Role Perception and Other Factors Influencing Clinical Decision-Making in Medical-Surgical Nurses

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ABSTRACT

COVID-19 has led nurses to need rapid and accurate clinical decisions. This study explores the medical and surgical nurses' clinical decision-making abilities, and the relationships between gender, age, educational level, work years or tenure, and role perception and nursing clinical decision-making abilities during the COVID-19 pandemic. To answer this question, 228 clinical nurses working in medical and surgical departments are selected and an online questionnaire is sent to collect their demographic profile, clinical decision-making ability, and role perceptions. The results show that during COVID-19 medical and surgical nurses can make decisions that benefit patients' health, but their perception of their role is decreased. The results also show that nurses with good clinical decision-making ability have decreased role perception, and nurses aged 21-25, junior college, and nurses with less than 1 work year also have better decision-making abilities. Not ignoring the decision-making ability of young nurses, with low education and low tenure contributes to patient health promotion. Nurses perceive that the role they play as nurses affects their decision-making ability, so focusing on and supporting role-playing and eliminating role ambiguity requires the attention of hospital administrators.

Keywords: Clinical decision-making ability, COVID-19, medical and surgical nurses, role perception

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Introduction

Patient care and health are linked to nurses' clinical decision-making (CDM) (Fernandez et al., 2020). The nursing department at Toronto General Hospital realized that for nurses to effectively plan individualized care for patients, they first needed help developing their CDM abilities (Harman et al., 1989). Nursing educators agree that "Thinking like a doctor" professional decision-making through specialized knowledge, attitudes, and skills is the ultimate academic goal and identify the value of nursing care for nurses to detect potential cues that affect patient recovery (Peet et al., 2019). Uncontrollably, at the start of 2020, the COVID-19 pandemic hit the public health system hard around the world, which requires healthcare providers to make decisions quickly during complicated patient conditions (Fusi-Schmidhauser et al., 2020). Nurses play a critical role in keeping the healthcare system on track because the nurses have responsibility for identifying the deterioration of patients early (Galehdar et al.,2020; Anton et al., 2021). For example, in the research of cardiovascular nurses, it was recognized that it is very critical to predict and early identify changes in heart rhythm when caring for severe patients with COVID-19 (Ozdemir Koken et al., 2022). However, the CDM of nurses is affected by the pandemic. Nurses during pandemic act contrary to the best care and initial care decision because of the bad environment (Laugesen et al., 2022). The nurses' unusually busy work in a short time and transfer to other wards in the hospital bring the opposite effect when they make clinical decisions on unknown tasks in strange fields (Nielsen & Dieperink, 2020).

Meanwhile, the quality of care is associated with the CDM (American Association of Nursing Colleges (AACN), 2021). Different scholars agree that health personnel as an important factor in measuring the quality of care (Fröjd et al., 2011 ; Moen et al., 2021). In nursing, Grinberg & Sela (2022) believed that there was a clear relationship between nurses' perceptions of their profession and the quality of care. The COVID-19 pandemic is a huge trouble faced by the nurses. The studies explored that the role of nurses included more tasks overloading them with tasks that made them feel fatigued and burdened, and that they believed it putting them at risk (Halcomb et al., 2020; Zhang et al., 2022). Meanwhile, Abuhammad et al. & Arcadi et al. (2020; 2021) figured out that outside media coverage burdened and underestimated their role as nurses. Interviews with nurses in the literature have exposed the perceived role of nurses in the COVID-19 pandemic compared to usual care, namely, they are required to do work that they are not required to do (Galehdar et al., 2020; Westbrook et al., 2022). This role perception of increased workload for their role perception as a nurse during the COVID-19 pandemic was not explained by previous studies.

Factors affecting nurses' clinical decision-making abilities

Reviewing the relevant factors of nursing CDM ability show that the studies classify the factors into personal and organizational factors. Personal factors identify that marital status, income level, nurses' morality, nurses' physical and mental

condition, nurses' emotions, critical thinking, and self-confidence are positively related to nurses' CDM abilities (Thompson, 2013; Isbell et al., 2020; Je., 2021; Savci et al., 2021; Wang et al., 2022; Yildirim& Kocatepe., 2022). Organizational factors reveal that continuing learning, better evidence-based abilities, high hospital grades, a good working environment, and positive teamwork can enhance the accuracy of nurses in decision-making (Hoffman et al., 2004; Nibbelink & Brewer, 2018; Li et al. 2019).

Aside from the following factors, some personal and organizational factors such as gender, age, educational level, and work years or tenure have not been fully explored in previous studies. The majority of nursing tasks are assigned to female nurses with the belief that they have an important role in CDM, while male nurses have a different understanding of the CDM process (Alaseeri et al., 2019). Age is not accurately stratified in previous studies, which is just collecting the demographic characteristics of the participants. Thinking about CDM that accompanies age does exist, then as a CDM among nurses where the factors need to be rethought in terms of different age groups. Educational level is a controversial presence in the literature, with some studies suggesting that higher education represents stronger CDM in nursing, while others suggest that educational level has little effect on nurses' CDM (Hoffman et al., 2004; Mirsaidi& Lakdizaji, 2012; Wang et al., 2022). Based on the education of Chinese nurses, the difference between nurses with a junior college degree and those with a bachelor's degree or above is not adequately explained, because a junior college degree or above accounts for up to 70 percent of nurses in China (Zhu, 2022). Tenure is thought to be associated with better CDM abilities and can be argued from Dr. Benner's theory (Benner, 2004). However, the literature categorizes tenure into several different levels and does not consider the differences brought about by different tenure.Numerous studies involve emergency departments or intensive care units, which are believed to need nurses to produce more accurate decisions to promote patient health. Neglecting medical and surgical (MS) nurses also needs to produce more accurate CDM, especially during the COVID-19 pandemic.

Theory about the Nursing Clinical Decision-making

Numerous nursing theories provide the theory for nurses' CDM. Only two theories that are relevant to this study are mentioned here. "Novice to Expert" is developed by Dr. Patricia Benner. This theory describes the evolution of nursing practice. Dr. Benner (2004) argued that nursing, because of the complexity and diversity of practice, requires nurses to make good clinical judgments based on scientific evidence and technological advances. This theory explores the 5 stages of nurse practice growth, which is progressively richer with work experience (He, 2015). The stages of nurses' tenure were deeply explored in this study for study. Cognitive continuum theory has its roots in cognitive psychology, and Dr. Hammond, a proponent, argues that nurses make decisions in choosing whether to use analysis or intuition based on the structure of the task (complexity, ambiguity of content, and presentation). Analysis is considered a slow and conscious process, while intuition is a fast and unconscious choice (Cader et al., 2005). This theory explains when the task

has a stable environment or more clues the nurse will choose analysis, and conversely, the nurse will choose the intuitive (Hammond, 1988). Cognitive continuum theory has been used to illustrate the decision-making that the COVID-19 pandemic causes nurses to choose when faced with different task structures.

Previous literature has revealed the importance of nurses' CDM ability for patient health. However, little literature has explored MS nurses' CDM ability during the COVID-19 pandemic. In exploring the factors affecting CDM ability, gender, age, education level, and tenure are ambiguous. As the COVID-19 pandemic is sweeping across the globe and requires nurses to make accurate CDM due to the increased role of nurses due to external circumstances.

This study aimed to determine the level of CDM abilities of staff nurses who worked in MS departments. Moreover, the relationship between participants' gender, age, education level, work years or tenure, and nurses' role perception and nurses' CDM abilities also were studied. The questions below were studied.

1. What is the level of participant's clinical decision-making abilities of the medical and surgical nurses?

2. Is there a relationship between role perception and the clinical decision-making abilities of medical and surgical nurses?

3. Is there a significant difference in the clinical decision-making abilities of medical and surgical nurses when classified according to their demographic profile of gender, age, educational level, and work years or tenure?

Methodology

Design

The study was quantitative with a descriptive cross-sectional correlation design with data collection via online questionnaires.

Participants

Nurses (*N*=228) from the MS departments of two hospitals in Shandong Province, China, were invited to participate anonymously, and they were purposively selected in this study: the inclusion criteria for this study were MS nurses working in clinical settings. Nurse managers and nurses working in the intensive care unit, emergency department, gynecology, pediatrics, and operating room were excluded.

Using G*power for a sample prior analysis, using the two-tailed test, a large effect size (f2 = 0.2), an alpha of .05, and a power of 0.80. A total of 241 participants were collected, of which 13 unqualified questionnaires were eliminated, and the questionnaire pass rate was 95 percent. 228 participants were finally recruited. Table 1 presented that most of the participants were female (83.3%), and unmarried (72.4%). The most of participants were a junior college (64.5%), 21-25 years old (64%), and less than 1 year of tenure (48.7%). 63.2% of participants were working in medical (internal medicine) departments.

Table 1

Social Demographic Profiles of The Participants (N=228)

	f	%
Gender		
Male	38	16.7
Female	190	83.3
Age		
21-25	146	64.0
26-30	25	11.0
31-35	17	7.5
36-40	16	7.0
41-50	11	4.8
>50	13	5.7
Educational Level		
Technical Secondary School	11	4.8
Junior College	147	64.5
Bachelor	61	26.8
Master	9	3.9
Tenure		
<1 Years	111	48.7
1-3 Years	57	25.0
4-5 Years	23	10.1
>5 Years	37	16.2
Marital Status		
Unmarried	165	72.4
Married	63	27.6
Work Department		
Department of Internal Medicine	144	63.2
Department of Surgery	84	36.8

*Note:*f, frequency; %, percentage

Instruments

Social Demographic Profile

It was used to collect the participant characterizations which included gender, age, educational level, work years or tenure, marital status, and medical and surgical department assignment.

Clinical Decision Making in Nursing Scale (CDMNS)

CDMNS, developed by Jenkins, was used to evaluate MS nurses' CDM abilities (Duarte & Dixe, 2021; Faan & Jenkins, 2001, p. 33). This scale contained 40 items in total. It was divided into 4 subscales, and each score was 10 to 50, which were: (A) Search for Alternatives or Options; (B) Canvassing of Objectives and Values; (C)

Evaluation and Re-evaluation of Consequences; and (D) Search for Information and Unbiased Assimilation of New Information. The scale assigned values to "Never, Ever, Sometimes, Often, " respectively. Among the 40 entries, 22 were positive entries, 1 to 5, and 18 (2, 4, 6, 12, 13, 15, 19, 22, 23, 24, 25, 30, 31, 32, 34, 36, 39, 40) were negative entries, 5 to1. The total score of the scale was 40 to 200. The higher the score, the better the CDM abilities of nursing. The total score was divided into different grades: 40.00 to 93.33 with low CDM abilities, 93.34 to 146.67 with medium CDM abilities, and 146.68 to 200.00 with strong CDM abilities.

Role Perception Scale (RPS)

RPS, developed by Jianhong Ma and Tingwen Zhang, was used to measure participants' role perception (Liang et al., 2021). The scale included two parts, including 21 items, namely the role ambiguity dimension (8 items), negative entries (5-1), and the role conflict dimension (13 items), positive entries (1-5). It assigned a scale to "Strongly Disagree, Disagree, Neutral, Agree, and Strongly Agree. The total scale was calculated according to the average score of all items, which was the sum of the selection scores of all items, and then divided by the number of items. The score value of three indicated a neutral level. Each dimension was calculated in the same way as the total score. If role ambiguity was less than 3, role perception was low. If role conflict was less than 3, role perception was high.

Reliability

The researcher pretested CDMNS and RPS. The researcher got in touch with the nursing managers of the two hospitals to obtain the pretest consent for the research instruments, and they helped the researcher purposefully select 20 research participants who were working in the pediatric department and obstetrics department. They are excluded as study participants. The questionnaire and informed consent forms were distributed through the Internet. The results outputted and calculated by IBM Statistic Package for Social Science (SPSS) version 25: CDMNS, Cronbach's α was 0.779, and RPS, Cronbach's α was 0.826. Based on the pretest, CDMNS and RPS questions were not changed and were used to collect data on MS nurses.

Data collection

Choosing two hospitals in Shandong Province, China, the researcher contacted the nursing managers of both hospitals, obtained their consent, and assisted the researcher in distributing the study and researcher information. After the purposeful selection of participants, the researcher sent the questionnaire online and obtained participants' informed consent through online. Participants were willing to participate in the study by choosing through the buttons set by the researcher, and if they did not agree they could simply withdraw to end the questionnaire.

Participants who were willing to participate in the study and were aware of the informed consent can continue to complete the questionnaire. The questionnaire automatically stopped and outputted the data after they were completed. During the process of completing the questionnaire, the researcher supported them to pause and

exit halfway if they experienced any discomfort, and data were not outputted, only saved. All the options in the questionnaire were set as mandatory and the results were automatically outputted into a table after completion and the data was statistically processed.

Data analysis

The data were calculated by IBM SPSS version 25. The descriptive statistic was used to evaluate the participant's profile using frequency, percentage, mean, and standard deviation. The Pearson correlation coefficient was used to identify the relationship between the MS nurses' CDM abilities and role perception. The independent t-test was used to test the significant gender difference. Meanwhile, the one-way ANOVA and Tukey's honestly significant difference (HSD) test were used to test the significant differences between and within groups such as age, educational level, and work years or tenure.

Ethical consideration

Before the data collection, the study was approved by the Ethics Review Committee of Far Eastern University (Code: 2022-2023-102) by June 2023. This study offered informed consent to participants and was displayed at the time of data collection. For data management, the researcher stored the data in Excel and set a password to save it.

Results and Discussion

Table 2 below showed that participants' CDM abilities were medium level (mean 143.93, SD16.98). This study demonstrated the abilities of MS nurses to adapt to the changes in the COVID-19 pandemic and they would choose the best care appropriate for the patient when making decisions. In the comparison of four subscales, (C) Evaluation and Re-evaluation of Consequences had the highest score (mean 36.78, SD 5.50) and it were the same as Chen et al. (2020) explored acute and critical care nurses. This result found that the COVID-19 pandemic was opposite to their familiar knowledge and experience, nurses working in MS settings had to go through the repetitive evaluation of the ensuing changes in the patient's condition to find better care as acute care nurses did. (D) Search for Information and Unbiased Assimilation of New Information scores were the lowest (mean 34.13, SD 5.00). It showed that the ability of MS nurses to search for information declined, which may be related to the fact that the environment had changed a lot, resulting in the nurses not having much energy to search for it. Laugesen et al. (2022) suggested that the organization needed to keep up with the provision of appropriate information because nurses searching for it was difficult although they were willing to go for the betterment of themselves.

Table 2

The Level of Clinical Decision-Making Abilities of Medical and Surgical Nurses (N=228)

Dimensions	Mean	SD
Search for Alternatives or Options (A)	36.73	5.45
Canvassing of Objectives and Values (B)	36.29	5.19
Evaluation and Re-evaluation of Consequences (C)	36.78	5.50
Search for Information and Unbiased Assimilation of New Information (D)	34.13	5.00
Clinical Decision-Making Ability	**143.93**	**16.98**

The participants had low role perception (mean 2.26, SD 0.58) showed in Table 3 below. Role perception is a belief in the privileges and obligations associated with one's profession, and nurse role perception is believed to guide nurse behavior and attitudes (Schuler, 2016). Nurses are negatively affected by the large number of patients and infectious diseases they face and have increased uncertainty about their role. The MS nurses surveyed demonstrated a low level of role perception, and they became troubled during the COVID-19 pandemic. Jia et al. (2020) suggested that nurses were ambiguous about what kind of duties they were facing during the COVID-19 pandemic and what roles they were playing. This result was also revealed in the level of role ambiguity presented (mean 2.06, SD 0.62, indicating low role perception). Meanwhile, COVID-19 raises ethical considerations for nurses, and there are high expectations for nurses, resulting in what they need to do to best meet the patients' expectations, and their leaders' expectations, negatively affecting the MS nurses' perception of their roles.

Table 3

The Level of Role Perception of Medical and Surgical Nurses (N=228)

Dimensions	Mean	SD
Role Ambiguity	2.06	0.62
Role Conflict	2.39	0.69
Role Perception	**2.26**	**0.58**

Pearson correlation analyzed CDMNS and RPS had a significant relationship, negative strong correlation ($r=-.649$, $p<.001$), shown in Table 4. This study found that CDM abilities and role perception during the COVID-19 pandemic had a negative correlation, while the CDM abilities increased, role perception decreased. Bochatay et al. (2017) suggested that attention should be paid to the relationship between nurses' role perception and action. There was a plausible explanation for this during the COVID-19 pandemic, and it can be said that in the busy working environment, nurses had detected the best nursing decision through their rational analysis or intuition, and

they needed to implement it immediately. In other words, these nurses had good CDM abilities, but in line with Bochatay et al., nurses had biases in what services they needed to provide or meet the requirements of the health team (Taylor et al., 2020). The nurses had the separation of action and perception of their role. This is the result that nurses have to face in the Covid-19 pandemic. Excessive role expectations, conflicts in the unknown environment, remote control by doctors, and the professional interests of nurses have resulted in role conflict and ambiguity in nurses. Another point to consider is that role perception is an identity belief, that changes with external changes and with the person itself (Van, 2023b).

Table 4

Relationship of Clinical Decision-Making Abilities and Role Perception of Medical and Surgical Nurses (N=228)

	Role Ambiguity	Role Conflict	RPS
CDMNS (A)	-.589***	-.584***	-.669***
CDMNS (B)	-.585***	-.476***	-.588***
CDMNS (C)	-.532***	-.469***	-.561***
CDMNS (D)	-.280***	-.180**	-.246***
CDMNS	-.623***	-.538***	**-.649***

Note : CDMNS: Clinical Decision Making in Nursing Scale; RPS: Role Perception Scale;
The correlation between the total score of CDMNS and RPS was marked in bold.
**p value <0.01
***p value< 0.001

Table 5 presented that an independent t-test was used to test the significant difference in gender and one-way ANOVA had performed the effect in exploring the multi-categorical variables age, educational level, tenure and CDM abilities and Tukey's HSD was used to find differences between groups in each of the categorical variables.

Table 5

Significant Difference in Clinical Decision-Making Abilities According to Gender, Age, Educational Level, and Tenure (N=228)

	Mean	SD	F	t	P value (2-tailed)	Tukey's HSD 1	2	3	4	5
Gender										
Male	142.42	18.97		-0.546	.587					
Female	144.23	16.59								
Age										
21-25	147.42	16.68				—				
26-30	132.56	14.09				**.000**	—			
31-35	130.76	19.40	6.193***		<.001	**.001**	.999	—		
36-40	144.44	11.93				.981	.196	.147	—	
41-50	144.82	18.29				.995	.288	.216	1.000	—
>50	142.31	8.18				.881	.486	.376	.999	.999
Educational level										
Technical Secondary School	149.64	15.26				—				
Junior College	147.04	17.32	7.081***		<.001	.957	—			
Bachelor	136.61	14.01				.073	**.000**	—		
Master	135.67	15.15				.230	.181	.999		
Tenure										
<1 Years	145.80	16.94				—				
1-3 Years	145.00	17.32	2.809*		.040	.991	—			
4-5 Years	135.09	16.62				**.029**	.082	—		
>5 Years	142.14	15.49				.658	.850	.391		

Note: F, one-way ANOVA; t, independent t-test, Significant values found by Tukey's HSD were marked in bold.

*p value< .05

***p value<.001

Gender was found to have no significant difference with CDM abilities (t=-0.546, p=.587). Both male and female nurses presented good CDM abilities (M: 142.42±18.97; Female:144.23±16.59). The number of female nurses in the clinic was still greater than male nurses today, and this was consistent with the results (83.3%). Female nurses have more expectations and male nurses will be feminized when they practice nursing (Kaur et al., 2023). However, Bjørk & Hamilton (2011) explained that male nurses had their own understanding of the CDM process, and they had an innate judgmental mindset. Male nurses professionally judged the possible problems of the patient and were willing to find the most appropriate nursing care (Tong et al., 2023). It could explain why gender did not differ during the COVID-19 pandemic and that male nurses need to be assigned appropriate nursing tasks and not lose sight of the value they create.

A significant difference was found between age and CDM abilities (F(5, 222)=6.193. In China, nurses under 35 years old made up more than half of the nursing workforce, which was consistent with the proportion shown in the demographic profiles (Lu et al., 2021). Some studies concluded that nurses around 30 years old had more fatigue from the COVID-19 pandemic than older nurses, although they were willing to keep learning about the clinical environment (Moya-Salazar et al., 2023). Young nurses aged 21-25 were better than those who were 26-35 years old (p<.001; p=.001). Van der Heijden et al. (2020) believed that with the increase in age, some goals will become more important, while the value of others will decrease. Similarly, Karel et al. (2010) argued that firm values based on life experience and belief systems may automatically and more explicitly influence an individual's reasoning and CDM consciously or rationally. Various kinds of disorders, such as work pressure and inconsistent coordination between family and work, affected their value of making accurate decisions. Nurses with 21-25 years old were considered to have less clinical experience in clinical settings and were given more clinical training. Meanwhile, they were also considered to have more clinical freshness. In China, nurses experience clinical freshness for the first time at the age of 21-25. Moreover, it can be seen from the CDM abilities score that nurses over 36 years old were not bad during the COVID-19 pandemic, so it can be considered that they had formed more stable CDM abilities in the nursing environment.

Most studies demonstrated that higher education resulted in higher CDM abilities (Yang et al., 2012; Li et al,.2017; Alaseeri et al., 2019). Instead, this study found that nurses with junior college were better than bachelor's degree (p<.001). Hoffman et al. (2004) explained that education level did not have a large impact on actual CDM. It was also argued that despite the low level of education, nurses were experienced, and could not be ignored in the collected hospitals, the nurses had a low level of education, and may not be willing to go further to upgrade their education, which led to the presence of experienced nurses in the junior college education. Meanwhile, most of the nursing tasks were assigned to them, especially during the COVID-19 pandemic when the number of nurses was lacking, because the proportion showed most MS nurses with a junior college. The cognitive processes resulting from this repeated exposure to a nursing situation were in line with Dr. Benner's theory. As well as Sheng et al. (2020) it was also indicated that the nurses' shift to being experienced nurses for themselves during Covid-19 pandemic was of great help.

Previous studies showed a positive relationship between tenure and experience, suggesting that the longer they had worked then the better CDM abilities would be. This was

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also shown in Dr. Benner's theory. However, less than 1 work year was better than 4-5 work years *(p*=.029). When the COVID-19 pandemic came, MS nurses needed to make decisions that were outside of their knowledge, which they may not have been exposed to (Laugesen et al., 2022). Moreover, in line with Dr. Benner's view, any nurse who had no clinical experience with patients was at the novice stage (Benner 2004). It was hypothesized by Buckingham & Adams (2000) that along with an increase in potential uncertainty, new technology, and the changing role of the nurse, then the changes in judgment and accuracy made by the nurse would also change. In Dr. Benner's theory, nursing procedures and nursing rules were effective for nurses who have less than 1 work year. This was one of the reasons for less than 1 work year to be better than 4-5 work years. Nurses who had been working for 4-5 work years were considered to be familiar with the work scene, and they may face conflicts in the work environment and gradually changing job expectations, which may affect their CDM (Hagbaghery et al., 2004; Abu Arra et al., 2023). Meanwhile, in Dr. Benner's theory, proficient nurses can identify nursing that did not meet the needs of patients but did not reach a stable expert stage. It can be considered that managers help nurses who are in the proficient stage to steadily convert expert stage. In addition, most nurses with less than 1 work year in social demographic profiles were likely to be young nurses, which also affected the CDM abilities score of nurses with less than 1 work year better than those with 4 5 work years.

Conclusions and Recommendations

CDM abilities are important for nurses to provide optimal patient care. This study contributes to the new sight of nurses' CDM abilities and shows that MS nurses can provide accurate decision-making during the COVID-19 pandemic. Instead, role perception is affected and presented at a low level. This study concludes that when CDM abilities increase, role perception decreases, which is related to nurses' actions, inability to fulfill health team requirements, and conflict due to the COVID-19 pandemic. Meanwhile, the differences in gender, age, educational level, and tenure are added to nurses' CDM and showed different results compared to previous studies. There is no difference in CDM abilities between female and male MS nurses during the COVID-19 pandemic. MS nurses who are 21-25 years old, in junior college, and with less than 1 work year are better than others, which may be related to the clinical freshness, giving more nursing procedures, and assuming more nursing tasks during the COVID-19 pandemic. Our findings reveal that nurses who are younger, with a junior college, and with less than 1 work year can meet patient's health and nursing practice.

It is suggested that in the event of a future health public event, in addition to paying attention to nurses' poor role perception, nursing managers can also develop special management plans for young nurses, nurses with junior college, and less than 1 work year to bring into play their value. Nursing administrators need to coordinate the balance between the life and work of nurses, especially those in important life stages, and identify nurses' educational level and experience, give different knowledge supplementation and task assignments to utilize more of their ability. Finally, the self-reports used to explore the clinical feelings of the participants and the selection of only two hospitals, insufficient sample size, and uneven distribution of each group show their experiences over time and more

hospitals, more nurses with education levels other than a junior education, with long work years, and at older ages be included in the comparisons in the future.

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