (0.82)	3.60 (0.92)
Deputy chief nurse and chief nurse	20 (1.5)	118.20 (15.87)	4.06 (0.58)	4.17 (0.60)	4.03 (0.80)	3.83 (0.61)	3.75 (0.57)
Position							
Nurse	1263 (95.5)	113.09 (24.10)	3.94 (0.84)	3.94 (0.85)	3.91 (0.89)	3.69 (0.86)	3.55 (0.92)
Head nurse and above	60 (4.5)	126.12 (15.18) ^c	4.36 (0.54) ^c	4.35 (0.53) ^c	4.30 (0.69) ^c	4.08 (0.65) ^c	4.05 (0.66) ^c
Working on the front line of COVID-19							
No	594 (44.9)	113.35 (23.40)	3.95 (0.82)	3.96 (0.83)	3.97 (0.86)	3.67 (0.84)	3.55 (0.91)
Yes	729 (55.1)	113.95 (24.34)	3.98 (0.85)	3.95 (0.85)	3.90 (0.90)	3.73 (0.86)	3.59 (0.93)

^a $P < .05$, comparison between groups.

^b $P < .05$, comparison between 25-34 years age group and ≥35 years age group.

^c $P < .01$, comparison between groups.

Comparison With Liu's PI Norm

The total mean score and item mean scores for all 5 dimensions of PI in this study were significantly higher than Liu's PI norm¹⁴ ($P < .001$; Table 2). Of the 5 dimensions, the greatest difference in the item mean score was in PI evaluation (3.57 in this study vs 2.88 in Liu's study; Table 2). The difference in the PI level distribution between participants in this study and Liu's study²⁵ was significant ($P < .001$), and the percentage of participants in the high-level group was significantly higher in this study (40.6%) than in Liu's study (4%) (see Figure).

Nurses' Feelings During the COVID-19 Pandemic

Regarding the open-ended questions, 607 participants responded to the first question (how they felt as nurses when witnessing the COVID-19 pandemic) and 523 responded to the second question (how they felt if they participated in frontline work). Of the respondents to the first and second questions, 68.9% and 83.9%, respectively, expressed viewpoints related to the formation of positive PI (Table 3). The major themes identified were a sense of professional and social responsibility and accountability, actively dealing with setbacks and frustrations, a sense of

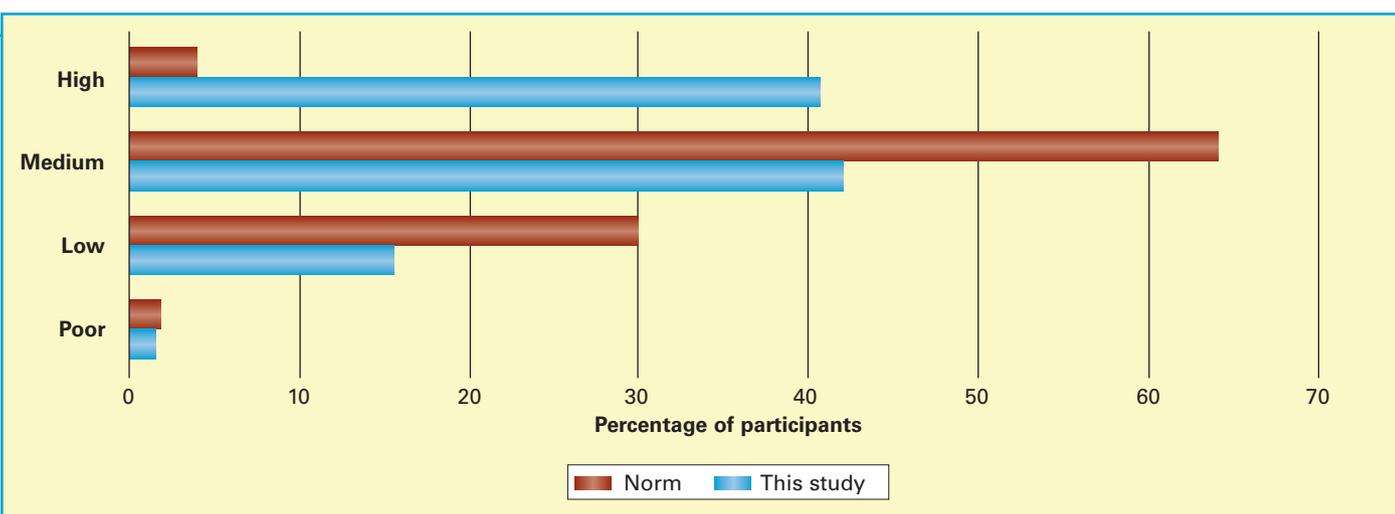


Figure Distribution of total professional identity scores in this study compared with the norm established by Liu²⁵ ($P < .001$). Total scores ≤ 60 indicate a poor level of professional identity; >60 through 90, a low level; >90 through 120, a medium level; and >120 , a high level.²⁴

professional value and fulfillment, social support, concerns about the nursing profession, and emotional reactions. The first 4 of these themes were associated with positive PI changes (Table 3).

Discussion

Overall, our results revealed that during the COVID-19 pandemic, the PI of emergency and ICU nurses was at a medium level. The PIS total mean score and the mean scores of the 5 dimensions were significantly higher than the norm reported by Liu et al,¹⁴ indicating that there were positive changes in all the aspects of PI. However, PI still did not reach an ideal level for emergency and ICU nurses with challenging professional responsibilities at the critical time of the COVID-19 pandemic outbreak. Targeted PI-promoting interventions to better prepare this group of nurses to cope with delivering care during crises such as future pandemics are indicated.

Subgroup analyses revealed no significant differences in PIS total mean scores or item mean scores of each dimension among participants of different sexes, years of nursing experience, marital status, educational levels, or job titles, a finding that is consistent with those of previous studies.^{26,27} Most studies with participants of different sexes reported that male nurses had a lower level of PI.^{28,29} The lack of any significant difference in PI between male and female nurses in our study might indicate that male nurses have not only a physical advantage over female nurses but a psychological advantage of being more valued and recognized in the ICU and emergency department, especially at the critical time of the pandemic outbreak. Although nurses generally become more professionally mature and competent with increasing years of nursing experience and with senior

Table 2
Scores on Professional Identity Scale for Nurses in this study compared with the norm established by Liu²⁵

Score	Mean/item mean (SD)		<i>t</i> ^a
	This study (n = 1323)	Norm (n = 524)	
Total scale	113.68 (23.92)	96.83 (14.99)	25.623
	3.79 (0.80)	3.23 (0.50)	25.517
Dimensions			
Professional social support	3.96 (0.84)	3.58 (0.53)	16.687
Dealing with professional frustration	3.95 (0.84)	3.42 (0.57)	23.201
Professional self-reflection	3.93 (0.88)	3.37 (0.65)	23.072
Professional social proficiency	3.70 (0.85)	3.12 (0.53)	24.892
Professional identity evaluation	3.57 (0.92)	2.88 (0.66)	27.350

^a All *P* values $< .001$.

professional titles,³⁰ our study did not show significant differences in PI among participants with different years of nursing experience and job titles. The reason for this finding might be that PI does not reflect only professional proficiency; rather, it is a set of traits shaped by personal, familial, social, and institutional factors.^{29,31} Findings on the influence of marriage on nurses' PI have not all agreed. Some researchers found that increased family burden may reduce nurses' PI level,³² and others reported that married nurses were more committed to their profession.²⁶

Results of some studies indicated that lower educational levels were associated with higher PI levels.^{33,34} In our study, however, we found no significant differences among nurses of different educational levels. The reason might be that hospitals in China are paying much more attention to the cultivation and retention of highly educated nurses than ever before,

Table 3
Analysis of participants' feelings during the COVID-19 pandemic based on the responses to open-ended questions

Theme and code	No. (%) of responses		
	Question 1 ^a (n=607)	Question 2 ^b (n=523)	Total (N=1130)
Sense of professional and social responsibility and accountability	203 (33.4)	180 (34.4)	383 (33.9)
Sense of responsibility/duty-bound	75 (12.4)	99 (18.9)	
Hope/willing/ready to participate in frontline work at any time	70 (11.5)	22 (4.2)	
Devote myself	30 (4.9)	23 (4.4)	
Help others using professional skills	20 (3.3)	28 (5.4)	
Unconditionally obey work arrangement	8 (1.3)	8 (1.5)	
Actively dealing with setbacks and frustrations	145 (23.9)	208 (39.8)	353 (31.2)
Stick to post and try best	55 (9.1)	91 (17.4)	
Determination, confidence to overcome setbacks and frustrations	50 (8.2)	81 (15.5)	
Keep learning, grow up, and become mature	18 (3.0)	11 (2.1)	
Active participation and coping	14 (2.3)	15 (2.9)	
Resilience and endurance	8 (1.3)	10 (1.9)	
Sense of professional value and fulfillment	88 (14.5)	109 (20.8)	197 (17.4)
Sense of meaningfulness, fulfillment, pride; being needed, valued, and respected	73 (12.0)	105 (20.1)	
Inspired/moved by frontline colleagues' braveness, dedication, service, and team spirit	15 (2.5)	4 (0.8)	
Social support	65 (10.7)	21 (4.0)	86 (7.6)
Moved by collectivism and cooperation from the public	47 (7.7)	17 (3.3)	
Recognition from patients, patients' family members, nursing colleagues, other health care professionals, and the public	7 (1.2)	3 (0.6)	
Being supported by colleagues/family/managers	11 (1.8)	1 (0.2)	
Concerns about the nursing profession	66 (10.9)	38 (7.3)	104 (9.2)
Not well valued, respected, and treated	31 (5.1)	14 (2.7)	
Heavy workload and hardship	17 (2.8)	14 (2.7)	
Risky, stressful working environment	12 (2.0)	8 (1.5)	
Need for expanding the nurse's role: public health educator	4 (0.7)	0 (0)	
Shortage of nurses	2 (0.3)	2 (0.4)	
Emotional reactions	39 (6.4)	13 (2.5)	52 (4.6)
Feel pained/distressed/powerless/helpless	21 (3.5)	0 (0)	
Anxiety, worry, fear	18 (3.0)	13 (2.5)	
Others	182 (30.0)	121 (23.1)	303 (26.8)
Recommendations for prevention and control: protect medical/nursing staff; provide more antiepidemic materials (protective clothing, medical masks, etc); suggestions to the public (wear mask, no gathering, hand hygiene, do exercise, health education, etc)	90 (14.8)	72 (13.8)	
Expectations for COVID-19 pandemic: hope everyone is safe, hope patients recover soon, hope pandemic is over soon, etc	62 (10.2)	33 (6.3)	
Views on life: protecting animals and environment; cherish present; importance of body, life, health; etc	30 (4.9)	16 (3.1)	

^a As a nurse, how do you feel when witnessing the pandemic situation of COVID-19?

^b As a nurse, how do you feel if you participate in the frontline work?

making those nurses feel valued.³⁵ In our study, participants in the 25- to 34-year age group scored significantly lower in the dimensions of professional social support and PI evaluation than did those older than 35 years. The reason may be that 25- to 34-year-olds have comparatively higher life and work pressure because they are at the beginning or growing stages of their careers, establishing families, and having children. However, participants older than 35 years might be more mature in their professional life, and some may already be in management

positions and have a relatively stable professional mindset.^{25,36} Compared with nurses not in management positions, those in management positions reported a significantly higher level of PI, as in other studies.^{25,37} Holding a management position might enhance the sense of fulfillment and overall self-confidence.²⁹ The interplay of these demographic and professional factors in shaping PI development warrants further exploration.

For a long time, the PI of Chinese nurses has been at medium and low levels³¹ and even lower for

emergency and ICU nurses.^{22,23} It is encouraging that our study participants' mean total PI score was significantly higher than the norm established by Liu¹⁴ and by other studies^{27,38,39} and that more than 40% of our participants had a high PI level. More importantly, the largest difference from Liu's results in the item mean score was in the dimension of PI evaluation (3.57 vs 2.88), indicating a fundamentally positive PI change in emergency and ICU nurses during the COVID-19 pandemic. Several possible explanations are reflected in our participants' responses to open-ended questions. As listed in Table 3, of the 6 major themes identified, the top 4 (sense of professional and social responsibility and accountability, actively dealing with setbacks and frustrations, sense of professional value and fulfillment, and social support) were helpful for positive PI formation.

During the COVID-19 pandemic, the public and media strongly affirmed nurses' bravery, altruism, and value. Frontline nurses were called "the most beautiful heroes heading for danger," which largely enhanced the public image of nurses. Studies have shown that nurses' professional self-perception can influence their PI formation,^{21,40} and a negative perception by the public can affect nurses' self-perception.²¹ Praise from the public during the pandemic has brought nurses more respect and recognition, which might have prompted them to reexamine their profession and form a positive perception. Studies have shown that feelings of achievement and being valued contribute to self-esteem and confidence, which influence coping strategies.⁴¹⁻⁴³ Studies on the correlation between social support and PI also support this explanation: nurses' PI is influenced more by the public than by their family members.⁴⁴

For both frontline nurses and nurses not on the front line, responses to open-ended questions indicated that they actively dealt with setbacks and frustrations. The most common comments from frontline nurses were "As professional nurse[s], we cannot flinch from the virus. Only by facing [the situation] bravely can we save those patients"; "The more difficult [the situation], the more [we move] forward"; and "We must learn to thrive on problems." Nurses not on the front line emphasized that although they were not on the front line, they would try their best to stick to their posts and be ready to go to the front line at any time. Additionally, participants, especially frontline nurses, stated that they felt that they had become more mature not only in professional skills but also in their views on life and the nursing profession. They were also psychologically more resilient.

In the responses to open-ended questions, both frontline nurses and nurses not on the front line most often mentioned increased professional and social responsibility and accountability. Frontline participants wrote, "Fighting against the pandemic is the duty-bound responsibility of every nurse" and "[I would] sacrifice myself to contribute to society." Although confronted with considerable challenges and uncertainties, especially the risk of being infected, participants in this study expressed a strong desire to work on the front line. "Ready to go at any time," "I want to go on the front line to fight with my colleagues side by side," and "Feel regret that I may have lost the only chance to go on the front line to do something in my nursing career" were frequently reported feelings for nurses who were not on the front line. Although their work brought hardship and uncertainty, most frontline nurses expressed feeling the meaningfulness of their work, a strong sense of pride and fulfillment, and gladness that they could play a role. They may serve as vivid examples for other nurses to inspire internal moral motivation, deepen their professional cognition, and contribute to positive PI formation.^{45,46} People choose nursing as a profession because they want to help others.⁴⁷ The goal of wanting to help people defines how nurses view themselves and their work.⁴⁸ As a major force in fighting against the pandemic, nurses have played an irreplaceable role. From their innermost hearts, they realize the difference nurses can make and the value their work can bring to society and humankind. Moreover, positive evaluation and recognition from patients and the public and more care and support from family, colleagues, and managers may have contributed to the positive PI change, particularly in the professional social support dimension.

Overall, our survey findings suggest that the COVID-19 pandemic had a positive effect on the PI of emergency and ICU nurses. The changes and underlying mechanisms identified confirm that "professional identity emerges through a process of self-formation, in which social interaction and self-reflection are basic processes."⁴⁹ Nevertheless, participants reported experiencing negative emotional reactions such as pain, distress, worry, fear, powerlessness, and helplessness. Some participants also

Mentioned most in the responses to the open-ended questions was a sense of professional and social responsibility and accountability.

expressed their concerns about the nursing profession: the lack of good recognition, respect, and value; the heavy workload, high work pressure, and shortage of nursing personnel; the risky, stressful working environment; and the need to expand the nurse's role, such as being public health educators. These factors may also explain why the PI of our participants improved significantly but remained at a medium level. Additionally, participants suggested pandemic prevention and control measures and expressed wishes for overcoming the pandemic, the well-being of humankind, and their awe of life.

One of the unexpected findings of this study was that PI scores of frontline nurses did not differ significantly from PI scores of nurses who were not on the front line. This finding may be related to the nature of the work and environment of the emergency department and ICU. The emergency department has the

highest risk for occupational exposure in the hospital, and the most severely ill patients are cared for in the ICU. The working environment is stressful, complex, and changeable, and nursing work is characterized by urgency, a heavy workload, high risk, and uncertainty.¹ Although

some emergency and ICU nurses did not directly participate in caring for patients with confirmed COVID-19, they were still at the forefront of the health care system, bearing almost the same risks and physical and psychological stresses, and they also obtained increased public recognition during the COVID-19 pandemic. One other possible reason might be positive feedback from their frontline colleagues. The positive public response to nurses during the pandemic might have prompted them to think about the meaning of nursing and the value of nurses.

Limitations

This study has several limitations. First, the survey was conducted as the pandemic was building, and the results do not reflect nurses' PI at other stages of the pandemic. A longitudinal design would be required to explore the long-term impact of the COVID-19 pandemic on nurses' PI. Second, to compensate for the insufficiency of the questionnaire survey we added 2 open-ended questions, but information mining was still limited compared with in-depth interviews. We suggest a well-designed qualitative study to more fully understand the implications, connotations, and

changes in emergency and ICU nurses' PI during a severe public health emergency. Third, the convenience sampling adopted in our online survey may have caused some bias, but our large sample size helped reduce this bias. Fourth, because PI is culturally shaped and influenced by multidimensional factors, generalization of our findings to emergency and ICU nurses with other sociocultural backgrounds needs to be done with caution.

Conclusion

To our knowledge, to date in China no relevant research has been conducted concerning the PI of emergency and ICU nurses during major public health emergencies. In addition, we innovatively included both frontline participants and participants who were not on the front line for comparison. Social evaluation and recognition and a sense of professional value and fulfillment are important to shaping nurses' PI, as we found in our study. To reduce turnover and stabilize emergency and ICU nursing teams, we suggest designing and implementing targeted PI-promoting strategies such as improving nurses' social status, enhancing the nursing profession's public image, exploring new areas of practice and new professional roles, and optimizing the appropriate use of different levels of nurses.

FINANCIAL DISCLOSURES

None reported.

REFERENCES

- McDermid F, Mannix J, Peters K. Factors contributing to high turnover rates of emergency nurses: a review of the literature. *Aust Crit Care*. 2020;33(4):390-396. doi:10.1016/j.aucc.2019.09.002
- Inoue KC, Versa GL, Matsuda LM. Stress level among intensive care nurses in the municipality of Paraná (Brazil). *Invest Educ Enferm*. 2014;32(1):69-77.
- Mosallam R, Hamidi S, Elrefaay M. Turnover intention among intensive care unit nurses in Alexandria, Egypt. *J Egypt Public Health Assoc*. 2015;90(2):46-51.
- Lam SKK, Kwong EWY, Hung MSY, Chien WT. Emergency nurses' perceptions regarding the risks appraisal of the threat of the emerging infectious disease situation in emergency departments. *Int J Qual Stud Health Well-being*. 2020;15(1):e1718468.
- Yang Y, Peng F, Wang R, et al. The deadly coronaviruses: the 2003 SARS pandemic and the 2020 novel coronavirus epidemic in China. *J Autoimmun*. 2020;109:102434. doi:10.1016/j.jaut.2020.102434
- Statement on the second meeting of the International Health Regulations (2005) Emergency Committee regarding the outbreak of novel coronavirus (2019-nCoV). World Health Organization. January 30, 2020. Accessed March 4, 2020. [https://www.who.int/news/item/30-01-2020-statement-on-the-second-meeting-of-the-international-health-regulations-\(2005\)-emergency-committee-regarding-the-outbreak-of-novel-coronavirus-\(2019-ncov\)](https://www.who.int/news/item/30-01-2020-statement-on-the-second-meeting-of-the-international-health-regulations-(2005)-emergency-committee-regarding-the-outbreak-of-novel-coronavirus-(2019-ncov))
- WHO director-general's opening remarks at the media briefing on COVID-19, 11 March 2020. World Health Organization. March 11, 2020. Accessed March 28, 2020. <https://www.who.int/director-general/speeches/detail/who-director-general-s-opening-remarks-at-the-media-briefing-on-covid-19---11-march-2020>
- Epidemiology Working Group for NCIP Epidemic Response, Chinese Center for Disease Control and Prevention. The epidemiological characteristics of an outbreak of 2019 novel

The COVID-19 pandemic made nurses realize the difference they can make and the value their work can bring to society and humankind.

- coronavirus diseases (COVID-19) in China. Article in Chinese. *Chin J Epidemiol.* 2020;41(2):145-151.
9. Jung H, Jung SY, Lee MH, Kim MS. Assessing the presence of post-traumatic stress and turnover intention among nurses post-Middle East respiratory syndrome outbreak: the importance of supervisor support. *Workplace Health Saf.* 2020;68(7):337-345. doi:10.1177/2165079919897693
 10. Hassankhani H, Hasanzadeh F, Powers KA, Dadash Zadeh A, Rajaie R. Clinical skills performed by Iranian emergency nurses: perceived competency levels and attitudes toward expanding professional roles. *J Emerg Nurs.* 2018;44(2):156-163.
 11. Lakanmaa RL, Suominen T, Perttilä J, Puukka P, Leino-Kilpi H. Competence requirements in intensive and critical care nursing—still in need of definition? A Delphi study. *Intensive Crit Care Nurs.* 2012;28(6):329-336.
 12. Cowin LS, Johnson M, Craven RG, Marsh HW. Causal modeling of self-concept, job satisfaction, and retention of nurses. *Int J Nurs Stud.* 2008;45(10):1449-1459.
 13. Sabanciogullari S, Dogan S. Relationship between job satisfaction, professional identity and intention to leave the profession among nurses in Turkey. *J Nurs Manag.* 2015; 23(8):1076-1085.
 14. Liu L, Zhang Y, Liu X. The correlation between job stressors, job burnout and professional identity of nurses. Article in Chinese. *J Nurs Adm (Chinese).* 2009;9(8):1-2. doi:10.3969/j.issn.1671-315X.2009.08.001
 15. Larson J, Brady M, Engelmann L, Bro Ignatius Perkins, Shultz C. The formation of professional identity in nursing. *Nurs Educ Perspect.* 2013;34(2):138.
 16. Willetts G, Clarke D. Constructing nurses' professional identity through social identity theory. *Int J Nurs Pract.* 2014; 20(2):164-169.
 17. Mousazadeh S, Yektatalab S, Momennasab M, Parvizy S. Job satisfaction challenges of nurses in the intensive care unit: a qualitative study. *Risk Manag Healthc Policy.* 2019;12:233-242.
 18. Mousazadeh S, Yektatalab S, Momennasab M, Parvizy S. Impediments to the formation of intensive care nurses' professional identity. *Nurs Ethics.* 2019;26(6):1873-1885.
 19. Rasmussen P, Henderson A, Andrew N, Conroy T. Factors influencing registered nurses' perceptions of their professional identity: an integrative literature review. *J Contin Educ Nurs.* 2018;49(5):225-232.
 20. Glerean N, Hupli M, Talman K, Haavisto E. Young peoples' perceptions of the nursing profession: an integrative review. *Nurse Educ Today.* 2017;57:95-102.
 21. ten Hoeve Y, Jansen G, Roodbol P. The nursing profession: public image, self-concept and professional identity. A discussion paper. *J Adv Nurs.* 2014;70(2):295-309.
 22. Ye T, Ji Y, Zheng T. Study on relationship between psychological resilience, coping style and professional identity among emergency nurses. Article in Chinese. *Hosp Manag Forum (Chinese).* 2019;36(6):66-68. doi:10.3969/j.issn.1671-9069.2019.06.022
 23. Golestan F, Ashktorab T, Anboohi SZ, Mohtashami J, Salmani F. Professional self-concept in nurses working in intensive care unit in hospitals affiliated to medical sciences universities of Tehran in 2014. *Adv Nurs Midwifery.* 2016;25(90):39-46.
 24. Liu L, Hao Y, Liu X. Development of professional identity scale for nurses. Article in Chinese. *Nurs J Chin People's Liberation Army.* 2011;28(2A):18-20. doi:10.3969/j.issn.1008-9993.2011.03.006
 25. Liu L. *A Study on Nurses' Professional Identity Level and Its Correlation With Job Stress and Job Burnout.* Dissertation in Chinese. Second Military Medical University, Shanghai, China; 2009. doi:10.7666/d.y1503977
 26. Zhang H. *Study on the Relationship Between Compassion Fatigue and Professional Identity in Critical Care Nurse.* Dissertation in Chinese. Shandong University, Jinan, China; 2014. doi:10.7666/d.Y2593973
 27. Shang X, Jiang X, Wang X. Professional identity of nurses at a Class III Grade A hospital in Lhasa. Article in Chinese. *Chin J Modern Nurs.* 2019;25(10):1292-1295. doi:10.3760/cma.j.issn.1674-2907.2019.10.024
 28. Worthington M, Salamonsen Y, Weaver R, Cleary M. Predictive validity of the Macleod Clark Professional Identity Scale for undergraduate nursing students. *Nurse Educ Today.* 2013;33(3):187-191.
 29. Mao A, Lu S, Lin Y, He M. A scoping review on the influencing factors and development process of professional identity among nursing students and nurses. *J Professional Nurs.* Published online May 6, 2020. doi:10.1016/j.profnurs.2020.04.018
 30. Chai X. *Study on the Current Condition and Influence Factors of Nurse Professional Identity.* Dissertation in Chinese. Shanxi Medical University, Taiyuan, China; 2012. doi:10.7666/d.y2127420
 31. Wang J, Ding S, Sang T, Feng H. Research progress on promotion strategy of nurses' professional identity. Article in Chinese. *Chin J Practical Nurs.* 2017;33(14):1117-1120. doi:10.3760/cma.j.issn.1672-7088.2017.14.018
 32. Peng Y, Shi R. Research progress on professional identity of nurses. Article in Chinese. *J Nurs (China).* 2008;15(7):22-24. doi:10.3969/j.issn.1008-9969.2008.07.007
 33. Wang T, Luo Y. Correlation between care atmosphere perception in hospital and professional identity of nursing students in clinical training. Article in Chinese. *Chin Nurs Res.* 2018; 32(5):825-828. doi:10.3969/j.issn.1009-6493.2018.05.041
 34. Mu Q. *Relationship Between Professional Identity, Job Satisfaction and Turn Over Intention of Emergency Department Nurses in Top-Class Hospitals of Liaoning Province.* Dissertation in Chinese. China Medical University, Shenyang, China; 2012. doi:10.7666/d.y2092180
 35. Ma D. *Relationship Between Quality of Work Life, Occupational Commitment and Intention to Leave the Profession Among Nurses—Take University Affiliated Tertiary Hospitals as an Example.* Dissertation in Chinese. Nanfang Medical University, Guangzhou, China; 2018. doi:10.7666/d.Y3475156
 36. Liu H, Tian Y, Du A, Zhou C. Study of ICU nurses' perception of the working environment and its impact on the intention of turnover. Article in Chinese. *Chin J Modern Nurs.* 2017; 23(15):2010-2014. doi:10.3760/cma.j.issn.1674-2907.2017.15.014
 37. Wang X, Li Y, Lin L. A survey of status quo of professional identity of nurses in Weifang city. Article in Chinese. *Chin Nurs Res.* 2007;21(7A):1728-1730. doi:10.3969/j.issn.1009-6493.2007.19.014
 38. Wu R, Lin M. Investigation on the current situation of career identity of nurses in large third-grade class-A hospitals. Article in Chinese. *Int J Nurs (Chinese).* 2017;36(8):1030-1034. doi:10.3760/cma.j.issn.1673-4351.2017.08.007
 39. Meng Y. Investigation and analysis of professional identity of nurses in different positions in emergency department. Article in Chinese. *Today Nurse (Chinese).* 2019;26(3):20-21.
 40. Okura M, Uza M, Izumi H, Ohno M, Arai H, Saeki K. Factors that affect the process of professional identity formation in public health nurses. *Open J Nurs.* 2013;3(1):8-15.
 41. Seo K, Kim M. Professional identity of Korean nurse practitioners in the United States. *J Am Assoc Nurse Pract.* 2017; 29(4):195-202.
 42. Piil K, Kolbaek R, Ottmann G, Rasmussen B. The impact of [corrected] expanded nursing practice on professional identity in Denmark. *Clin Nurse Spec.* 2012;26(6):329-335.
 43. Dahl BM, Clancy A. Meanings of knowledge and identity in public health nursing in a time of transition: interpretations of public health nurses' narratives. *Scand J Caring Sci.* 2015; 29(4):679-687.
 44. Wei M, Zhang L. The influence of social support on professional identification. Article in Chinese. *Chin Nurs Manage.* 2009;9(6):47-49. doi:10.3969/j.issn.1672-1756.2009.06.018
 45. Baldwin A, Mills J, Birks M, Budden L. Reconciling professional identity: a grounded theory of nurse academics' role modelling for undergraduate students. *Nurse Educ Today.* 2017;59:1-5.
 46. Jack K, Hamshire C, Chambers A. The influence of role models in undergraduate nurse education. *J Clin Nurs.* 2017; 26(23-24):4707-4715.
 47. Eley D, Eley R, Bertello M, Rogers-Clark C. Why did I become a nurse? Personality traits and reasons for entering nursing. *J Adv Nurs.* 2012;68(7):1546-1555.
 48. Landis TT, Severtsen BM, Shaw MR, Holliday CE. Professional identity and hospital-based registered nurses: a phenomenological study. *Nurs Forum.* 2020;55(3):389-394.
 49. Fagermoen MS. Professional identity: values embedded in meaningful nursing practice. *J Adv Nurs.* 1997;25(3):434-441.

To purchase electronic or print reprints, contact American Association of Critical-Care Nurses, 27071 Aliso Creek Road, Aliso Viejo, CA 92656. Phone, (800) 899-1712 or (949) 362-2050 (ext 532); fax, (949) 362-2049; email, reprints@aacn.org.