

Current State of the Nurse's First Aid Ability in the Non-Acute and Critical Care Unit of a 3A Grade Hospital

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Abstract: **Objective:** To understand the emergency ability of clinical non-acute and critical care nurses facing various emergencies and to provide targeted strategies. **Methods:** A total of 713 non-acute and critical care nurses from a 3A grade hospital were selected in July 2021. A questionnaire developed by Zhao et al. was administered using the clinical emergency care evaluation for non-emergency department nurses. Data were evaluated by descriptive statistics, analysis of variance, and multiple linear regression analysis. **Results:** The total score of the clinical emergency ability of non-acute and critical care nurses was 127.43 ± 11.91 points, of which the score of emergency management ability was the highest (56.54 ± 6.27). The theoretical knowledge reserve reached the lowest score (12.72 ± 1.53). One-way analysis of variance showed that non-acute and critical care nurses with different ages, capability levels, nursing ages, educational backgrounds, working abilities, and whether they had the first aid ability operation and theory training were found to have significant differences in the total score and the scores of each dimension of clinical first aid ability ($P < 0.05$). Multiple linear regression analysis revealed that nursing age, capability level, and whether they had trained in the first aid ability operation were the primary influencing factors of the clinical emergency ability of non-acute and critical care nurses. **Conclusion:** Non-acute and critical care nurses need to improve their knowledge reserves and response skills for treating emergencies. It is necessary for non-acute and critical care nurses to improve their theoretical knowledge, practical skills, and comprehensive capacity in clinical emergency treatment.

Keywords: Non-Emergency Department; Nurse; Clinical Emergency Ability

Introduction

The nurse's first aid ability refers to a broad range of nursing staff's capacity to attentively and promptly monitor changes in patients' conditions in clinical practice, give reasonable analysis and judgment, apply professional skills, and make prompt decisions regarding rescue and disposition^[1]. Although non-acute and critical care nurses have fewer opportunities to participate in first aid than emergency department nurses, they often fail to timely and accurately recognize disease changes in emergencies involving acute, critical, and critically ill patients. Due to this, hospitals, departments, and patients are exposed to potential severe safety risks, and there may be nursing deficiencies or escalating conflicts^[2]. Given this, the study aims to investigate the current state of the comprehensive emergency capabilities of non-acute and critical care nurses and analyze the influencing factors, serving as a foundation for future training in these areas.

1. Subject and method

1.1 Subject

In July 2021, a convenience sampling method was used to select nurses from a tertiary care hospital's non-acute and critical care department in Nanjing, Jiangsu Province. Inclusion criteria: In-service registered nurses. Exclusion criteria: ① Acute and critical care nurses; ② nurses with more than one year of working experience in the emergency sector but not in a

specialty related to acute and critical care; ③ nurses who have been out of the workforce for more than one month; ④ refresher nurses.

1.2 Instrument

After obtaining the authors' permission via email, the clinical first aid ability of non-emergency department nurses was evaluated using a questionnaire created by Zhao et al. The questionnaire included five dimensions: first aid management ability, critical condition observation ability, first aid response-ability, first aid disposal ability, and theoretical knowledge reserve. Twenty-eight items were rated by the Likert 5-level classification, eight of which were reverse questions, and the rest were forward questions. We assigned grades of "5, 4, 3, 2, and 1" for "extremely necessary, necessary, generally necessary, less necessary, and unnecessary", respectively. The reverse question was assigned a score of reverse points, and the forward question was given a score of forwarding points. The questionnaire's construct validity was 0.92, and its Cronbach's α coefficient was 0.927^[4].

1.3 Investigation method

The survey was conducted using a questionnaire star. The nursing department sent a link to qualified non-acute and critical care nurses through the WeChat group. The investigators followed standardized guidelines for completing the requirements. All items were set as mandatory questions to ensure the questionnaire completeness. Each device could only answer once to avoid repeated responses. The completion time was one week.

1.4 Statistical analysis

The data that did not meet the logical relationship were censored after the data exported from the questionnaire star were coded, sorted out, and established for a database. The remaining information was added to SPSS version 21.0 software. Measurement data were described by mean and standard deviation. Counting data were presented as frequency and percentage. The difference in nurses' clinical first aid competency scores in the non-emergency department was examined using one-way analysis of variance (ANOVA) and multiple linear regression. The test level was set at α of 0.05. $P < 0.05$ was considered statistically significant.

2. Results

2.1 General information for nurses in non-acute and critical care units

As detailed in Table 1, 713 clinical non-acute and critical care nurses were included in this study. With a recovery rate of 99.7%, 711 valid surveys were returned. The mean age was 30.91 ± 6.17 years. The average nursing age was 9.14 ± 6.60 years.

Table 1 General information on the 711 study participants

Indicator	Category	Case (n)	Percentage (%)
Age	20 to 29 years	335	47.1
	30 to 39 years	314	44.2
	≥ 40 years	62	8.7
Title	Junior	564	79.3
	Intermediate	135	19.0
	Senior	12	1.7
Nursing age	≤ 5 years	204	28.7
	6 to 10 years	306	43.0
	> 10 years	201	28.3
Personnel benefit	Officially in preparation	35	4.9
	Personnel agency	64	9.0

Capability level	Employment	612	86.1
	N0	31	4.4
	N1	144	20.3
	N2	407	57.2
	N3	119	16.7
Highest degree	N4	10	1.4
	College	95	13.4
	Bachelor	610	85.8
	Master degree or above	6	0.8
Department	Non surgical area	363	51.1
	Surgical area	348	48.9
First aid ability operation training	Yes	651	91.6
	No	60	8.4
First aid ability theory training	Yes	648	91.1
	No	63	8.9

The total score of the clinical emergency ability for non-acute and critical care nurses was 127.43 ± 11.91 points, with the highest dimension score (56.54 ± 6.27) of emergency management capacity and the lowest score (12.72 ± 1.53) of theoretical knowledge reserve.

Table 2 Each dimension score and total scores of nurses' emergency abilities in clinical non-acute and critical care department (n=711)

Item	Mean	Standard deviation	Highest score	Lowest score
Theoretical knowledge reserve	12.72	1.526	15	6
Critical condition observation ability	21.62	2.271	25	12
First aid response-ability	18.71	1.792	20	12
First aid disposal ability	17.85	1.980	20	10
First aid management ability	56.54	6.265	65	36
Total score	127.43	11.912	145	87

ANOVA revealed a significant difference in the total score of clinical first aid ability among non-acute and critical care nurses with different ages, professional titles, nursing ages, and capability levels, and whether they had the first aid ability operation and theory training ($P < 0.05$). Additionally, non-acute and critical care nurses with various degrees showed statistically significant differences in their clinical first aid response-abilities and disposal ability scores ($P < 0.05$).

Table 3 Influencing factors of all dimensions and total scores of nurses' first aid abilities in clinical non-acute and critical care department (n=711)

Item	Category	Total score		Theoretical		Critical		First aid		First aid		First aid	
		x	s	x	s	x	s	x	s	x	s	x	s
Age	20 to 29	125.	12.4	12.67	1.46	21.29	2.37	18.4	1.91	17.65	1.98	335.0	55.7
	30 to 39	128.	11.1	12.70	1.61	21.87	2.15	18.9	1.64	18.01	1.97	314.0	57.1
	≥ 40 years	129.	11.5	13.06	1.42	22.16	2.08	18.8	1.73	18.13	1.94	62.00	57.6
	<i>F/t</i>	6.20		1.797		7.448		6.51		3.302		5.232	
	<i>P</i>	0.00		0.167		0.001		0.00		0.037		0.006	
Title	Junior	126.	12.0	12.64	1.52	21.47	2.29	18.6	1.82	17.76	1.97	56.25	6.37
	Intermedi	130.	10.4	13.06	1.50	22.22	2.12	19.0	1.58	18.23	1.95	57.80	5.52
	Senior	126.	15.2	12.50	1.78	21.83	2.21	18.1	2.37	17.83	2.52	55.92	7.91

Item	Category	Total score		Theoretical		Critical		First aid		First aid		First aid	
Nursing	<i>F/t</i>	5.10		4.27		6.061		3.52		3.051		3.425	
	<i>P</i>	0.00		0.014		0.002		0.03		0.048		0.033	
	≤5 years	125.	12.1	12.68	1.401	21.2	2.366	18.4	1.90	204	17.6	204	55.4
	6 to 10	127.	12.0	12.68	1.496	21.64	2.235	18.7	1.78	306	17.8	306	56.7
	>10	129.	11.1	12.81	1.689	22.02	2.159	18.9	1.63	201	18.0	201	57.3
	<i>F/t</i>	5.24		0.527		6.797		4.60		2.539		4.754	
First aid ability operatio	<i>P</i>	0.00		0.591		0.001		0.01		0.08		0.009	
	Yes	128.	11.4	12.8	1.507	12.8	1.507	18.8	1.70	17.96	1.92	56.85	6.06
	No	119.	13.9	11.8	1.447	11.8	1.447	17.6	2.36	16.65	2.19	53.17	7.40
	<i>F/t</i>	4.71		4.945		5.537		3.56		4.998		3.735	
	<i>P</i>	0.00		0.000		0.000		0.00		0.000		0.000	
	Yes	128.	11.6	12.79	1.52	21.73	2.238	18.7	1.73	17.93	1.95	56.8	6.16
First aid ability	No	121.	12.7	12.02	1.42	20.48	2.306	18	2.21	17.06	2.11	53.86	6.68
	<i>F/t</i>	4.25		3.858		4.244		2.69		3.336		3.586	
	<i>P</i>	0.00		0.000		0.000		0.00		0.000		0.000	
	N0	121.	12.2	12.45	1.362	20.65	2.058	17.6	1.80	17.52	1.63	53.74	6.80
	N1	125.	13.3	12.71	1.514	21.24	2.665	18.2	2.06	17.69	2.07	55.69	6.88
	N2	127.	11.4	12.63	1.527	21.65	2.132	18.8	1.66	17.81	1.94	56.63	6.09
Capabil	N3	130.	10.3	13.11	1.5	22.22	2.124	19.0	1.60	18.29	1.98	57.99	5.35
	N4	126.	16.3	12.4	1.955	22.1	2.234	18.1	2.51	17.9	2.51	56.2	8.56
	<i>F/t</i>	4.82		2.633		4.747		7.23		2.023		3.89	
	<i>P</i>	0.00		0.033		0.001		0.00		0.089		0.004	
	College	126.	12.3	126.8	12.38	21.44	2.328	18.4	2.05	17.87	2.01	56.34	6.41
	Bachelor	127.	11.8	127.6	11.84	21.66	2.266	18.7	1.74	17.87	1.97	56.6	6.24
Highest	Master	118.	7.78	118.6	7.789	20.17	1.329	17.1	1.60	15.67	0.81	53	5.51
	<i>F/t</i>	1.83		0.005		1.637		3.67		3.715		1.039	
	<i>P</i>	0.16		0.995		0.195		0.02		0.025		0.354	
		1						6					

Multiple linear regression analysis showed that nursing age and whether they had received emergency ability operation training were the primary influencing factors on the total score of the clinical emergency ability of non-acute and critical care nurses. A longer nursing age was associated with a higher total score of clinical first aid abilities of non-acute and critical care nurses. Non-acute and critical care nurses who had undergone training in first aid ability operation had a higher overall clinical first aid ability score. Furthermore, higher title levels were related to higher scores of nurses' clinical emergency response abilities in non-critically ill units.

Table 4 Assignment of variables in multiple linear stepwise regression analysis

Variable	Assignment form
Age (years)	Continuous variable
Professional title	Junior=0; Intermediate=1; Senior=2
Nursing age (years)	Continuous variable
Capability level	N0=0; N2=1; N2=2; N3=3; N4=4
First aid ability operation training	Yes=0; No=1
First aid ability theory training	Yes=0; No=1

Table 5 Multiple linear stepwise regression analysis of influencing factors of nurses' first aid abilities in non-acute and critical care departments (n=711)

Variable	b	β	t	P	R ²	F	P
Total score							
(Constance)	134.383	——	70.866	0.000	0.056	21.898	0.000
First aid ability operation training	-8.353	-0.195	-5.332	0.000			
Nursing age	0.231	0.128	3.497	0.001			
Theoretical knowledge reserve							
(Constance)	13.804	——	60.858	0.000	0.032	24.448	0.000
First aid ability operation training	-1.002	-0.183	-4.945	0.000			
Critical condition observation ability							
(Constance)	22.851	——	63.395	0.000	0.061	24.097	0.000
First aid ability operation training	-1.568	-0.192	-5.265	0.000			
Nursing age	0.052	0.150	4.105	0.000			
First aid response-ability							
(Constance)	18.816	——	48.649	0.000	0.048	18.811	0.000
First aid ability operation training	-0.999	-0.155	-4.200	0.000			
Capability level	0.335	0.144	3.899	0.000			
First aid disposal ability							
(Constance)	19.276	——	65.539	0.000	0.033	24.979	0.000
First aid ability operation training	-1.313	-0.184	-4.998	0.000			
First aid management ability					0.039	15.323	0.000
(Constance)	59.242	——	58.879	0.000			

Variable	b	β	<i>t</i>	<i>P</i>	R ²	F	<i>P</i>
First aid ability operation training	-3.470	-0.154	-4.174	0.000			
Nursing age	0.116	0.122	3.303	0.001			

3. Discussion

3.1 Current state of the nurse's emergency ability in the non-acute and critical care department

Our study revealed that non-acute and critical care nurses had the lowest theoretical knowledge reserve scores, consistent with the relevant domestic surveys^[7]. The reason might be the lack of understanding of the emergency first aid concept. Another explanation could be that the patient's condition was reasonably stable in non-acute and critical care departments. Furthermore, nurses had few opportunities to deal with sudden events that might have been life-threatening or confront emergency, critical, and critically ill patients. As a result, there was a lack of awareness of active learning and a poor reserve of theoretical knowledge when saving patients for nurses in these departments.

3.2 Influencing factors of the nurse's first aid ability in the non-acute and critical care department

3.2.1 Age, nursing age, and education

Univariate analysis showed the first aid ability scores of non-acute and critical care nurses with various ages, nursing ages, and educational levels. The nurse's first aid skills became more confident with more working years, work experience, and steady growth in working ability. However, 13.4% of the nurses had a bachelor's degree or below in this survey. The majority of 85.8% of bachelor's degrees were obtained through in-service education. Moreover, younger age was present in 28.6% of nurses with less than five years of employment. It was urgent to strengthen the proportional adjustment of human resources and the training of first aid capabilities for nurses due to the rapid development of the nursing profession.

3.2.2 Title and capability level

The study found that non-acute and critical care nurses with professional titles of supervisor and above showed a significantly greater capacity for reacting to public health emergencies than senior nurses and nurses. Similar to relevant domestic research, the senior nurse's competence was greater than that of the nurse, indicating that the professional title was one of the main factors affecting the response capacity of public health emergencies in non-acute and critical care nurses^[10-11]. Nurses with higher professional titles would likely have longer working years, richer working experience, more valuable clinical practice skills, more teaching experience, and higher emergency response capacities. Only 20.6% of the nurses had intermediate or higher professional levels in this study, indicating that the overall qualification was low. Therefore, the management department should strengthen the implementation of hierarchical level training.

3.2.3 First aid training

This study demonstrated that the nurses who underwent first aid capability-related operational and theoretical training had a much higher emergence capability than those who did not. Zhang et al. have confirmed that training drills could improve the nurse's emergency response ability^[13]. Therefore, improving nursing emergency skills in non-acute and critical care departments requires more systematic and practical training of nurses at various levels.

3.3 Countermeasures

3.3.1 Hierarchical training and emergency drill

In the study on training first aid level of operating room nurses, Nurses' first aid skills increase with ongoing learning and operation. Hierarchical training is a strong guarantee for improving the nurse's emergency response ability and an effective way to address the tension between the variety and complexity of current training material. It can suit the middle-level and senior nurses' desires to learn new enterprises and the primary nurse's urgent requirement to raise the technical operation level. Our hospital established the hierarchical training goal under the organization of the nursing department. Furthermore, the nurse could participate in the nursing guidance and research for the relevant speciality, grasp the latest development trends, and lead the nursing staff's continuous quality improvement. Nurses could be familiar with the contents of the emergency plan, the rescue process, and the rescue responsibility through emergency drills. They could further develop their sensitivity to emergencies, rescue capabilities, and willingness and confidence to participate in rescue operations effectively. Nurses can discuss how to handle emergencies, psychological reactions, and pressure relief in monthly nursing emergency experience discussion workshops, which enhance their risk prevention awareness and emergency response skills.

3.3.2 Enhancing self-psychological quality and increasing self-efficacy

sensation

Maintaining a healthy psychological state was the most important while handling several emergencies. Those with poor psychological health were easy to experience emotional instability, fatigue, anxiety, irritability, and other stress-related symptoms during the first aid response. High self-efficacy individuals would regard the pressure as an opportunity, face it actively, treat the difficulty as an exercise, pick up a variety of new skills, and start a positive cycle. It was evident that nurses' first aid proficiency and other professional skills might be enhanced by their self-efficacy levels. The nurse's confidence should be enhanced through daily first aid training and drills when participating in rescue operations as nursing management. Besides, they should develop their mental capacity, increase their sense of self-efficacy, and ensure sustained use of the approach in a demanding setting.

3.3.3 Providing social support

Social support refers to the mental and material supports that individuals obtain from their social relationships, including instrumental, emotional, information, and peer supports. With this assistance, the individual may feel less psychological and mental strain and be more sociable. Nursing social support is the assistance and support from relatives, friends, and colleagues. Good social support can effectively improve the first aid ability. Therefore, nursing managers should create a good working environment, positive interpersonal relationships, and a harmonious organizational atmosphere. They should also promote communication among nurses and provide assurances for efficiently increasing first aid skills.

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