



Research article

A study on patient safety management's knowledge, attitude, confidence in performance, and practice during pediatric-adolescent nursing clinical practice

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ABSTRACT

This descriptive study was conducted to investigate nursing college students' level of patient safety management during the pediatric-adolescent nursing clinical practice courses. This study aimed to provide a baseline data for developing systematic nursing educational curriculum for the enhancement of competence in nursing college students' fundamental patient safety nursing intervention. The participants consisted of 372 senior nursing college students who have had clinical practice at a nursing college in G metropolitan city. The data was collected from December 1 to 28th, 2019 at the end point of their clinical training education in nursing college, and convenience sampling method was used. The results of this study indicated that the ratio of correct answers of PSM-K was 7.30 out of 10, PSM-A was 3.76, PSM-CP was 3.92, and PSM-P was 4.21 out of 5 points. In terms of the correlations between PSM-K, PSM-A, PSM-CP, and PSM-P, significant positive correlations existed between PSM-K and PSM-A($r=.28$, $p<.001$), PSM-CP and PSM-K($r=.19$, $p<.001$), PSM-CP and PSM-A($r=.48$, $p<.001$), PSM-P and PSM-A($r=.37$, $p<.001$), and PSM-CP and PSM-P($r=.36$, $p<.001$). Therefore, to enhance the nursing college students' competence in patient safety nursing intervention, nursing college students must experience various exercises and training for patient safety management during the clinical practicum as well as with scenario-based simulation. The nursing education facilities should develop educational contents about patient safety for nursing college students.

Keywords: Patient Safety, Safety Management, Nursing College Student

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INTRODUCTION

Nursing education aims to ensure that nursing students acquire knowledge and skills to provide patient care as nurses after graduation, and clinical practice is essential to achieve the purpose of nursing education. The Korea Institute of Nursing and Education emphasizes the importance of clinical practice by specifying in the nursing and certification evaluation standards that require more than 1,000 hours of clinical practice to improve the quality of nursing education and to meet the needs of nursing professionals.

The clinical environment is a place where practical education for nursing students is conducted, and nursing students can develop essential behaviors, skills, knowledge, and confidence required in nursing practice and gain job satisfaction through the clinical environment. However, the clinical environment is a multidimensional and complex environment with various risks, including physical risks from occupational health, biological risks from blood and respiratory infections, chemical risks, physical risks

from stabbing and shift work and psychosocial risks from emotions and violence. Nursing college students who practice in this environment lack experience and expertise compared to other medical personnel and continue to be exposed to complex clinical environments that are unfamiliar because they move to other departments after short-term practice.

In addition, nursing students are more vulnerable to occupational health safety because they are exposed to the clinical environment as well as beneficiaries of clinical practice learning. In fact, if nursing students experience safety accidents during clinical practice, they are reported to have a negative impact on the process of socializing as professionals, such as giving up their studies halfway or pessimistic thoughts on their career views. Therefore, it is necessary to prepare to protect nursing students from the risk of violence or injury that they may experience during clinical practice and to help them socialize their professional jobs.

Nursing students experience patient safety accidents such as falls, patient identification errors, injection errors, and oral medication errors during clinical practice, so they should be able to establish patient safety knowledge through proper education and training. Nursing college students are being trained on the importance of patient safety management activities before practice, but they are not prepared for this. Factors affecting patient safety management activities of nursing students include knowledge and attitude of patient safety, self-efficacy, and awareness of infection control, presence of medical personnel in the family, major satisfaction, practice satisfaction, practice period, patient safety education, and patient safety accident experience.^[1]

A medical institution is obliged to provide its patients medical services of the highest level of safety and quality. However, because of increased change during the progress of medical service and complexity, superfluous health care information, patients' increasing expectations of a perfect treatment result, increased medical severity and vulnerability of the patients visiting health care facilities, patient safety is being threatened during the process of being provided with medical service.^[2]

Patient safety accidents refer to accidents that have occurred or are likely to occur in the process of providing health and medical services to patients, and patient safety activities refer to all activities performed by health and medical institutions, health and medical personnel, and patients and patients' guardians. In order to prevent patient safety issues that are directly related to the lives of patients, all members of the hospital should pay keen attention to patient safety. Nursing students who will be future leaders of health care should also be able to know and carry out principles and concepts of patient safety. Patient safety accidents occurring in hospitals include, regardless of the damage on the patient, all sorts of errors, mistakes, accidents, eventually leading to considerable expenses, such as decrease in healthcare quality and financial loss.^[3] In this context, patient safety is, first of all, chosen as a basic and indispensable element for a nursing care of high quality.^[4] Recently, for the settlement of patient safety culture, not only technical aspects, such as regulations, guidelines, or structured system programming regarding patient safety management, but also reinforcing the awareness about patient safety of healthcare providers through a fundamental change on perception are increasingly required.^[5] Patient safety management is a responsibility of not only healthcare facilities, but also of all people associated with patient safety management in the institution, where nurses are of big importance.^[6] Nurses take care of patients for a whole day in hospitals, and as an expert who sensitively perceive problems associated with patient safety management, interest and awareness plays an important role on improving patient safety.^[7]

A nursing education institution ensures students to receive alongside with theoretical education, practical education, which enables students to be in actual contact with patients to produce nursing college students who has competency in clinical practice.^[8] Nursing college students are directly concerned with patient safety, since they perform not only interviewing the patients, supporting transfer, and monitoring vital sign check during clinical practice training, but also fundamental nursing practice under the supervision of an experienced nurse.^[2] Therefore, it is necessary to reinforce patient safety management knowledge and attitude, and to enhance confidence when in performance related to patient safety management knowledge practice of nursing college students.^[6]

Through this, nursing college students are expected to perform nursing care safely during the clinical practice training for two years, and, after graduating, by habituating themselves to patient safety management, they will grow up being a healthcare provider who performs patient safety management practice appropriately, putting patient safety management at the forefront.^[9] The knowledge about patient safety management is a must to protect patients from harmful dangers,^[10] which affects patient safety management performance.^[11] In particular, confidence in performance promotes the learning process of the individual by improving problem solving ability of the student, and also by assisting the acquisition of knowledge, attitude and skill necessary in clinical fields.^[12, 13] Therefore, to enhance patient safety management practice, it seems vital to learn the right knowledge about patient safety management, to form a positive attitude towards patient safety management, and to enhance confidence in performance promote the above written process.^[9]

Accordingly, this research aims to confirm the knowledge about patient safety management, the attitude towards this subject, the confidence when in performance of nursing college students, the practice for patient safety management, and to grasp the relevance between them, therefore to provide the basic evidence to develop a curriculum for the enhancement of patient safety management capability of nursing college students.

This research investigates the knowledge about patient safety management, the attitude towards the subject, confidence when in performance, and practice for patient safety management; the specific objectives are as follows.

- 1) Investigate the knowledge about patient safety management, the attitude towards this subject, confidence when in performance, and the degree of patient safety management practice.
- 2) Investigate the difference between knowledge about patient safety management, the attitude towards this subject, confidence when in performance, and the degree of patient safety management practice by general and characteristics of safety management.

3) Analyze the correlations among knowledge about patient safety management, the attitude towards the subject, confidence when in performance, and the degree of patient safety management practice.

MATERIALS AND METHODS

Research Design

The study is a descriptive survey aimed to measure nursing college students' degree of knowledge, attitude towards this subject, confidence when in performance, and practice on patient safety during pediatrics-adolescent nursing practice clinical courses.

Data Collection

Using G*Power 3.1.2 for power analysis, the power was .85 for linear multiple regression analysis, a medium effect size of .20, and a significance level of .05. The sample size of 218 was satisfactory to identify the affecting factors. The study sample consisted of 372 senior nursing college students who have had pediatrics nursing practice clinical courses in nursing schools(A, B, C, D) in G metropolitan city. The subjects were selected by convenience sampling and those who volunteered to participate.

Research Instrument

Safety is an unacceptable risk of harming individuals, and safety performance is an individual's behavior that promotes the safety and health of healthcare workers, patients, and the environment in performing their duties. In-hospital safety accidents include all kinds of errors, mistakes, and accidents that occur in hospitals, with or without the damage done to patients.

PSM-K (Knowledge about Patient Safety Management)

Patient safety is an activity that prevents possible errors and minimizes injury to patients, and patient safety management knowledge refers to the degree to which they know appropriate safety in treating or nursing patients. The questionnaire was designed to measure the degree of nursing college students' knowledge about patient safety management (PSM-K). The PSM-K refers to the measured score with the tool, which was reorganized to suit nursing college students by Choi & Lee [14], based on the nursing college student's knowledge measurement tool developed by Park & Park [2], taking reference from researches by International Patient Safety Goal (IPSG) and Flin et al [15].

The tool consists of 10 items, and the subject is asked to respond Yes, No, or No idea. Yes answers count for 1 point, No and No idea count for 0, and the points from the 10 items are summed up.

PSM-A (Attitude towards Patient Safety Management)

It refers to the cognitive, emotional, and behavioral orientation of the individual to protect the patient from unnecessary harm.

Attitude towards patient safety management (PSM-A) was developed by Chenot & Daniel. [16]. The PSM-A consists of 10 items based on awareness, attitude, and method when coping with medical errors, which are rated on five-point Likert scale (1=absolutely not, 5= absolutely yes), and average scores were used. A higher average

score indicated a higher PSM-A.

The questionnaires were found to have a Cronbach's α of .66, thus confirming the reliability and homogeneity of the questionnaire<Table 1>.

PSM-CP (Confidence when in Performance towards Patient Safety Management)

Confidence when in Performance towards Patient Safety Management (PSM-CP) refers to the degree to which one believes that one can achieve or perform patient safety management as intended.

PSM-CP is a tool revised and complemented by Park and Park,[2], taking reference from Patient Safety/Medical Fallibility Assessment Curriculum Survey and IPSG developed by Madgisky et al [17] for the assessment of knowledge about patient safety management, the attitude towards the subject, and medical affiliated college students' ability during performance.

The 10 questions asked the nursing college students about response to medical errors, accurate patient identification during clinical practice, reducing healthcare associated infections, and nursing interventions for a lower fall risk.

The reliability of the tool, according to Cronbach's α , was .85 by Park & park [2], and .87 in this study<Table 1>.

PSM-P (Practice for Protection towards Patient Safety Management)

Practice for protection towards Patient Safety Management (PSM-P) means systematic activities to identify possible problems during nursing and to prevent and manage patient safety accidents. The questionnaire was designed to measure the degree of nursing college students' practice for protection of patient safety from medical accidents or errors. The questionnaire was developed to measure the extent of nursing college students' PSM-P, the tool for measuring patient safety management is developed by Kim et al [18] and the elements were from the IPSG outlined by Joint Commission International (JCI). PSM-P scores were measured by Yoo & Lee [19] using a tool that has been reorganized to measure the degree of patient safety management practice for nursing college students. [18]. The PSM-P consists of 15 items which are rated with five-point Likert scale (1=absolutely not, 5= absolutely yes), and average scores were used. A higher average score indicated a higher practice of PSM.

The questionnaires were found to have a Cronbach's α of .91, thus confirming the reliability and homogeneity of the questionnaire<Table 1>.

Table. 1 Reliability coefficients for tools

| Tool | Number of items | Original study Cronbach's alpha | Current study Cronbach's alpha |
|--------|-----------------|---------------------------------|--------------------------------|
| PSM-K | 10 | - | - |
| PSM-A | 10 | .67 | .66 |
| PSM-CP | 10 | .85 | .87 |
| PSM-P | 15 | .89 | .91 |

Data Collection Procedures

The data were collected from December 1 to 28th, 2019. Before starting the study, approval was obtained from the institutional review board of nursing college of G University. For data collection, researchers visited each nursing education institution, explained the objectives of the study, received his/her permission to collect data, and then obtained the data from them.

Data analysis

The collected data were analyzed using SPSS statistics version 19.0. Descriptive statistics (frequency & percentile) were used to report participants' general characteristics. The nursing college students' knowledge, attitude, confidence in performance, and practice of patient safety management was calculated by mean score and standard deviations. Knowledge, attitude, confidence in performance, and practice of patient safety management depending on the characteristics of the participant were analyzed with t-test or one-way ANOVA. Post - test of different groups was followed by Scheffé test.

Ethical considerations

The researcher contacted A, B, C, and D nursing colleges and obtained permission to recruit participants. The participants were informed about the purpose of the survey and asked to sign a written consent form. The survey was then completed anonymously. Participants' personal information were coded and encrypted for statistical analysis, and only the researcher had access to the data.

RESULTS AND DISCUSSION**Participant Characteristics**

Of the 372 participants, 94.4% of them were female, and 29.0% were Christian. For the level of academic grade, 192 (51.6%) had a score from 3.5 or higher to below 4.0. Most of them rated 'Satisfactory' (52.7%) with their major study, while most of the assessment during clinical practice was 'Mediocre' (58.6%).

The status of experiences concerning safety management education was divided into 'have experienced' (74.2%) and 'have not experienced' (25.8%). Regarding whether the students experienced safety accidents, 30 (8.1%) students answered that they 'have experienced' safety accidents, and 342 (91.9%) students, answered that they 'have not experienced' safety accidents. Among the 41 students who experienced safety accidents, those who answered that they have experienced such accidents 'once' were 36 (87.8%) and those who answered 'twice' were 5 (12.2%), and the average number of times of safety accidents was 1.1 times for those 41 students. The most common type of safety accidents experienced was related to 'a needle prick' (70.8%) <Table 2>.

PSM-K (patient safety management knowledge)

How well the questionnaires knew about patient safety management for this study was given in Table 2. The score to judge the knowledge ranged from 1 to 10. The average score of (PSM-K) was 7.30 out of 10. The items, which over 90% of the questionnaires

answered positively, were 'To prevent falls on the bed, put all the bedrails on' (97.6%), 'For verbal/phone prescriptions, you do not have to keep verbal /phone prescriptions after the prescription is carried out' (94.2%), 'When treating with sterile gloves, you do not have to perform hand hygiene before wearing gloves'(93.1%), 'Physicians who have implemented oral/phone prescriptions shall implement computerized prescriptions within 24 hours' (91.8%), and 'It does not report errors that do not cause harm to the patient' (91.8%). On the other hand, the item which showed the lowest correct answer rate was 'Checking the patient with the bedside number and the name of the patient' with a percentage of 20.4% <Table 3>.

Table 2. General characteristics of the participants

| Characteristics | Categories | n | % |
|------------------------------------|-------------------------------|-----|------|
| Gender | Male | 21 | 5.6 |
| | Female | 351 | 94.4 |
| Religion | Buddhism | 39 | 10.5 |
| | Christianity | 108 | 29.0 |
| | Catholic | 48 | 12.9 |
| | Have no religion | 177 | 47.6 |
| Academic grade | GPA of 4.0 or higher | 45 | 12.1 |
| | GPA 3.5 or higher ~ below 4.0 | 192 | 51.6 |
| | GPA 3.0 or higher ~ below 3.5 | 115 | 30.9 |
| | GPA Below 3.0 | 20 | 5.4 |
| Major satisfaction | Satisfactory | 196 | 52.7 |
| | Mediocre | 153 | 41.1 |
| | Unsatisfactory | 23 | 6.2 |
| Satisfaction of clinical practice | Satisfactory | 126 | 33.9 |
| | Mediocre | 218 | 58.6 |
| | Unsatisfactory | 28 | 7.5 |
| Safety management education status | Have experienced | 276 | 74.2 |
| | Have not experienced | 96 | 25.8 |
| Safety accident experience | Have experienced | 30 | 8.1 |
| | Have not experienced | 342 | 91.9 |
| Number of safety accident | Once | 36 | 87.8 |
| | Twice | 5 | 12.2 |
| Safety accident type | A needle prick | 34 | 70.8 |
| | Medical equipment damage | 5 | 10.4 |
| | Patient identification error | 4 | 8.3 |
| | Oral administration error | 3 | 6.3 |
| | Antiseptic item contamination | 2 | 4.2 |

PSM-A (Attitude towards Patient Safety Management)

The attitudes toward patient safety management for this study were as shown in Table 4, where the average score was 3.76 out of 5. Questions with high average ratings showed 4.42 points for 'Patient safety management activities are important', 4.38 points for 'The priority for patient safety management in the nursing practice is high', 4.11 points for 'The priority for patient safety management in the curriculum is high', and 3.91 points for 'I'm interested in patient safety management'. On the other hand, the questions with low average ratings were 2.98 points for 'Work guidance on patient safety management should be relaxed (reverse questions)', 3.01 points for 'Any person may be in charge of affairs for patient safety

management regardless of his/her expertise (reverse questions)', 3.59 points for 'Investment in patient safety management is a kind of expendable cost (reverse questions)', 3.70 points for 'Patient safety management activities do not contribute to the productivity of work in hospitals (reverse questions)', and 3.72 points for 'I am well aware of how to maintain and improve patient safety (reverse questions)' <Table 4>.

Table. 3 The level of PSM-K

| Items | Correct rate (%) |
|---|------------------|
| To prevent falls on the bed, put all the bedrails on. | 97.6 |
| For verbal/phone prescriptions, you do not have to keep verbal /phone prescriptions after the prescription is carried out. | 94.2 |
| When treating with sterile gloves, you do not have to perform hand hygiene before wearing gloves. | 93.1 |
| Physicians who have implemented oral/phone prescriptions shall implement computerized prescriptions within 24 hours. | 91.8 |
| It does not report errors that do not cause harm to the patient. | 91.8 |
| Proximity or near miss is a medical error that does not cause harm to the patient. | 67.5 |
| An unexpected event accompanied by or accompanied by death or serious physical or mental damage is called an adverse event. | 62.1 |
| Packages containing disposable catheters are not subject to segregated collection as medical waste. | 65.4 |
| If a patient and his/her family ask about the patient's condition over the phone, they kindly explain it. | 46.5 |
| Check the patient with the bedside number and patient name. | 20.4 |
| Mean \pm SD | 7.30 \pm 1.24 |

Table. 4 The level of PSM-A

| Items | Mean \pm SD | Range |
|---|-----------------|-------|
| Patient safety management activities are important. | 4.42 \pm 0.72 | 3~5 |
| The priority for patient safety management in the nursing practice is high. | 4.38 \pm 0.62 | 2~5 |
| The priority for patient safety management in the curriculum is high. | 4.11 \pm 0.74 | 2~5 |
| I'm interested in patient safety management. | 3.91 \pm 0.44 | 2~5 |
| I am actively involved in patient safety management activities. | 3.84 \pm 0.64 | 1~5 |
| I am well aware of how to maintain and improve patient safety. | 3.72 \pm 0.78 | 1~5 |
| Patient safety management activities do not contribute to the productivity of work in hospitals.* | 3.70 \pm 0.67 | 1~5 |
| Investment in patient safety management is a kind of expendable cost.* | 3.59 \pm 0.24 | 1~5 |
| Any person may be in charge of affairs for patient safety management regardless of his/her expertise. * | 3.01 \pm 0.78 | 1~5 |
| Work guidance on patient safety management should be relaxed. * | 2.98 \pm 1.72 | 1~5 |
| Mean \pm SD | 3.76 \pm 0.42 | |

PSM-CP (Confidence when in Performance towards Patient Safety Management)

The confidence in the performance of the patient safety

management was 3.92 out of 5. The high score items were 'Always secure the wheel when moving the patient in a moving bed or wheelchair' (4.58), 'Keep the patient's bedside railing raised at all times and check the importance of the railing' (45.2), 'Proper hand hygiene method for precise to be conducted' (4.39), and 'In order to prevent infection, contaminated wastes shall be separated and discharged as general pollutants and extracts' (4.31), whereas the lowest item was 'In the event of a medical error, an incident report (report) shall be prepared accurately' (3.09) <Table 5>.

Table.5] The level of PSM-CP

| Items | Mean \pm SD | Range |
|--|-----------------|-------|
| Always secure the wheel when moving the patient in a moving bed or wheelchair. | 4.58 \pm 0.69 | 3~5 |
| Keep the patient's bedside railing raised at all times and check the importance of the railing. | 4.52 \pm 0.28 | 3~5 |
| Proper hand hygiene method for precise to be conducted. | 4.39 \pm 0.70 | 2~5 |
| In order to prevent infection, contaminated wastes shall be separated and discharged as general pollutants and extracts. | 4.31 \pm 0.68 | 2~5 |
| Inform the professor in charge of the error. | 3.88 \pm 0.67 | 1~5 |
| I know exactly how to identify patients and check accurately before every treatment. | 3.82 \pm 0.92 | 1~5 |
| Inform medical personnel of errors. | 3.80 \pm 0.82 | 1~5 |
| I support and advise colleagues on how to deal with errors. | 3.69 \pm 0.98 | 1~5 |
| I analyze the situation to find the cause of the error. | 3.49 \pm 0.42 | 1~5 |
| In the event of a medical error, an incident report (report) shall be prepared accurately. | 3.09 \pm 0.78 | 1~5 |
| Mean \pm S | 3.92 \pm 0.38 | |

PSM-P (Practice for protection towards Patient Safety Management)

The level of patient safety management at the target site was 4.21 out of 5 <Table 6>. The most commonly performed practices for patient safety management were 'Be sure to check the patient before administering the medication or hematopoietic medication' (4.86), 'Patients must be identified before performing nursing activities (procedures/treatment)' (4.60), 'Focus your mind on nursing activities' (4.40), 'Activities to reduce the risk of falling (maintenance, education, etc.) shall be carried out to patients with falling risk' (4.39), 'Be careful not to expose patient information to protect patient privacy' (4.38), 'Correct hand hygiene is carried out in accordance with the guidelines' (4.32), 'Ensure that the nursing activities (procedures/ treatment) applied to the patient are correct according to the procedure' (4.31), 'Patients are identified using at least two indicators' (4.30), and 'When receiving information about a patient, record all the information received so that there is no information missing' (4.30).

But patient safety management practice such as 'Check at least once a day to see if there is any risk of fire' (2.98), 'When using

medical devices, check if there are any problems and use them' (3.92), and 'When receiving information about a patient, the recorded information is 'read back' to the person who provided the information' (3.91) were performed less frequently <Table 6>.

Table. 6 The level of PSM-P

| Items | Mean ± SD | Range |
|---|-----------|-------|
| Be sure to check the patient before administering the medication or hematopoietic medication. | 4.86±0.69 | 3~5 |
| Patients must be identified before performing nursing activities (procedures/treatment). | 4.60±0.69 | 2~5 |
| Focus your mind on nursing activities. | 4.40±0.58 | 2~5 |
| Activities to reduce the risk of falling (maintenance, education, etc.) shall be carried out to patients with falling risk. | 4.39±0.62 | 2~5 |
| Be careful not to expose patient information to protect patient privacy. | 4.38±0.49 | 2~5 |
| Correct hand hygiene is carried out in accordance with the guidelines. | 4.32±0.68 | 2~5 |
| Ensure that the nursing activities (procedures/ treatment) applied to the patient are correct according to the procedure. | 4.31±0.97 | 2~5 |
| Patients are identified using at least two indicators. | 4.30±0.52 | 2~5 |
| When receiving information about a patient, record all the information received so that there is no information missing. | 4.30±0.12 | 2~5 |
| When information about patients is given, it is reconfirmed that the information has been delivered correctly. | 4.18±0.66 | 1~5 |
| Patients are not identified only by the patient's room number and location. | 4.16±0.90 | 1~5 |
| Use clear and clear indications in accordance with the guidelines for nursing activities (procedures/ treatment). | 4.14±0.82 | 1~5 |
| When using medical devices, check if there are any problems and use them. | 3.92±0.42 | 1~5 |
| When receiving information about a patient, the recorded information is 'read back' to the person who provided the information. | 3.91±0.64 | 1~5 |
| Check at least once a day to see if there is any risk of fire. | 2.98±1.78 | 1~5 |
| Mean ± SD | 4.21±0.92 | |

Correlations between PSM-A, PSM- K, PSM-CP, and PSM-P

The patient safety management knowledge (PSM-K) showed significant quantitative correlation with patient safety management attitude (PSM-A) ($r=.28$, $p<.001$), confidence in performance of patient safety management (PSM-CP) ($r=.19$, $p<.001$), and patient safety management practice (PSM-P) ($r=.22$, $p<.001$). The patient safety management attitude (PSM-A) showed a significant correlation between confidence in performance of patient safety management (PSM-CP) ($r=.48$, $p<.001$) and patient safety management practice (PSM-P) ($r=.37$, $p<.001$). In addition, patient safety management (PSM-CP) had a significant correlation with patient safety management practice (PSM-P) ($r=.36$, $p<.001$) <Table 7>.

Table. 7 Correlation between PSM-K, PSM-A, PSM-CP, and PSM-P

| Variables | PSM-K r(p) | PSM-A r(p) | PSM-CP r(p) | PSM-P r(p) |
|-----------|------------|------------|-------------|------------|
| PSM-K | 1 | | | |
| PSM-A | .28(<.001) | 1 | | |
| PSM-CP | .19(<.001) | .48(<.001) | 1 | |
| PSM-P | .22(<.001) | .37(<.001) | .36(<.001) | 1 |

Note: PSM-K = patient safety management knowledge

PSM-A = patient safety management attitude

PSM-CP = confidence in performance of patient safety management

PSM-P = patient safety management practice

DISCUSSION

This study attempted to determine patient safety management knowledge, attitude, confidence in performance, and practice among the nursing college students.

According to the study results, patient safety management knowledge (PSM-K) was 7.30 out of 10, or higher than the average. Compared to the results of the study by Choi & Lee [5] and Park [12] toward the third and fourth graders, this study was highly limited to the fourth grade nursing college students.

In this study, questions with a correct answer rate of more than 90% in patient safety management knowledge were 'fall prevention', 'oral or phone prescriptions', 'glove & hand hygiene', 'inputting instructions into a computer', and 'error report', and this was consistent with the findings by Choi & Lee [5] and Park [12]. Results of these studies were considered to have been learned sufficiently in the nursing education curriculum not only on fundamental nursing practice training and simulation labs in the college but also in clinical practice thorough practical training.

On the other hand, the lowest answer was 'patient identification'. For accurate patient identification, at least two of the patient names, date of birth, and hospital registration number should be used, and the patient's room number and location should not be used as indicators. Repeated training should be conducted throughout the clinical exercise to ensure accurate patient identification reflecting the results of this study.

The patient safety management attitude was 3.76 out of 5, higher than the average. This was a similar result, with a score of 3.83 in Hyun and a score of 3.59 in Choi & Lee. [5]. Choi & Lee [5] was in the 3rd and 4th grade, and in this study, it was only for 4th grade, but had a similar score in their patient safety management attitudes. It is considered that the nursing college students did not influence the patient safety management attitude during the clinical trial period. In the results of this study, administrative aspects of patient safety management attitude were assessed to be low, including the guidelines for patient safety management, expertise of personnel, and consumption of associated costs. Therefore, there is a need to strengthen theoretical education to complement these problems.

The confidence in performance of patient safety management of nursing college students was 3.92 out of 5, higher than the score of patient safety management attitude. In particular, the results of this study showed high scores relating to 'secure the foot switch', 'importance of side-rails', 'proper hand hygiene', and 'contaminated waste separation'. On the other hand, the items 'description of an accident report in case of medical error', 'situation analysis for investigating the cause of medical error', and 'report on medical errors and support from colleagues' showed low confidence in performance of patient safety management level, consistent with the result of Park. It is believed that these results were mainly because of clinical nursing practice conducted by nursing college students. Therefore, since nursing college students lack experience in responding to medical errors and in the reporting system, orientation should be provided before clinical practice to report and respond to medical errors.

This result is significant in the way that it accumulated empirical evidence of the patient safety management, and suggested the basis for practical spread. In addition, this study expanded the concept of the patient safety management in nursing, strengthened the preparatory the ground for clinical practicum by providing information about clinical environment to nursing college students who were about to take clinical practicum on knowledge, attitude, confidence in performance, and practice of patient safety management. In the future, it is expected that the integrated safety education program developed by the researcher would be widely used not only for nursing students but also nurses' education. Furthermore, it is suggested that a program should be developed and conducted in different region to accumulate empirical evidence on the effectiveness of this education program.

ACKNOWLEDGMENTS

These should be brief and placed at the end of the text before the references.

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