

The Effects of Pre- and Post- operative Nursing Education Using Simulation on New Nurses' Communication Ability, Self-Efficacy and Clinical Performance

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Abstract: In the past two years, due to the COVID-19, clinical practice has not been carried out normally, so new nurses are complaining of difficulties in conducting safe nursing independently. In particular, there is a lack of clinical performance skills in core nursing competency and communication. Therefore, this research was conducted to confirm the effects of pre- and post-operative nursing education using simulation on new nurses' communication ability, self-efficacy, and clinical performance. This study uses a single-group pre-post experimental design. The subjects of the study were new nurses who worked for less than one year at a general hospital or higher in C city. Data collection was conducted from November 18 to November 25, 2022 through presential survey targeting a total of 26 new nurses. The data were resolved by performing independent t-test and stepwise multiple linear regression analysis using SPSS/Win 23.0. Results show that, after pre- and post-surgery nursing education using simulation, the communication skills of new nurses were significantly improved, and the clinical performance skills were also statistically significantly improved after the implementation of the program. Through this, it was found that pre- and post-surgery nursing education using simulation improved communication ability and clinical performance ability, confirming that simulation education is effective in enhancing the competency of new nurses. Therefore, this study proposes that it is wanted to develop and operate a education by simulation programs to enhance new nurses' communication ability and clinical performance.

Keywords: Nurse, Communication Ability, Self-efficacy, Clinical Performance, Simulation

1. Introduction

1.1 Need of Research

Nurses, as professionals who directly provide medical services to patients, must have clinical performance skills to meet patients' various expectations and demands for medical services and to provide high-quality nursing care[1]. Accordingly Clinical sites are demand competent professional nurses to respond to the changing health care environment and become better the quality of medical care[2]. Nursing education is the basis for developing nurses' competencies. Through education, they acquire necessary theoretical knowledge required in the clinical field and apply the acquired knowledge to practice and to improve their competencies[3]. In addition, nurses are expected to have the ability to

Received: January 03, 2023; 1st Review Result: February 18, 2023; 2nd Review Result: March 14, 2023
Accepted: April 30, 2023

substitute for actual and potential problems through clinical practice targeting patients[4]. However, as the number of nursing education institutions and nursing students increased and the basic human rights and safety of patients were emphasized, it became difficult to secure practice institutions where students could practice. In addition, the scope and opportunities for practice are also reduced, so the opportunity to perform directly nursing and acquire practical skills in the clinical practice field as a nursing student is gradually decreasing[4][5]. Moreover, as clinical practice education during the regular curriculum of the nursing department has become difficult due to the spread of COVID-19 over the past two years, anxiety about how to cope with the situation as a new nurse after employment is rising[6]. However, due to the quantitative increase in nursing education institutions and the number of nursing students and the recent COVID-19 infection, it has become difficult to secure practice institutions and clinical practices were limited to direct observation and implementation due to patient safety and protection of rights [4,5]. In this situation, most new nurses entering the practice field for the first time complain of difficulties in performing the task of independently providing safe nursing care to patients[7]. Stress related to work performance due to work burden and lack of practical competency was the highest[8]. As a result of investigating the stress and difficulties experienced by new nurses, it was found that they lack confidence in various skills and have difficulty fulfilling their role as nurses[9]. It was reported that new nurses lacked clinical performance skills in medical record preparation[10], handover[11], communication and teamwork [10][11]. This shows that the clinical competence of new nurses does not match the nursing service needs of nursing subjects. These problems act as a cause for new nurses to have maladaptation to the clinical practice field and intention to leave[12][13]. Therefore, it is necessary to help new nurses change their roles so that they can adapt well to the clinical field[14], and to provide independent patient care performance as professional nurses in order to improve clinical performance skills. Hence, more careful management and educational support for new nurses are needed[15]. Accordingly, there is a need for simulation education for pre- and post-surgery nursing, including ISBAR nursing reporting and DAR nursing recording methods, which are required by most new nurses among core skills. This study aims to verify whether it is effective upswing communication ability, self-efficacy, and clinical performance of new nurses by conducting pre- and post-operative nursing simulation education.

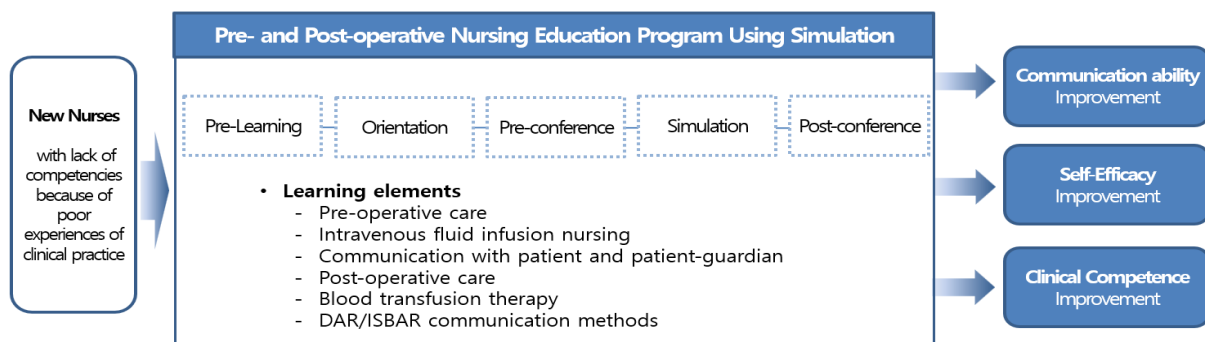
1.2 Theoretical Background

Simulation education is an educational strategy that provides experiences in various clinical situations through an environment similar to clinical situations and allows practice and learning in a safe environment, and is a method to improve nurse clinical performance[16]. The principle of simulation education based on constructivist learning theory and situational awareness theory is to encourage critical reflection on the learner's experience and to confirm personally constructed knowledge. In addition, through cognitive and behavioral experiences, learners do not stop at simple skill acquisition or agility training, but link knowledge and skills and further develop clinical judgment and problem resolution skills through integrated thinking and critical thinking skills[17]. The fidelity of a simulator used in simulation education refers to the degree to which real situations are implemented, and in high-fidelity patient simulation a patient simulator can represent various physical and physiological responses with a sense of reality. Simulation education converts more of nurses' competencies into the actual medical environment and the knowledge and skills acquired through education using high-fidelity simulation are shown to continue to have effects over time, helping to improve new nurses' competencies[18]. In particular, for new nurses, basic pre-and post-operative nursing is a nursing technique that can be commonly experienced in clinical settings, requiring continuous repeated learning and training of knowledge and skills[19].

Self-efficacy is the conviction that an individual can use his or her capacities effectively and is the

force to change and sustain behavior. In the context of nursing, it refers to the nurse's confidence to successfully perform the task expected of her[20]. Since self-efficacy is closely related to the communication ability to develop successfully a therapeutic relationship with the patient[21][22], it suggests that it is an important variable that affects the communication ability and confidence of new nurses.

However, studies confirming the force of simulation education on communication skills and self-efficacy for new nurses are lacking. Recent studies that have verified the strengths of using simulation for new nurses include studies related to emergency situation management[23], emergency airway management[24], and handover[25]. In this study, it was effective in improving self-confidence, clinical performance, self-efficacy, and communication skills. However, since the simulation education for new nurses is limited to emergency nursing, the measurement variables of the simulation education are not diverse and the effects cannot be compared or analyzed, so the generalization of the results is limited. In particular, new nurses who conducted clinical practice online due to COVID-19 are complaining of difficulties in core nursing skills, communication, and nursing records.. Therefore, simulation training was conducted for new nurses according to the simulation training procedure presented in [Fig. 1], and it was verified that it was effective advancing communication skills, self efficacy, and clinical performance skills of new nurses. This study tried to provide the research results as basic data for advancing a simulation education program. This study will help to find an educational approach strategy to improve the field adaptation of new nurses through simulation education for new nurses and prepare a plan to effectively present the results of future nursing education



[Fig. 1] Concept Model of the Study

1.3 Research Purpose

The goal of this study is to confirm the effects of new nurses' communication ability, self-efficacy, and clinical performance after applying pre-and post-operative nursing education using high-fidelity simulation. Specifically, it aims to:

- 1) Identify the general characteristics of the subject.
- 2) Identify differences in communication ability, self efficacy, and clinical performance of new nurses before and after application of pre- and post-surgery nursing education using simulation.
- 3) Identify the factors that affect the subject's clinical performance ability.

2. Research Method

2.1 Research Design

This study is a experiment study of single group pre-post experiment design[Table 1] to apply high-

fidelity simulation-based education to new nurse and verify its effectiveness.

[Table 1] Research Design

| Group | Pre | Intervention | Post |
|--------------------|-----|--------------|------|
| Experimental group | E1 | X | E2 |

E1: pre communication ability, self efficacy, and clinical performance ability

X: Simulation education

E2: post communication ability, self efficacy, and clinical performance ability

2.2 Research Instruments

2.2.1 Communication Ability

As for the communication ability measurement tool, Global interpersonal communication competence scale(GICC) developed by Rubin et al.[26] and modified by Huh[27].was supplemented by Hyunsuk Lee and Kim[28]. It consists of a total of 15 questions on a five(5)-point scale from one(1) point for “not at all” to five(5) points for “very much so”, with higher scores indicating higher communication skills. In the study by Lee and Kim[28], the reliability was Cronbach's $\alpha=.83$, and in this study, the reliability was Cronbach's $\alpha=.92$.

2.2.2 Self-efficacy

Self-efficacy refers to confidence in the ability to properly perform clinical performance. The measurement tool that was used was developed by Sherer et al.[29] and modified by Jeong[30] consisting of a total of 17 items. A higher score on a five(5)-point likert scale means higher self-efficacy, and the reliability at the time of research and development was Cronbach's $\alpha=.94$. Reliability in this study was shown as Cronbach's $\alpha=.94$.

2.2.3 Clinical Performance

For clinical performance, Choi[31] modified and supplemented the clinical performance tool developed by Lee et al[32]. based on the Schwrian Six-Dimension Scale. This tool has a total of 45 questions, and the range of scores for each question is a likert scale ranging from 1 point for “very poor” to 5 points for “very good”, and higher scores mean higher levels of clinical performance. The reliability of the tool was Cronbach's $\alpha = .96$ at the time of development by Lee et al[32], Cronbach's $\alpha = .92$ in Choi's study, and Reliability was Cronbach's $\alpha = .95$ in this study.

2.3 Respondents of the Study

Indention this study, 26 new nurses who understood the goal of the study on the effect of simulation education and gave written consent to participate in the study were choosen as study subjects for new nurses aged six months or less at a hospital located in C city. The sample size of this study was based on the power analysis presented by Erdfelder, Faul, & Buchner[33].and the G*power 3.1 program was applied.The number of samples in this study was determined by the number of subjects for the independent t-test: significance level (α)=.05, power ($1-\beta$)=.80, effect size (d) = 0.80, 21 people were needed per group. A total of 26 participants participated without dropouts and the study was completed.

Subject selection criteria

- (1) A nurse who graduated from the Department of Nursing and got a job at a hospital
- (2) Nurse with less than 1 year of hospital experience
- (3) Holder of a nurse's license

Subject exclusion criteria

- (1) Confirmed hospital employment and waiting nurse

2.4 Simulation Education Program Development and Operation Procedure

The simulation education program was developed by the six stages of the medical education curriculum development model.

2.4.1 Step 1. Problem Identification and General Assessment

From May to July 2022, the reality of the job of new nurses in the region and the necessity of developing an education program were confirmed through the meeting of the education committee of the nurses' association in C region and a literature review.

2.4.2 Step 2. Needs Assessment of Targeted Learners

From July to August 2022, 11 new nurses' educational needs, including preoperative nursing and postoperative nursing, were identified through the nursing departments of nine institutions located in C region. In addition, the necessity of developing a training program for new nurses using simulation was confirmed through a meeting consisting of department heads of four hospitals, new nurses, professors at nursing, and education members of the nursing association.

2.4.3 Step 3. Goal and Specific Measurable Objectives

From September to October 2022, through visits to three medical institutions in region C and a working-level meeting, a specific educational topic was selected as 'pre- and post-gastrectomy care for gastric cancer patients'. After setting the purpose of program development and operation to strengthen job competencies such as basic clinical skills, communication skills, and problem-solving skills of new nurses belonging to medical institutions in C region, set specific learning goals were also set for 'pre-surgery nursing' and 'post-surgery nursing'[Table 2].

[Table 2] Learning Objectives of Simulation based Pre & Post Operative Nursing Education Program

| Topic | | Learning Objectives | |
|-------|-----------------------------|---------------------|--|
| 1. | Pre-Operative Nursing Care | 1-1 | Understand complications after gastrectomy in gastric cancer patients and perform preoperative care to prevent them. |
| | | 1-2. | Understand the psychological state of gastric cancer patients ahead of gastrectomy and apply appropriate interview techniques. |
| | | 1-3. | Apply necessary nursing process in an appropriate way to solve the nursing problems identified in gastric cancer patients who are about to undergo gastrectomy |
| | | 1-4. | Check the doctor's prescriptions and set appropriate priorities to carry them out. |
| | | 1-5. | Apply medical aseptic technique strictly when performing nursing. |
| | | 1-6. | Perform intravenous therapy of prescribed medication according to the administration principle. |
| 2. | Post-Operative Nursing Care | 2-1. | Assess, record and report the patient's condition immediately after gastrectomy in an appropriate way(DAR/ISBAR). |
| | | 2-2. | Understand complications after gastrectomy in gastric cancer patients and perform postoperative care to prevent them. |
| | | 2-3. | Apply the necessary nursing procedures in an appropriate way to resolve nursing problems identified after gastrectomy. |
| | | 2-4. | Check the doctor's prescriptions and set appropriate priorities to carry them out. |

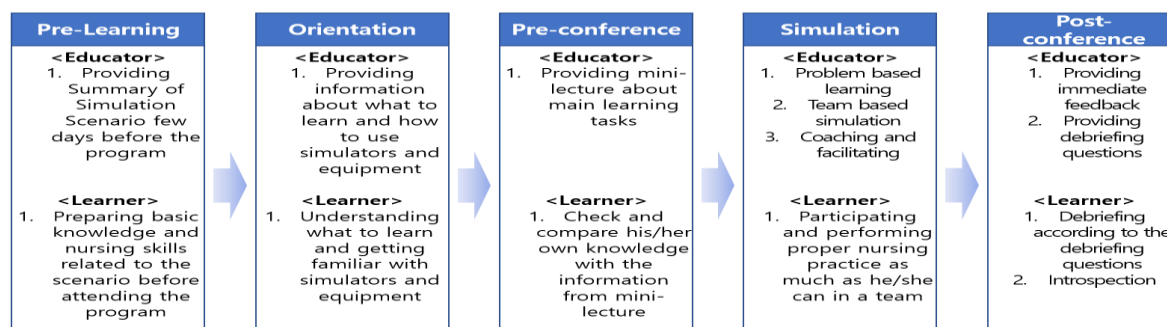
| | | | |
|--|--|------|--|
| | | 2-5. | Apply medical/surgical aseptic technique strictly when performing nursing. |
| | | 2-6. | Transfuse the prescribed blood in an appropriate way and perform nursing care to prevent transfusion side effects. |

2.4.4 Step 4. Educational Strategies

From September to October 2022, scenarios and templates were initially developed to achieve learning goals through visits to three medical institutions located in region C, working-level meetings, and literature review. The developed scenario, scenario outline, scenario algorithm, medical record form, etc. were discussed with two nursing professors and educators at three medical. The scenario was modified and supplemented. Each educational program scenario was developed by including the nursing skill items that showed high educational demands during the pre-survey. In other words, 'preoperative nursing' education included 'intravenous fluid infusion nursing' and 'communication with patient and patient-guardian', and to realize this, a trained SP (standardized patient) was used as the patient's guardian. In postoperative nursing education, 'blood transfusion therapy' and 'ISBAR communication methods' were included. However, considering that this program is a one-time, short-term program, it was designed to experience the same patient before and after surgery by linking the two scenarios to reduce the learning burden and facilitate the flow of learning. A program was organized to distribute case summaries before training and provide short key lectures on the day of participation in training. In all simulations, a high-fidelity adult simulator (SimMan 3G, Laerdal Korea) was used.

2.4.5 Step 5. Implementation

The program execution procedure proceeded in the order of pre-learning, orientation, problem-based learning, simulation execution, and debriefing [Fig. 2]. For pre-learning, the instructor distributed a one-page summary of the scenario, including learning objectives, learning elements, medication, and case summaries 2 days before the training, so that learners could conduct pre-learning. On the day of training, a 30-minute orientation was provided to learn what to learn before starting learning activities in earnest and to learn how to use equipment and practice environments, including simulators. For problem-based learning, during the pre-conference the instructor provided information on case studies in the form of handover. The instructor explained the roles of participants, and provided a mini-lecture on important learning elements for about 30 minutes. In the simulation, a total of 5 teams were formed as a team of 2-3 people. Each team practiced and decided on the role of its team members, including the leader and recorder, to participate. After completing the simulation, feedback was provided by the instructor, and debriefing questions were provided to each team so that debriefing was conducted for each team. After the simulations of all teams were completed, discussions and reflections were conducted centering on the debriefing questions provided in advance by the five teams participating in the training.



[Fig. 2] Process of Simulation based Pre- & Post-Operative Nursing Care Education Program

2.4.6 Step 6. Evaluation and Feedback

To be able to provide appropriate feedback to all participants who participated in the program, the instructor evaluated knowledge, application and attitude using the teaching simulation evaluation table. , The instructor provided the evaluation results immediately after practice and during the debriefing session. In the case of preoperative nursing, the SP(standard patient) evaluated the performance attitude, relationship formation and communication of the participant from the guardian's point of view using the simulation evaluation table for the SP and provided feedback on what went well and what needs to be improved. To prove the effectiveness of the program, evaluate its adequacy, and improve it, questionnaires were used to evaluate participants' clinical performance, self-efficacy, and communication skills, and their satisfaction and opinions about the program were collected.

2.5 Statistical Tools

The data were decomposed by the SPSS/WIN 23.0 program.

Frequency, percentage, average and standard deviation were obtained for general characteristics, communication ability, self-efficacy, and clinical performance of the subjects.

To verify the strength of simulation training, the difference before and after the simulation training experiment was identified by independent t-test.

Effects affecting clinical performance were identified through stepwise multiple linear regression [Fig. 3].

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 \cdots \beta_p X_p + \epsilon_i$$

[Fig. 3] Multiple Linear Regression

2.6 Ethical considerations

This study was carried out as an education program for nurses conducted by the Chungnam Nursing Association, and was conducted with ethical permission for the research subjects after passing the deliberation of the Chungnam Nursing Association board of directors for the education protocol and questionnaire. The goal and procedure of the study, guarantee of anonymity, protection of personal information were explained to the research subjects before the education was conducted. New nurses who voluntarily expressed their intention to participate in the research were asked to sign a consent form and a survey was conducted. In addition, it was clearly explained that there would be no disadvantage in grades even if the participant refused to participate in the study, and it was explained that they could withdraw their participation in the study at any time. A simple token was provided after the simulation education was over.

3. Research Results

3.1 General Characteristics of the Participants

[Table 3] shows the general characteristics of the research subjects. The subjects of this study were 26 new nurses who participated in high-fidelity simulation-based training, with an average age of 24.76 ± 1.36 years, males 4(15.4%) and females 22(84.6%). Job satisfaction was an average of $3.42 \pm .75$, experience was 8.5 ± 8.58 months, and subjects 9(34.6%) were unable to practice clinical practice at all due to the spread of COVID-19 infection. 22(84.6%) had previous simulation experience while 4 (15.4%) did not.

[Table 3] General Characteristics of the Participants

N=26

| Characteristics | Categories | n(%) | communication | self-efficacy | Clinical Competence |
|-----------------------|-----------------|----------|---------------|---------------|---------------------|
| | | | Mean±SD | Mean±SD | Mean±SD |
| Age(yr) | ≤ 24 | 17(65.4) | 3.89±.32 | 3.84±.33 | 3.99±.37 |
| | >24 | 9(34.6) | 4.04±.38 | 3.94±.31 | 4.05±.28 |
| | Mean±SD | | 24.76±1.36 | | |
| Gender | Men | 4(15.4) | 4.08±.12 | 4.00±.24 | 4.13±.16 |
| | Women | 22(84.6) | 3.91±.37 | 3.85±.33 | 3.99±.36 |
| Job satisfaction | Mean±SD | | 3.42±.75 | | |
| | dissatisfied | 3(11.5) | 3.97±.10 | 3.90±.13 | 3.90±.12 |
| | usually | 10(38.5) | 3.97±.38 | 3.91±.32 | 4.05±.31 |
| | satisfied | 13(50.0) | 3.90±.37 | 3.84±.36 | 4.01±.40 |
| career | Mean±SD | | 8.5mon±8.58 | | |
| | ≤1mon | 8(30.8) | 3.90±.23 | 3.88±.22 | 4.05±.35 |
| | >1mon and ≤6mon | 5(19.2) | 4.14±.38 | 4.09±.38 | 4.18±.32 |
| | >6mon | 13(50.0) | 3.89±.39 | 3.79±.32 | 3.93±.33 |
| Practice institute | 0 | 9(34.6) | 3.91±.48 | 3.88±.46 | 4.05±.47 |
| | 1-2 | 8(30.8) | 3.95±.35 | 3.86±.29 | 3.98±.30 |
| | 3 | 9(34.6) | 3.95±.20 | 3.88±.21 | 4.00±.24 |
| simulation experience | yes | 22(84.6) | 3.91±.37 | 3.87±.35 | 4.03±.35 |
| | no | 4(15.4) | 4.10±.15 | 3.92±.15 | 3.90±.24 |

3.2 Effects of Communication Ability, Self-efficacy, and Clinical Performance according to Pre- and Post-Operative Nursing Education using Simulation

[Table 4] shows the comparison results before and after pre- and post-operative nursing education using simulation. The communication ability of new nurses before and after pre- and post-surgery nursing education using simulation was 3.62±.50 points before the education and 3.94±.35 points after the education, showing an improvement in communication ability after the education (t=-2.66, p= .010). Self-efficacy improved after training with 3.67±.59 points before training and 3.88±.32 points after training, but it was not significant (t=-1.512, p=.137). Clinical performance was 3.70±.58 before education and 4.01±.34 after education, showing a statistically significant upswing in clinical performance after education (t=-2.345, p=.023).

[Table 4] Effects of Pre- and Post-Surgery Nursing Education using Simulation

N=26

| Variables | M±SD(pre) | M±SD(post) | t(p) |
|----------------------|-----------|------------|---------------|
| Communication skills | 3.62±.50 | 3.94±.35 | -2.66(.010)** |
| Self-efficacy | 3.67±.59 | 3.88±.32 | -1.512(.137) |
| Clinical Competence | 3.70±.58 | 4.01±.34 | -2.345(.023)* |

*>.05, **>.01

3.3 Factors Affecting Clinical Performance

[Table 5] shows the outcomes of stepwise multiple regression analysis conducted to confirm the factors affecting the clinical performance of new nurses. In order to identify the factors that affect the clinical performance of new nurses, general characteristic variables showed no significant difference in clinical performance. Therefore, communication ability and self-efficacy, which showed a significant correlation with clinical performance, were input as independent variables. Multiple regression analysis of the stepwise method was performed. As a result of the correlation analysis, there was no variable with a correlation coefficient of 0.8 or higher, tolerance limits of 0.87 to 0.95, all of which were 0.1 or higher, and Variation Inflation Factor (VIF) values of 1.05 to 1.15, which were smaller than the reference value of 10, so all variables were multiplexed. It turns out that there is no problem of collinearity. As a result of multiple regression analysis, the factor influencing new nurses' caring behavior was self-efficacy, and this variable explained 59% of clinical performance ($F=19.030$, $p<.05$).

[Table 5] Factors Affecting Clinical Performance

| Variables | B | S.E. | β | t | p |
|--|------|------|---------|-------|-------|
| Constant | | | | 1.436 | <.005 |
| communication skills | .321 | .236 | .490 | 1.359 | .187 |
| self-efficacy | .513 | .254 | .329 | 2.023 | .050 |
| $R^2=.62$, $Adj.R^2=.59$, $F=19.030$, $p<.05$ | | | | | |

4. Discussion

This study checked to check the effects on communication ability, self-efficacy, and clinical performance ability after applying pre- and post-operative nursing education using simulation to new nurses. Communication ability was statistically significantly improved after receiving pre- and post-surgery nursing education using simulation. Interactions with subjects were experienced using simulators and standardized patients that respond similarly to humans, and efforts were made to correct and supplement by recognizing deficiencies in the communication process through the debriefing process. The outcomes of this study were coincided with the research by Song and Woo[34] and Lee [24], who said that the subject's communication ability was improved through this. In addition, the simulation-based education shown in Lee[35]'s study supported the results of acquiring nursing knowledge and developing critical thinking about various clinical situations to improve the communication skills of new nurses necessary for communication between subjects and medical personnel. This seems to have improved the communication ability by increasing the accuracy and understanding of communication through communication between medical personnel using ISBAR while the subject performed the role during the simulation operation[36].

Self-efficacy improved after receiving pre- and post-surgery nursing education using simulation, but it was not significant. However, self-efficacy was confirmed to have a statistically significant effect on clinical performance. In the study of Tawalbeh and Tubaishtat[37], simulation education improved self-confidence by acquiring and strengthening related knowledge, and in the study of emergency management simulation education[24] and Jang and Hwang[38], self-efficacy of nursing college students said to improve. This provided new nurses with a simulation education program consisting of debriefing sessions including individualized and customized feedback on each performance. It was reported that this simulation education program included various teaching strategies that had a affirmative effect on self-efficacy. However, in this study, self-efficacy improved after conducting

simulation training consisting of a debriefing session including individualized and customized feedback for each performance, but it was not significant. This is considered to be a small number of subjects, and a repeat study with an increased number of subjects is suggested in the future.

In terms of clinical performance, the average score of the subjects in this study was 3.70. Compared to previous studies evaluating clinical performance, the score was lower than 4.07 in the study of Kim and Han[39] and 4.06 in the study of Kim and Park[40]. This is thought to be because unlike previous studies, this study had many new nurses with less than 6 months of clinical experience out of less than 1 year. Since high-quality nursing service is based on nurses' scientific knowledge[41], it is thought that continuous education on knowledge and additional information related to actual job performance of new nurses is necessary. In addition, clinical performance ability was statistically significantly improved after receiving pre- and post-surgery nursing education using simulation. Since the problem-solving ability of new nurses is a process rather than a behavioral result of a given task, it can be said to be an important factor influencing clinical performance[42]. Based on the inference that the level of clinical performance will also increase by increasing one's own judgment on the ability to perform tasks[43]. By applying an effective problem-solving process through simulation education, it is considered that simulation training is needed to enhance the clinical performance of new nurses.

5. Conclusion and Suggestion

This study was attempted to confirm the effects of pre- and post-operative nursing education using simulation on communication ability, self-efficacy, and clinical performance of new nurses. Results show that, pre- and post- operative nursing education using simulation was confirmed as an effective educational method for improving new nurses' communication skills and clinical performance skills and it was found that self-efficacy affects clinical performance skills. In clinical settings that are more complex than in the past, it is recommended to select topics such as pre- and post-surgery nursing, which are frequently performed in clinical settings. Applying them together with simulation education to satisfy patients who require high-quality nursing care and to perform smooth and effective communication between medical teams is recommended.

Since this study was conducted in a single group, there are limitations in expanding the study, so based on this results, the following suggestions are made. First, it is necessary to study and evaluate the force of simulation education with an experimental and control group. Second, repeated studies are needed to see if self-efficacy as well as communication and clinical performance can be improved by expanding the number of samples. Third, it is wanted to exploit a simulation education program that combines various clinical situations and analyzes the effect.

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