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## A Current Survey on Patient Safety Competence of Intern Nursing Students

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### ABSTRACT

**Objective** The aim of this study is to investigate the current status of patient safety competency among intern nursing students, in order to provide reference for medical colleges and teaching hospitals to develop corresponding training paths to improve the patient safety competency of intern nursing students.

**Methods** Using convenient sampling method, 250 intern nursing students who interned at four tertiary hospitals in Beijing from October 2023 to December 2023 were selected as the research subjects.

**Results** The total score of patient safety competency among 219 intern nursing students was  $(132.94 \pm 24.47)$ , with an average score of  $(3.80 \pm 0.70)$ . The dimension with the highest score was patient-centered  $(3.86 \pm 0.76)$ , while the dimension with the lowest score was evidence-based nursing practice  $(3.74 \pm 0.80)$ . Gender, length of practice, voluntary choice of nursing major, whether both parents or one party are engaged in the medical industry, whether they plan to work in the medical industry after graduation, and whether they have participated in patient safety training courses were the influencing factors of the safety competency score of intern nursing students ( $P < 0.05$ ).

**Conclusions** The patient safety competency of intern nursing students is at a moderate level, which is consistent with the research results of Tan Yifen and others. It is recommended that medical schools strengthen theoretical education for students, establish evaluation mechanisms, and cultivate their practical abilities; It is recommended that teaching hospitals strengthen the patient safety awareness of internship nursing students, provide practical opportunities, establish feedback mechanisms, and effectively improve the safety competency of internship nursing students through cooperation between both parties.

**KEY WORDS:** Nursing students; Patient safety; Safety competency; Safety Awareness

## Foreword

In medical services, patient safety is a critical issue, and providing safe, error-free nursing care is a fundamental requirement of healthcare delivery [1]. The patient safety competence of healthcare workers is a key factor in ensuring patient safety [2]. In the medical field, the core competencies and qualities required to ensure patient safety are defined as 'patient safety competence', which encompasses multiple aspects such as communication, legal ethics, critical thinking, technical skills, and continuous learning. It is also an essential component of professional competence [3]. In the healthcare environment, nurses, as the group most closely involved with patients, bear the critical responsibility of safeguarding patient safety [4]. Meanwhile, nursing interns, as the future workforce of clinical nurses, also carry significant responsibilities for patient safety. Therefore, enhancing the patient safety competence of nursing interns is of great practical significance for ensuring the safety of future patients."

In the United States, early research on patient safety competencies identified six essential competencies required for healthcare professionals, including nurses' patient safety competencies [5]. Studies [6] suggest that nursing educators should critically review nursing curricula and reassess educational content related to patient safety. The research by HWANG et al. [7] demonstrates the importance of enhancing nurses' patient safety competencies, patient-centered care approaches, and establishing a safe clinical environment. In China, research on patient safety competencies began relatively later. Current studies primarily focus on investigating the status quo of patient safety competencies among nursing staff, with no published literature specifically addressing nursing students' patient safety competencies [8]. Given that nursing students represent the future of the nursing workforce, it is imperative to conduct research on their patient safety competencies to explore effective training approaches and methodologies [9]. Currently, China lacks systematic and professional intervention frameworks for patient safety competency development. While preliminary explorations have been made by scholars, most research concentrates on risk assessment and current status evaluation, with limited attention to patient safety culture and evidence-based information skills. This limitation hinders comprehensive evaluation of nurses' safety competency levels and results in insufficient intervention measures tailored to China's specific healthcare context [10].

This study aims to investigate nursing students' patient safety competencies and analyze influencing factors. The findings will provide valuable references for medical schools and hospital administrators to enhance nursing students' safety competencies and mitigate potential medical risks.

## 1. Objects and methods

### 1.1 Research object

Using the convenience sampling method, 250 nursing interns from four tertiary-A hospitals in Beijing were selected as study participants between October and December 2023.

Inclusion criteria: ① Full-time nursing interns ; ② Voluntarily agreed to participate in the study ; ③ Had completed  $\geq 3$  months of internship

Exclusion criteria: Interns who suspended their training for more than 1 month due to various reasons.

### 1.2 Research tools

#### 1.2.1 General Information Questionnaire

This study employed a systematic literature review methodology to collect relevant domestic and international research on the assessment of nursing staff's patient safety competencies. Based on the evidence gathered, the general information survey was developed, comprising the following 9 demographic items: Gender, Political affiliation, Completed internship duration (months), Educational background, Only-child status, Previous participation in patient safety training programs, Voluntary choice of nursing as a career, Professional qualifications, Current clinical department.

#### 1.2.2 Nurse Patient Safety Competency Assessment Scale

A questionnaire survey was conducted using the patient safety and competence nurse evaluation scale designed by Wang Qing [10] and others. The scale has a total of 6 dimensions and 35 items, including: evidence-based nursing practice (4 items), patient-centered (6 items), continuous quality improvement (4 items), patient safety culture (7 items), clinical practice (4 items) and safety risk management (10 items), using Likert 5 grade score, the evaluation standard is "very non-compliant, non-compliant, sometimes conform, very conform", the corresponding score is "1~5" points, the content validity index (S-CVI) of the scale is 0.933, and the confidence Cronbach's coefficient is 0.942, indicating that the quantity The table has good confidence and validity. The total score of the scale is based on the sum of each item. The higher the score, the better the safety ability of the patients intern nurses [11].

### 1.3 Data collection method

During the nursing internship period, after obtaining informed consent, we generated survey links and QR codes through the "Questionnaire Star" platform to distribute questionnaires to nursing interns. Participants were invited to complete the questionnaire voluntarily. Prior to distribution, we explained the survey's purpose, methodology, and important notes to the interns. All collected questionnaires were carefully reviewed and coded before data entry.

### 1.4 Statistical methods

Statistical software SPSS27.0 is used for data analysis. The general survey data is described by percentage and frequency, and the score of the safety competency of intern nursing patients is described by mean  $\pm$  standard deviation, and t-test and variance analysis are used for group comparison.

## 2. Results

### 2.1 Demographic Characteristics of Nursing Interns

In this study, 250 electronic questionnaires were actually distributed, a total of 230 questionnaires were recovered, 11 invalid questionnaires were discarded, and 219 valid questionnaires were finally obtained, with an effective recovery rate of 87%. The survey results of this study show that among the 219 nurses, 26 are male (11.9%) and 193 are female (88.1%); education: 65 are junior college students (29.7%), 154 undergraduates (70.3%); 97 are only children (44.3%), and 122 are not only children. (55.7%); 93 people (42.5%) intend to engage in the medical industry after graduation, and 126 people (57.5%) do not intend to engage in the medical industry after graduation. See Table 1 for details.

Table 1 General information of intern nursing students (n=219)

Project	Frequency (n)	Percentage (%)
<b>Gender</b>		
Male	26	11.9
Woman	193	88.1
<b>Educational background</b>		
Specialized course	65	29.7
Bachelor's degree	154	70.3
Graduate student	0	0
<b>Is the individual an only child</b>		
Yes	97	44.3
No	122	55.7
<b>Political status</b>		
Communist Party member	50	22.8
Communist Youth League member	169	77.2
Masses	0	0
<b>Internship duration completed</b>		
3 to 5 months	99	45.2
≥6 months	120	54.8
<b>Whether either or both parents are engaged in the medical industry</b>		
Yes	34	15.5
No	185	84.5
<b>Is it a voluntary choice to select the nursing profession</b>		
Voluntary choice	90	41.1
To be transferred	82	37.4
Obey the arrangements made by parents	47	21.5
<b>Do you plan to pursue a career in the medical industry after graduation</b>		
Yes	93	42.5
No	126	57.5
<b>Have you ever attended a patient safety training course</b>		
Yes	151	68.9
No	68	31.1

## 2.2 Overall Scores of Nursing Interns' Patient Safety Competency

The total patient safety competency score among nursing interns in this survey was (132.94±24.47), with a mean item score of (3.80±0.70). The highest score in the average score of the article is the patient-centered dimension (3.86±0.76), and the lowest score is the evidence-based nursing practice (3.74±0.80). See Table 2 for details.

Table 2: Scores of each dimension of patient safety competency among intern nurses (n=219, points, (x±s))

Dimension	Number of projects	Total score	Entries are evenly distributed (x±s)
Patient-centered	6	23.16±4.59	3.86±0.76
Patient Safety Culture	7	26.77±5.18	3.82±0.74
Safety Risk Management	10	37.53±7.70	3.75±0.77
Clinical practice	4	15.36±3.28	3.84±0.82
Evidence-based nursing practice	4	14.94±3.20	3.74±0.80
Continuous Quality Improvement	4	15.19±3.51	3.80±0.88
Total score	35	132.94±24.47	3.80±0.70

### 2.3 Analysis of Differences in Patient Safety Competency Scores by Demographic Characteristics

The results show that there are differences in the safety competency scores of internship patients with different genders, whether they intend to engage in the medical industry after graduation, whether they voluntarily choose nursing majors, whether they have participated in patient safety training courses, whether both parents or one of them are engaged in the medical industry, and the differences are statistically significant ( $P < 0.05$ ). See Table 3 for details.

Table 3: Analysis of differences in patient safety competency scores among intern nurses with different demographic characteristics (n=219, score,  $\bar{x} \pm s$ )

Project	Category	Number of people	Score	t/F	P
Score	Male	26	131.15±22.41	2.002*	0.047
	Woman	193	138.98±29.88		
Educational background	Specialized course	65	135.34±22.79	0.982*	0.328
	Bachelor's degree	154	131.92±25.14		
	Graduate student	0	0		
Is the individual an only child	Yes	97	131.67±26.70	-0.669*	0.504
	No	122	133.94±22.59		
Political status	Communist Party member	50	132.69±27.59	-0.054*	0.957
	Communist Youth League member	169	132.97±24.10		
	masses	0	0		
Internship duration completed	3 to 5 months	99	137.07±28.12	2.227*	0.027
	≥6 months	120	129.53±20.48		
Whether either or both parents are engaged in the medical industry	Yes	34	137.94±27.86	2.525*	0.013
	No	185	129.25±20.98		
Is it a voluntary choice to select the nursing profession	Voluntary choice	90	136.90±29.01	3.295**	0.039
	To be transferred	82	132.72±10.87		
	Obey the arrangements made by parents	47	125.72±30.28		
Do you plan to pursue a career in the medical industry after graduation	Yes	141	139.35±27.37	17.658*	0.001
	No	78	128.20±20.97		
Have you ever attended a patient safety training course	Yes	151	132.95±24.96	2.396*	0.018
	No	68	132.91±23.52		

\*indicates t-values\*\* indicates F-values

## 3. Discussion

### 3.1 The safety ability of intern nursing patients is generally at a medium level

According to the results of Table 2, the total score of the safety competency of intern nursing patients is (132.94±24.47), and the average score of the entries is (3.80±0.70), indicating that the safety competency of intern nursing patients is at a medium level, which is consistent with the research results of Tan Yifen [3] and others. The reason for the analysis may be related to the lack of clinical experience of intern nurses, insufficient professional knowledge, insufficient awareness of patient safety and lack of risk prevention awareness. The level of patient safety and competency of nurses

directly affects the development of nursing work, and further affects the safety of patient follow-up treatment [12]. As a reserve force of clinical nurses, the level of patient safety and competence of intern nurses also affects the development of nursing work and the safety of patient follow-up treatment. Therefore, it is very important to improve the safety and competence level of intern nurses.

Among the six dimensions, the dimension with the highest average score of the item is patient-centered (3.86±0.76). The analysis of the reason may be that the positive attitude of the intern nurse who has just entered the clinical work. Many intern nurses can establish sympathy with the patient, pay attention to the patient's condition and emotional changes, and have a strong relationship with the

patient-centered aspect. The dimension with the lowest average score of the article is evidence-based nursing practice ( $3.74 \pm 0.80$ ). The analysis is the same as the research results of Tian Tian [13] and others. The reason may be that nursing students have just entered clinical practice and have not been able to effectively transform the theoretical knowledge learned and apply it to practical clinical operations, which is the biggest obstacle faced by nursing students in the process of internship [14]. Therefore, it is suggested that teaching hospitals can establish a scientific and effective evidence-based nursing training plan, strengthen the clinical thinking of intern nurses, cooperate with institutions to improve nurses' understanding of safety risk management and evidence-based nursing practice, and promote the improvement of students' evidence-based nursing practice ability [15]. Patient safety competence can be regarded as the ability of health care staff to minimize injuries or risks to patients through their personal performance during operations [16]. Internship nurses are also one of the health care staff. Therefore, helping intern nurses connect theoretical knowledge with practical experience and enhance their ability to transform knowledge into practice, which not only helps to improve the safety and competence of nursing patients, but also reduces the risk of injury to patients.

### **3.2 Analysis of the difference in the score of safety and competence of internship nursing patients with different demographic characteristics**

#### **3.2.1 Gender**

The difference in the score of the safety competency of intern nursing patients of different genders is statistically significant ( $P < 0.05$ ), which is consistent with the research results of Yang Yong [17] and others. The analysis of the reason may be that the current society is influenced by traditional concepts. Patients have a low sense of identity with male nurses, which leads to their gender stereotypes about the nursing industry [18]; Secondly, there is a conflict between the image of the nursing industry and male nurses, which may lead to their rejection of their majors, and men pay more attention to the sense of career achievement, and the repetitiveness of nursing work reduces their job satisfaction, thus reducing their interest in learning patient safety knowledge and affecting the safety ability of male nurses.

Therefore, it is suggested that colleges and universities can first establish a good image of male nurses by publicizing their employment prospects and advantages in the field of nursing, improve their sense of professional identity, so as to reduce the loss of talents; secondly, medical institutions can let male nurses teach more, increase practical opportunities, so as to stimulate male nurses' interest in learning and improve their A sense of work achievement; Finally, through teaching and training, the hospital can let nurses first conduct case simulation training, and then let them carry out clinical practice operations and establish feedback mechanisms, sort out and analyze problems in practice, adjust training methods, and help intern nurses adapt to the environment, so as to achieve patient safety adverse events in clinical work. At that time, I can face it calmly and help the teacher solve the problem. At the same time, intern nurses themselves should also pay attention to the safety of patients. Whether there is supervision or not, they should always maintain a cautious and independent spirit and not operate illegally, so as to reduce the risk of safety problems for patients.

#### **3.2.2 Duration of internship**

Comparing the safety and competence scores of intern nursing patients with an internship duration of 3 to 6 months and  $\geq 6$  months, the difference in the safety and competence scores of intern nursing patients is statistically significant ( $P < 0.05$ ), which is the same as the

research results of Zhao Chunying [19] and others. The analysis of the reason may be that the intern nurse has received training related to patient safety in the hospital. With the increase of the internship time, experience in patient safety has been accumulated, thus enhancing the patient safety ability of the intern nurse, and long-term practice is also conducive to cultivating the inward and reverse thinking of the intern nurse. Have a certain degree of foresight [20], so that intern nurses can better think about and understand the problems of patients' safety competence. Therefore, with the increase of clinical practice time, while its experience has increased, clinical thinking has also been improved, so that it can think more deeply and understand the problem of patients' safety and competence and take countermeasures.

This suggests that when training students, teachers should not only pay attention to teaching theoretical knowledge, but also pay attention to students' practical operation training. In order for students to better adapt to internship life in the future, schools should also do a good job in pre-service training for students, eliminate students' fear and anxiety about clinical practice, and let students have enough confidence. Mind and practical ability to cope with future challenges [21]. Therefore, during the internship period, nursing managers should not only train intern nurses, but also pay attention to the effect of training and learning of intern nurses, understand the degree of mastery of patient safety at each stage, and analyze the shortcomings shown at each stage through evaluation, and Adjust the training plan to effectively improve the safety and competentness of patients intern nurses.

#### **3.2.3 Whether both parents or one of them are engaged in the medical industry**

Whether both parents or one of them are engaged in the medical industry is compared with the safety and competency score of intern nursing patients. The former score is higher than the latter, and the difference is statistically significant ( $P < 0.05$ ). The analysis of the reason may be that both parents or one of them are engaged in the medical industry. Intern nurses who are affected by the growth environment and will be exposed earlier. Medical-related knowledge, more understanding of disease cognition and prevention, and at the same time, they can better understand the importance of patient safety, which enables them to make better judgments and decisions in clinical practice, and obtain relatively more knowledge about patient safety through parental channels. Therefore, when the hospital conducts patient safety and competency training for intern nurses, both parents or one of them are engaged in the medical industry. Intern nurses are more interested in learning patient safety knowledge. Therefore, their patients have a relatively strong sense of safety, and they are more proactive in learning relevant knowledge, and then the patient's safety and ability is also relatively high.

Therefore, nursing managers can let both parents or one of them, who are engaged in the medical industry, drive all intern nurses to learn patient safety knowledge through sharing, so as to promote the attention of intern nurses to patient safety and help improve the patient safety and ability of intern nurses.

#### **3.2.4 Whether to voluntarily choose nursing major**

The safety and competence score of intern nursing patients who voluntarily choose nursing majors is relatively high, and the difference is statistically significant ( $P < 0.05$ ), which is different from the research results of Zhong Weinan [22] and others. The reason for the analysis may be related to different research subjects and different sample sizes. Zhong Weinan's research subjects are new nurses. They have experienced clinical practice, accumulated rich clinical experience, and have a deeper understanding of

professional knowledge. At the same time, they have also learned and practiced error identification and risk management ability, which can better ensure the safety of patients, new nurses also learn how to deal with stress in clinical work, so they can stay calm and make clearer and safer decisions when facing a stressful or high-pressure environment. For intern nurses, who have just come into contact with the clinical environment, when they face fatigue, tension, stress, irregular life and other problems like new nurses, the probability of adverse events may be greater than that of new nurses. However, compared with intern nurses who voluntarily choose nursing majors, they have a high willingness to learn and risk awareness of nursing knowledge. Therefore, when conducting patient safety-related training in clinical practice, intern nurses who voluntarily choose nursing majors show higher enthusiasm and enthusiasm for learning, so as to have a knowledge reserve on patient safety. , improve the safety and competency of its patients.

Although there are many students who voluntarily choose nursing majors, some students are transferred and choose nursing majors according to their families' arrangements. Therefore, it is recommended that medical schools can focus on publicizing the various advantages of nursing majors when enrolling students, so that students can see the future employment prospects of nursing majors and the stability of their jobs. And let students understand the benefits of learning medical knowledge for individuals and their families; secondly, it can also increase students' understanding of nursing majors by introducing the outstanding contributions of nursing staff in emergency rescue and epidemic prevention and control; finally, the school can also organize various volunteer activities, such as health publicity, nursing homes and other vulnerable groups. Provide medical assistance, etc., to increase students' recognition of nursing professions, so as to guide more students to be willing to choose nursing majors.

### 3.2.5 Do you plan to work in the medical industry after graduation?

After graduation, the comparison of the safety and competence scores of intern nursing patients who intend to engage in the medical industry and those who do not intend to engage in the medical industry. The difference in the safety and competence scores of intern nursing patients is statistically significant ( $P < 0.05$ ), which is different from the research results of Rezi Vanguli Eniwa [23] and others. The reason for the analysis may be that some intern nurses intend to continue to engage in the medical industry after graduation. They will take the initiative to adjust themselves and try to adapt to the new environment. Therefore, they may be easier for them to adapt to the clinical environment during the internship and carefully learn about patient safety. The fact that they do not intend to engage in intern nursing in the medical industry may be related to their inability to integrate well into the medical environment and the low importance of learning patient safety knowledge.

Some studies have pointed out that the use of the pre-plan scenario simulation teaching mode can effectively improve the condition observation ability and clinical adaptability of new nurses, so that they can better adapt after entering clinical work, observe changes in patients' condition in time, reduce patient safety risks, and provide high-quality nursing services [24]. Therefore, in order to improve the safety competence of intern nursing patients, in addition to using the plan scenario simulation teaching mode to train students' observation ability and adaptability, reduce safety risks and improve the safety competence of intern nursing patients, the school can also use questionnaires to investigate the employment direction of students after graduation. , adjust the training plan according to the

survey results, so that more intern nurses are willing to continue to engage in the medical industry after graduation, and cultivate their patients' safety awareness to better prepare for becoming a new nurse.

### 3.2.6 Have you participated in the patient safety training course?

The comparison of the score of the safety competence of the intern nurse who has participated in the patient safety training course, and the difference in the score of the safety competence of the intern nurse is statistically significant ( $P < 0.05$ ). It is consistent with the research results of Tian Tian [13] and others. The analysis of the cause may be related to the fact that trained intern nurses learn how to use professional knowledge to protect the safety of patients, while untrained nurses are relatively weak in this regard, resulting in differences. Therefore, it is necessary for colleges and universities to build nursing safety education courses. Studies have shown that nurses should have enough knowledge to identify potential safety risks, and they should have enough confidence to protect patients from preventable injuries and adverse events [25].

This requires nurses to constantly improve their abilities in theoretical learning and clinical practice to ensure the safety of patients. Therefore, nursing colleges and universities can carry out courses on patient safety-related knowledge to cultivate students' patient safety awareness. Secondly, they can use group simulation scenarios as part of the final assessment to stimulate students' interest in learning. Teaching hospitals can set up different patient safety training courses for intern nurses according to the needs of different stages of internship, and regularly test the safety competence of nursing patients, so as to strengthen the ability of nurses to communicate, teamwork and deal with emergencies, so as to protect the safety of patients and reduce the occurrence of adverse events.

## 4. Conclusion

The patient safety competency of student nursing interns is at a moderate level, and there are still challenges and deficiencies in their patient safety competency. It is recommended that medical colleges and universities can strengthen students' theoretical learning, establish a comprehensive evaluation mechanism, and enhance the cultivation of students' practical abilities. Teaching hospitals can, on the other hand, enhance student nursing interns' emphasis on patient safety, provide practical opportunities, and establish a feedback mechanism. Through the cooperation between the two parties, the patient safety competency of student nursing interns can be effectively improved.

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