

## A Study on the Safety Perception, Ethical Awareness, and Safety Activities of Nursing Students

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### Abstract

*The purpose of this study is to identify the level of safety perception, ethical awareness, and safety activities of nursing students for patients, and to identify the correlation and impact between them. The research design is a descriptive survey study, and the subject of the study were 197 nursing college students in G City. Safety perception, ethical awareness, and safety activity tools were used for, and the data collection period was from October 17 to 28 in 2022. T-test, one-way ANOVA, Pearson's correlation coefficient, Regression analysis were used to analyze data. The result of the study indicated that the average level of safety perception of nursing students was 3.72 points, the average ethical awareness of patients, professional work, and cooperators perceived by nursing students was 3.04 points, and the safety activities of nursing students were 4.20 points. In the case of safety awareness and ethics awareness,  $r=.327$ , a significant positive correlation, in the case of safety awareness and safety activities,  $r=.399$ , significant positive correlation, ethics awareness and safety activities as  $r=.296$ . And so on these results showed that high safety perception increases safety activities, and high ethical awareness increases safety activities. Therefore, we need practical and step-by-step convergence education to equip nursing students with patient safety nursing capabilities. To this end, a safer environment will be created if the social support network for the systematic application of safety education is well formed.*

**Keywords:** Patient Safety, Ethical Awareness, Safety Activities, Nursing Students

### 1. Introduction

In the recent rapidly changing health care environment, it is directly related to individual health and life, and health care workers are required to provide high-quality and safe medical services. At a time when the importance of subject safety is emphasized inside and outside medical institutions, future health and medical experts should provide patient safety education as an essential curriculum before graduation. In particular, the nursing field requires nurses to safely and skillfully perform nursing practice based on various theoretical knowledge to solve the needs of the subjects [1]. Therefore, it is necessary for future nursing professionals to have professional competencies related to patient safety through the curriculum.

Nursing experts play a pivotal role in the health care of the subject, so professional intuition on safe nursing

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performance is needed [2]. In order to foster nursing professional, an educational strategy is needed to come up with efficient measures to improve nursing college students' attitude toward patient safety or self-efficacy [3]. In nursing education, the provision of education on patient safety requires efforts such as necessity, appropriate time, and awareness of safety culture, and patient safety nursing requires an integrated standard of practical and influential attitude, knowledge, and practice [3]. The stronger the patient safety management capabilities of nursing students, the better the quality of nursing, as well as the prevention of medical accidents and related costs [4].

The World Health Organization (WHO) one of the patient safety-related institutions, defined the core competencies of medical personnel to improve patient safety, developed data to guide the curriculum, and presented patient-centered care [5]. In view of this, in the future, the curriculum on patient safety or the core competencies of safety education of instructors can be systematized as elements of certification evaluation of educational institutions and the scope can be expanded [3].

The more positive the patient safety culture is formed to enable safe nursing activities more naturally. A positive patient safety culture refers to beliefs and behavior patterns shared at the individual and organizational level to prevent harm to patients, which enables efficient management of safety accidents based on the establishment of a safety education system [6]. Therefore, in order to improve patient safety, it is necessary to strengthen professional ethics as well as induce fundamental changes in the perception of members of the organization.

Ethical values can be said to be an important factor in the basic and positive impact on patient safety nursing activities in clinical practice. Nursing situations that require ethical judgment in clinical practice include conflicts between respect for life and professional work, relationships between nurses and subjects, and relationships between nurses and health care teams. In this situation, systematic education that improves individual ethical awareness, such as bio-medical ethics, helps nurses instill a positive ethical awareness. Based on that ethical awareness, correct patient safety management activities can be accompanied [7]. Therefore, it is necessary to educate nursing students, who are key medical personnel in the future, about basic concepts and principles for patient safety as well as providing continuous training [8].

Safety activities for patients in nursing situations are very important to prevent safety accidents at a time when patient safety is emphasized. Nursing education institutions provide nursing college students with theoretical education as well as nursing practice education to strengthen knowledge, attitudes, and practices directly related to patient safety [4]. Patient safety management will naturally increase nursing students' performance confidence if they efficiently cope with and solve a given situation by forming a positive attitude based on accurate and reasonable knowledge of safety [8].

The result of a study on patient safety competencies among students at domestic nursing universities, subjects including patient safety education in lectures and practices were different from school to school [9]. In order to improve the quality of health care, systematic patient safety education is needed in the undergraduate curriculum, and it is important to consider ways to narrow the gap between academics and practice so that instructors have sufficient patient safety capabilities first [3]. In addition, it is necessary to recognize the importance of patient safety, apply safety knowledge and technology, and share the latest patient safety information through nursing universities and practice institutions and academic cooperation activities [1]. Previous studies related to patient safety in nursing situations mainly focus on ethical awareness and safety activities of workers in hospitals. However, overseas studies on patient safety nursing education for nursing students continue to be reported during this study [10-12].

Therefore, at a time when the importance of safety is emphasized, this study was attempted to cultivate patient safety capabilities necessary for future nursing professionals. The purpose of this study was to confirm the level of safety perception, ethics, and safety activities of nursing students, and to identify the relationship and impact between them, and to provide basic data necessary for the development of safety education programs for nursing students.

## **2. Research Methods**

This study is a descriptive survey study to confirm the level of safety perception, ethical awareness, and safety activities for nursing college students and to understand their relationship and impact. The subjects of this study were nursing college students in G City who experienced clinical practice, understood the purpose of this study, and agreed to participate in data collection in writing. The subjects were calculated using the G\*Power 3.1.9 program based on the intermediate effect size.15, significance level.05, and power.95, and 189 samples were minimum, and 200 people were participated in the study in consideration of the dropout rate. Among the junior and senior nursing students who agreed to participate in the study, 197 questionnaires that were judged appropriate for data analysis were selected as the final research subjects.

Safety perception tool consists of a total of 20 questions on safety attitude, safety values, safety motivation, safety climate, and safety procedures. Each question is a Likert 5-point scale consisting of 1 point "not at all" and 5 points "very much" and the range of scores is 20 to 100, and the higher the score, the higher the safety perception [13]. At the time of development, the reliability of the tool was Cronbach's  $\alpha=.91$ , and the reliability of the tool in this study was Cronbach's  $\alpha=.84$ . The subjects' age, gender, grade, academic performance, religion, safety education experience, safety education place, and characteristics of safety education personnel were investigated. Ethical awareness cognitive measurement tool consists of a total of 30 questions and three areas, consisting of 10 questions of ethics for patients perceived by nursing students, 10 questions of ethics for professional work, and 10 questions of ethics for health and medical team members. Each question is a Likert 4-point scale consisting of 1 point for "not at all" and 4 points for "always." In the case of reverse calculation items, reverse calculation was performed, and the range of scores is 30 to 120, and the higher the score, the higher the ethical awareness [7]. At the time of development, the reliability of the tool was Cronbach's  $\alpha=.71$ , and the reliability of the tool in this study was Cronbach's  $\alpha=.73$ . Safety activity measurement tool measures the safety activities of health care workers in hospitals and consists of a total of 16 questions, including 4 questions on fall-related attitudes, 4 questions on safety-related subjects, 4 questions on infection, and 4 questions on fire. Each question is a Likert 5-point scale consisting of 1 point "not at all" and 5 points "very much" and the range of scores is 16 to 80, and the higher the score, the higher the safety activity [14]. At the time of development, the reliability of the tool was Cronbach's  $\alpha=.97$ , and the reliability of the tool in this study was Cronbach's  $\alpha=.84$ .

The data collection period of this study was conducted by this researcher and research assistant from October 17 to October 28, 2022. The preparation of the research questionnaire was conducted in a self-written manner, and the time required was about 15 to 20 minutes. After obtaining permission for research from the head of the agency for ethical consideration of the study subjects, the study subjects were informed before the study the purpose, method, research content, confidentiality of the subject, and their freedom to withdraw from the study. For voluntary participation in the study, after sufficient explanation, participation in data collection with written consent of the subjects was required.

The collected data were analyzed using the SPSS/WIN 25.0 program. General characteristics and safety education-related characteristics of the subjects were analyzed using frequency and descriptive statistics. T-

test, one-way ANOVA, Pearson's correlation coefficient, Regression analysis were used to analyze data.

### 3. Results

#### 3.1 General characteristics of the subject

As shown in Table 1, the average age of the subjects of this study was 23 years, and the gender was 166 women (84.3%) and 31 men (15.7%). The grades were 135(68.5%) junior, 62(31.5%) senior, 88(44.7%) academic achievement between 3.0 and 3.5, and 65(33.0%) between 3.5 and 4.0. The educational experiences were 59 people (29.9%) twice, 46 people (23.4%) four times or more, and 45 people (22.8%) once. The training location was online, 105 people (53.3%), and school, 76 people (38.6%), 16 people (8.1%) in clinical practice field, the education providers were online 116 (58.9%), practice instructors 34 (17.4%), and clinical practice instructors 30(15.2%) <Table 1>.

**Table 1. General characteristics of subjects (N=197)**

Characteristics	Categories	n(%) or Mean±SD
Age		23.32±(3.43)
Gender	Male	31(15.7)
	Female	166(84.3)
School year	Junior	135(68.5)
	Senior	62(31.5)
Academic achievement	<3.0	19(9.6)
	3.0-3.5	88(44.7)
	3.5-4.0	65(33.0)
	≥4.0	25(12.7)
Religion	Christianity	34(17.2)
	Catholic Church	18(9.1)
	Buddhism	9(4.6)
	Other	136(69.0)
Educational experiences	No	10(5.1)
	1	45(22.8)
	2	59(29.9)
	3	37(18.8)
	4(more than four times)	46(23.4)
Place of education	School.	76(38.6)
	Laboratory	16(8.1)
	Online	105(53.3)
Education provider	practice instructor	34(17.3)
	Academic advisor	17(8.6)
	Clinical practice instructor	30(15.2)
	Online	116(58.9)

### 3.2 Subject's safety perception, ethical awareness and safety activities

#### 3.2.1 Safety perception, ethical awareness, and level of safety activities of the subject

As shown in Table 2, nursing students' safety perception averaged 3.72 points on the 1- to 5-point Likert scale, higher than average, and higher than 4 points in the case of "I think it is important to prevent and prevent accidents" and "I think I should always work safely." The ethical awareness of patients, professional work, and cooperators perceived by nursing students who practice clinical practice was average at 3.04 points on the Likert scale of 1 to 5 points for the entire ethical awareness, which was about 3 points on average. By area, patient ethics was 3.30 points, cooperative ethics 2.98 points, and professional work ethics 2.85 points. By item, 'I never divulge the patient's secrets' was the highest with 3.72, followed by 'I respect the patient's faith. 3.47 points, and 2.83 points were relatively low in the case of "I have conflicts every day as a nursing student." Overall, the safety activities of nursing students who conduct clinical practice were high at 4.43 points on the 1-5-point Likert scale, followed by 4.51 points for falls, 4.16 points for infection, 4.23 points for client education, and 3.31 points for fire-fighting <Table 2>.

**Table 2. Safety perception, ethical awareness, and level of safety activities (N=197)**

Characteristics	Mean	SD
Safety perception	3.72	.51
Ethical awareness		
Ethical awareness for patients	3.30	.39
Ethical awareness in one's work	2.85	.34
Ethical awareness among health care teams	2.98	.24
Ethical awareness(overall)	3.04	.22
Safety activities		
Fall Prevention	4.51	.54
Education for clients	4.21	.67
Prevention of infection	4.23	.71
Fire-fighting management	3.86	.89
Safety activities(overall)	4.20	.66

#### 3.2.2 Statistics analysis of nursing students' safety perception according to their experience in safety education.

As shown in Table 3, the difference in nursing students' safety perception according to their safety education experience was significant, with high perception of "practicum institutions invests a lot to improve safety" twice and low perceptions if there was no safety education ( $p < .05$ ). Overall, it can be seen that safety perception showed low safety perception when there was no experience in safety education, but there was no significant difference <Table 3>.

**Table 3. Safety perception according to safety education experience (N=197)**

Classification	None a		1 time b		2 times c		3 times d		More than 4 times e		F	p	scheffee
	M	SD	M	SD	M	SD	M	SD	M	SD			
I think the investment in safety (time, money, etc.) is well worth it.	3.48	1.22	3.79	.79	3.91	.78	4.01	.78	3.94	.89	.879	.478	
I think we should always work safely.	3.95	1.21	4.23	.87	4.23	.89	4.41	.73	4.28	.76	.941	.453	
I have general knowledge of other tasks outside of practical work hours.	3.09	.70	3.26	.93	3.00	.71	3.49	.65	3.08	.71	2.757*	.029	d>b>a,e>c
Managers, department heads, and supervisors value and emphasize safety and health.	3.57	.934	3.84	.71	3.84	.89	3.82	.83	3.91	.87	.417	.793	
The training institution prioritizes safety improvement.	3.19	1.18	3.92	.87	3.91	.82	3.71	.93	3.94	.79	2.121	.075	
Training organizations invest a lot (money, time, etc.) to improve safety.	3.00	.89	3.54	.91	3.82	.83	3.73	.77	3.73	.68	2.81*	.027	c>d,e>b>a
Safety education data and procedures are easy to understand.	3.66	.91	3.72	.72	3.85	.68	3.66	.74	3.68	.77	.563	.752	

\* p<.05, \*\* p<.01, \*\*\* p<.001

### 3.2.3 Correlation between subject's safety perception, ethical awareness, and safety activities

As shown in Table 4, an analysis of the correlation between variables related to safety perception, ethical awareness, and safety activity indicate that safety perception and ethical awareness showed a significant positive correlation with  $r=.327$  ( $p<.01$ ). In the case of safety perception and safety activities,  $r=.399$  showed a significant positive correlation ( $p<.01$ ). In the case of ethical awareness and safety activity sub-variables, there was a significant positive correlation with safety perception, excluding patient ethical awareness and cooperative ethical awareness. In the case of ethical awareness and safety activities,  $r=.296$  showed a significant positive correlation (Table 3). These results show that when safety perception is high, ethical awareness and safety activities increase, and when ethical awareness is high, safety activities also increase <Table 4>.

**Table 4. Correlation between safety perception, ethical awareness, and safety activities (N=197)**

	Safety perception	Ethical awareness	Safety activities
Safety perception	1	.327**	.399**
Ethical awareness	.327**	1	.296**
Safety activities	.399**	.296**	1

### 3.2.4 Impact of Subject's Safety and Ethical Consciousness on Safety Activities

As shown in Table 5, in order to diagnose multicollinearity between variables in the impact of safety awareness and ethical awareness on safety activities, variable inflation factor (VIF) and tolerance (tolerance) were viewed, and in general, if the variance expansion coefficient is more than 10 or less than 0.1, it is judged that there is a problem of multicollinearity. In this analysis, the VIF values of the variables were all less than 10, and the allowable value was greater than 0.1, so it can be seen that the problem of multicollinearity did not occur. Looking at the effect of safety perception on safety activities, It was shown as  $\beta = -.341$  and can be seen that it has a significant negative effect ( $p < .001$ ) ethical awareness. It was shown as  $\beta = .186$ , and it can be seen that it has a significant positive (+) effect ( $p < .01$ ). These results show that if safety perception and ethical awareness are high, safety activities are also increased. The explanatory power was 19 percent. If you look at the effect of patient ethics on safety activities, which is a sub-variable of ethics, It was shown as  $\beta = .186$ , and it can be seen that it has a significant positive effect ( $p < .01$ ). It was shown as  $\beta = .273$ , and it can be seen that it has a significant positive (+) effect ( $p < .001$ ). In the case of cooperative ethics, there was no significant effect. The explanatory power was found to be 10% <Table 5>.

**Table 5. Impact of safety perception and ethical awareness on safety activities (N=197)**

Factor	B	SE	$\beta$	t	P	VIF
(constant)	1.503	.549		2.679	.006	
Safety perception	.382	.081	.341	5.021	.000	.892
Ethical awareness	.523	.203	.186	2.803	.006	.892

Adjusted R<sup>2</sup>=.191(.181), F=24.267\*\*\*

\* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$

## 4. Discussion

This study was attempted to confirm the level of safety perception, ethical awareness, and safety activities related to patient safety of nursing college students, and to understand the correlation between them and their impact on safety activities. Through the results of this study, we would like to provide basic data necessary for the development of patient safety education programs for nursing college students. This study found that ethical awareness and safety activities increase when safety perception is high, and safety activities increase when ethics are high. In addition, looking at the impact of safety perception and ethical awareness on safety activities, it was confirmed that if safety perception and ethical awareness are high, safety activities are also increased. Therefore, the results indicate that nursing college students play an important role in patient safety as future nursing experts, so education with systematic patient safety capabilities in the nursing education field is considered necessary.

In this study, nursing students' safety perception of patient safety was higher than average with an average of 3.72 points out of 5, and the importance of accident prevention and prevention by item. It is a high score range in safe work, and in the case of modifications and changes to judgment, the figure was relatively low. This was similar to the results of who studied patient safety culture recognition for nurses in small and medium-sized hospitals [15-16]. Nurses working in hospitals recognize the importance of safety awareness above the "normal" level for patient safety. Considering that the core of medical institution certification is patient safety or professional nurses, it is a natural result that nurses have an above-average level of safety perception, but it needs to be raised further in the future.

Looking at the difference in nursing students' safety perception according to their safety education experience, in the case of "I have overall knowledge of tasks other than time," it was 3.52 points for three safety education experiences, showing relatively high safety perception. In the case of "practice institutions invest a lot (money, time, etc.) to improve safety," the second time was relatively high, and the absence showed a low perception, showing a significant difference. Overall, in the case of safety perception, it was found that there was low safety perception when there was no experience in safety education.

The high safety perception of nursing students with experience in safety education has a positive effect on safety nursing activities, which is similar to the results of previous domestic and foreign studies [3, 9, 11]. In particular, senior nursing students were higher than third-grade nursing students, and in terms of clinical practice experience, it is believed that they received a lot of help from field training managers as opportunities for patient safety-related educational experiences. Efforts by related organizations will be needed to systematically establish patient safety management through the provision of step-by-step education to strengthen nursing students' awareness of patient safety culture and the establishment of a structural system.

In this study, the degree of ethical awareness of nursing students regarding patient safety was average at 3.04 points. By area, patient ethics 3.30 points, cooperator ethics 2.98 points, and professional work ethics 2.85 points were found in order. This is similar to studies on clinical nurses' ethical awareness and related variables. Overseas studies emphasize that it is essential to include patient safety in the curriculum to foster ethical awareness. In domestic research also emphasizes that systematic approach education for fostering biomedical ethics, moral sensitivity, and critical thinking is essential for patient safety, it is important to develop and apply educational programs to foster ethical awareness [7, 11, 17].

Ethical awareness according to safety education experience. 'I study steadily to improve the quality of nursing work. In the case of ', it was relatively high. In addition, 'the rights and obligations of nursing students differ from legal norms in the clinical field, resulting in conflict. In the case of ', it was highly recognized, and when there was no experience, it was low recognition. In the case of professional work ethics, awareness was high in the case of more than three times, and low in the case of no experience, showing a significant difference. Overall, ethical awareness was low when there was no experience in safety education, but there was no significant difference. Similar results are shown in overseas studies that nursing students with experience in safety education have a positive impact on safety nursing activities [3, 8, 11]. Therefore, to encourage nursing students to work with solid ethical values, there needs to be active efforts to ensure that ethics education is included in the curriculum as a mandatory course.

In this study, nursing students' perception of safety activities was high at 4.20 points. Previous domestic and international studies provided knowledge, attitude, and practical education in the curriculum. In particular, who reviewed extensive literature over the past 10 years in terms of patient safety education, emphasized that evidence-based practical education must be included in the bachelor's course based on it [1, 11, 18].



Considering health and quality of life in the recent pandemic related to infectious diseases, systematic education related to safety is urgent and very important for future nursing professionals. Therefore, it will be critical for there to be appropriate administrative and financial support. Looking at the perception of safety activities of nursing students who conduct clinical practice according to their experience in safety education, it can be seen that nursing students' perception of safety activities is relatively high if they are more than three times, but there was no statistically significant difference. The safety education experience is directly or indirectly affected by the safety activities of nursing students by the presence or absence of education from nursing educators. Therefore, it can be reaffirmed in similar research results that phased application education is essential for nursing students to develop patient safety-related nursing competencies such as confidence in safety management and communication [9-10, 19].

As a result of this study, a correlation analysis between variables related to safety perception, ethical awareness, and safety activity showed a static correlation between safety perception and ethical awareness. These results show that ethical awareness and safety activities increase when safety perception is high, and safety activities increase when ethical awareness is high. In addition, when looking at the effect of safety perception on safety activities, it was found that the significant negative impact and ethical awareness had a positive effect, but the explanatory power was 19%. These results confirmed that the sub-variables of ethical awareness affect safety activities in the order of professional work and patient ethical awareness. In addition, there is no significant relationship between cooperative ethics and the explanatory power is low at 10%, so the influence can be said to be minimal.

Recent overseas studies on safety activities specify that nursing students are required to take patient safety education through the curriculum [8, 11, 19]. In domestic studies, research related to factors affecting safety activities for nursing students is very weak, so active research is required in the future [20]. Safety nursing activities include communication between health care personnel, infection prevention, accurate and safe administration, patient safety-related treatment, fall prevention, and facility or fire prevention management. Including these categories, education necessary to improve the knowledge, attitude, and skills necessary for the curriculum for nursing students is very important. To this end, appropriate education should be provided through various related convergence education as well as nursing majors. In particular, necessary attention and efforts should be paid to nursing students because they are future nursing professionals who play a very important role in the health care of the people under the COVID-19-related pandemic.

This study identified the level of safety perception, ethical awareness, and safety activities for patient safety of nursing college students, and the relationship and influencing factors between them. At a time when the importance of patient safety is emphasized, the safety perception and ethical awareness of nursing students, who are the subjects of the study, were at a moderate level, and the level of safety activities was high. There was a difference in the level of safety activities of nursing college students due to different educational experiences. In addition, this study confirmed once again the importance of continuously providing safety education in various aspects of nursing students. If administrative and financial support is actively provided to future nursing professionals for thorough safety education systematic settlement, the quality of nursing provided to subjects will also improve.

Based on the above results, I would like to suggest the following. First, since this study was conducted on nursing college students attending a university, there is a limit to the generalization of the study, so repetitive research needs to be conducted in more various research areas. Second, since this study is aimed at nursing students, the clinical situation is the main background, but it is necessary to verify safety-related convergence studies in various situations later. Third, there is a need to study patient safety-related variables related to

infection in more detail to verify effectiveness through development of timely education programs.

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