

Effects of Clinical Nursing Simulation by Standardized Patient Instructor on Teaching Effectiveness and Clinical Nursing Performance of Nursing Students

¹Young Ju Lee, ²Jung Hur*

^{1,2*}Dept. of Nursing Science, Gimcheon University, Co-Professor
sonamu0815@gimcheon.ac.kr, emssjhj@naver.com*

Abstract

This study is quasi-experimental study of nonequivalent control group pretest-posttest design which applied simulation nursing education programs by standardized patient instructor to look into the effect on the Teaching Effectiveness and Clinical Nursing Performance of nursing students. There was a significant difference between two groups in the Teaching Effectiveness of the nursing students ($t = 3.68, p < 0.001$). There was a no significant difference between two groups in the Clinical Nursing Performance of the nursing students. ($t = 1.724, p = 0.089$). The simulation nursing education by standardized patient instructor program can help then relieve the Teaching Efficacy of the nursing students. In addition, it is required to develop an appropriate simulation nursing education by standardized patient instructor program considering level and experience of nursing students.

Keywords: Standardized Patient Instructor, Teaching Effectiveness, Clinical Nursing Performance, Nursing Simulation, Nursing Education

1. INTRODUCTION

Nursing education has a gap between theoretical education and practical training because of the dualization of the theoretical education and the practical training, and the clinical practice training of the nursing students is based on observing hospital practice and basic technique. Because of this, satisfaction with clinical practice training for nursing students is low and they experience a lot of stress related to clinical training [1,2]. This problem has been pointed out as a problem of clinical practice training because it leads to the deterioration of the ability of the new nurse to perform clinical practice after graduation [3,4].

In recent years, simulation education has been introduced into clinical practice training, and it is attempted to reduce the difference between theoretical education and clinical field by using clinical training based on virtual patient scenarios [5,6]. Clinical nurses, however, need the ability to use critical thinking and therapeutic communication to identify patients' health problems and provide care. For this reason, the hospital nursing department requires field practice-oriented clinical practice training along with basic nursing core practical training [7,8].

In order to strengthen the needs of these hospital nursing departments and the ability of new nurses to perform clinical practice, nursing education is trying various clinical practice training methods [9,10], and standardized patient simulation clinical practice training (SPSCPT) is an educational method that has the merit of being able to evaluate the comprehensive practice of knowledge, clinical technique and attitude. It is a

Manuscript received: October 26, 2021 / revised: November 12, 2021 / accepted: December 1, 2021

Corresponding Author: emssjhj@naver.com

Tel: +82-54-420-4229, Fax: +82-54-420-4005

Professor, Dept. of Nursing Science, Gimcheon Univ., Korea

teaching method which is used not only in nursing university but also medical school [11, 12].

Simulation practical training using standardized patients (SP) is a method of training SP directly by a nurse who has a clinical experience to understand the emotional and physical symptoms of patients, and this is an educational method that enhances clinical adaptability by interacting with students and experiencing the situation-centered situation and clinical practice [11]. For this reason, SP are instructors rather than participants in clinical practice training, and SP should have clinical experiences as well as instructors who have received training in instructional training.

In the study of simulation education, most are unilateral studies using the self-report type measurement tool [13,14], and studies on SPSCPT where after the instructor has gone through SP training, he develops a field-oriented scenario based on the clinical experience and directly plays the role of SP. In order to measure the effectiveness of clinical practice training, it is necessary to use objective measurement tools rather than self-reporting tools.

The purpose of this study was to investigate the effects of trained instructor on SPSCPT and to examine the effect of nursing students on teaching effectiveness and clinical nursing performance, and it was attempted to use this as a basic data for developing the curriculum of SPI and developing SPSCPT program.

2. METHOD

2.1 Design

This study is an unequal control group pre- and post-quasi-experimental research where a 'Nursing education program for elderly pneumonia patients with fever' is used identically to verify the differences between teaching effectiveness and clinical nursing performance of nursing students according to SPSCPT performed by the instructor and existing SPSCPT.

2.2 Subjects

The subjects of this study were 83 students in the 4th grade of G university nursing students who understood the purpose of the study and agreed in writing to participate in the study. The study period was from March 2016 to June 2016. The experiment group consisted of 42 nursing students who received simulation clinical practice training by SPI, and the control group consisted of 41 nursing students who received the SPSCPT, and there was no dropout rate. The minimum sample size required for the study was 54 persons when the significance level $\alpha = 0.05$, number of groups = 2, effect size = 0.90, and power = 0.80 using G * power 3.1.2 program [15], but 83 patients were included in the study considering the dropout rate.

2.3 Tools

1) Teaching Effectiveness(TE)

The instrument for measuring the effectiveness of TE was the Instrument to Measure Effectiveness of Clinical developed by Reeve [16] and adapted by Kim [17]. This tool measures 13 types of propensity for TE, and includes 50 items including interpersonal skills 8 items, communication 3 items, role model 3 items, aid 3 items, usability 6 items, encouragement and support 5 items, evaluation 5 items, teaching method 3 items, subject assignment 3 items, organizational 4 items, professional ability 3 items, knowledge 2 items, and cooperation with hospital staff 3 items. Each item has 5 points for 'strongly agree', 1 point for 'strongly disagree', and 5-point Likert scale, which means that the higher the score, the higher TE. Cronbach's Alpha of the tool developed by Reeve [16] was 0.95, and Cronbach's Alpha was 0.90 in Kim's [17] study. In this study, Cronbach's Alpha was 0.94.

2) Clinical Nursing Performance(CNP)

The instrument of measurement of CNP was the CNP measurement tool developed by Lee[18] from Six-Dimension Scale of Schwirian[19], revised and supplemented by Choi[20]. This tool measures 5 areas of CNP. It consists of 11 items of nursing process, 11 items of nursing skill, 8 items of education and cooperation, 6 items of interpersonal relationship and communication, and 9 items of professional development. Each item had a score of 5 points for 'very good' and 1 point for 'very poor', with a 5-point Likert scale, which means that the higher the score, the higher CNP. In Choi's [20] study, Cronbach's α was 0.92, and Cronbach's Alpha in this study was 0.93.

2.4 Research process

1) Standard Patient Instructor (SPI) Training Process

SPI in this study has a clinical career of 19 years in ward, outpatient ward, and anesthesia recovery room, completed simulation education in graduate course, and completed simulation education more than 3 times.

2) SPSCPT Program Development Process

The simulation scenario and the clinical practice training assessment checklist are designed to develop a 'nursing program for elderly pneumonia patients with fever', which is the fifth leading cause of death in Korea, with interviews of clinical nurses, expert opinions, and clinical experience of researchers. The data were collected through literature review and the training scenario and the evaluation checklist was drafted by adding the nursing core technique based on the core skill protocol presented by the Korea Nursing Education Evaluation Institute.

A total of 11 questions of the training scenario and SPSCPT assessment checklist items were completed through the verification of a nurse practitioner, a clinical nurse with at least eight years of experience, and three experts of respiratory medicine with clinical experience in the respiratory medicine department of E University Hospital.

The developed training program was preceded by simulation training practice and situation of SPSCPT together with one simulation operator of G university nursing department. This was standardized through the Mock CPX, which was consulted and examined by the Korean Drama Society and the Director of the Korea Theater Association and the editorial committee.

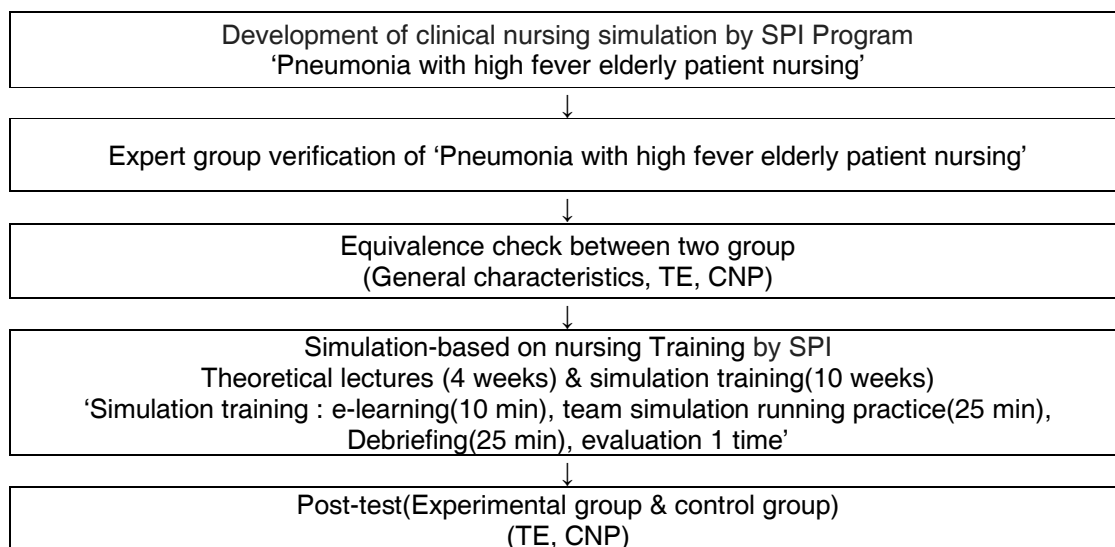


Figure 1. Process flow diagram of research

3) SPI Simulation Clinical Practice Training Progress

With the developed 'Nursing program for elderly pneumonia patients with fever', and integrated simulation course was run for 84 students at G university. TE and CNP was investigated by the preliminary investigation. Experimental group were performed by SPI and control group were performed by General Registered nurse for 4 weeks. Each group was subjected to simulation debriefing and post-test For 10 weeks.

2.5 Data analysis method

The collected data were analyzed using the SPSS WIN 22.0 program as follows.

The general characteristics of the subjects were analyzed by mistake, percentage, mean and standard deviation, and the pre-homogeneity test of the control group, which received the simulation clinical practice training by SPI and the SPSCPT by the general nurse, was analyzed by Chi-square test and t-test. The difference between before and after of TE and CNP of experiment group and control group was analyzed by t-test.

3. RESULTS

3.1 Homogeneity verification of General Characteristics of Subjects

Among the 83 subjects, there was no significant difference between the 42 experimental group and 41 control group subjects in age($\chi^2=4.998$, $p=0.172$), gender($t=0.321$, $p=0.830$), religion($\chi^2=1.630$, $p=0.830$) and clinical training satisfaction($\chi^2=3.015$, $p=0.830$), and homogeneity was secured.

Table 1. Homogeneity test for characteristics between experimental group and control group (N=83)

Variables/Categories	Exp.(n=42) n(%)	Cont.(n=41) n(%)	χ^2	p
Age				
21	1(2.4)	0(0.0)	4.998	0.172
22	4(9.5)	2(4.9)		
23	34(81.0)	39(95.1)		
26	3(7.1)	0(0.0)		
Religion				
Christian	15((35.7)	12((29.3)	1.630	0.652
Catholic	2(4.8)	5(17.1)		
Buddhism	3(7.1)	3(7.3)		
Atheism	22(52.4)	21(51.2)		
Gender				
Male	2(4.8)	1(2.4)	0.321	0.571
Female	40(95.2)	40(97.6)		
Satisfaction of clinical practice				
Very complaining	1(2.4)	1(2.4)	3.015	0.555
A bit of a complaint	15(35.7)	2(4.9)		
Usually	15(35.7)	12(29.3)		
A little satisfied	11(26.2)	12(29.3))		
Very satisfied	0(0.0)	7(17.1)		

Exp.=Experimental group ; Cont.=Control group

3.2 Verification of homogeneity of Dependent variables of Experiment group and Control group

Of the 83 subjects in the study group, 42 subjects in the experimental group and 41 subjects in the control group had no significant difference in TE ($t=-1.278$, $p=0.249$) and CNP ($t=0.061$, $p=0.830$) between the two groups, and pre-homogeneity was secured between two groups.

3.3 Comparison of TE between Experiment group and Control group before and after Education

In the experimental group, the pretraining effectiveness score improved from 181.1 (± 17.54) to 198.79 (± 19.16), but the control group showed no significant difference between pre-training 186.39 (± 19.82) and post-training 183.17 (± 13.47). The change of TE before and after the training group and the control group was significantly different between the two groups ($t=3.68$, $p<0.001$).

Table 2. Homogeneity test of experimental group and control group

(N=83)

Variables/Categories	Exp.(n=42) M \pm SD	Cont.(n=41) M \pm SD	t	p
TE	181.14 \pm 17.54	186.39 \pm 19.82	-1.278	0.249
CNP	160.88 \pm 20.20	160.61 \pm 20.49	0.061	0.830

Exp.=Experimental group ; Cont.=Control group

Table 3. Comparison of TE between experimental group and control group

(N=83)

Variables/Categories	Group	Pre M \pm SD	Post M \pm SD	Difference M \pm SD	F	p
TE	Exp.(n=42)	181.14 \pm 17.54	198.79 \pm 19.16	17.65 \pm 20.05	1.59	0.211
	Cont.(n=4)	186.39 \pm 19.82	183.17 \pm 13.47	-3.22 \pm 23.34		
	t	-1.278	4.286	3.68		
	p	0.249	0.105	0.000		

Exp.=Experimental group ; Cont.=Control group

3.4 Comparison of CNP between Experiment group and Control group before and after Training

In the experiment group, the pre-training CNP score improved from 160.88 (± 20.20) points to 172.17 (± 19.86) points after training, but it was not statistically significant. The control group showed no difference between 160.61 (± 20.49) before training and 160.93 (± 13.75) after training. The difference in the ability of the experimental group and the control group to perform clinical training before and after the training was not statistically significant ($t=1.72$, $p=0.089$).

Table 4. Comparison of CNP between experimental group and control group

(N=83)

Variables/Categories	Group	Pre M \pm SD	Post M \pm SD	Difference M \pm SD	F	p
CNP	Exp.(n=42)	160.88 \pm 20.20	172.17 \pm 19.86	11.26 \pm 22.81	1.46	0.231
	Cont.(n=41)	160.61 \pm 20.49	160.93 \pm 13.75	.32 \pm 23.84		
	t	0.061	2.991	1.724		
	p	0.830	0.180	0.089		

Exp.=Experimental group ; Cont.=Control group

4. DISCUSSION AND CONCLUSION

The results of the study are as follows.

In the experimental group participating in the simulation clinical practice training conducted by SPI, TE score before the training improved after the training, but the control group showed no difference. The change of TE before and after between the experiment group and the control group was significantly different between the two groups ($t=3.68$, $p<0.001$). In the experimental group who participated in the simulation clinical practice training conducted by SPI, CNP score improved after the training, but the control group did not show any differences before and after the training. However, the differences in the ability of the experimental group and the control group to perform clinical training before and after the training were not statistically significant ($t=1.72$, $p=0.089$).

The results of this study suggest that SPI simulation clinical practice training is a program able to improve TE of nursing students.

In the present study, there was a significant difference in TE between the experimental group receiving SPI simulation clinical practice training and the control group receiving the SPSCPT, and while CNP was not statistically significant, it was 12 points higher in the experimental group than before education. These results are similar to those of Chung [21], who suggest that the teaching proficiency of nursing students will be higher when a full-time professor conducts practical training, rather than a clinical training professor, or a practice assistant.

The effectiveness of teaching is influenced by practice content, practice attitude, practice environment and practice evaluation in SPSCPT. The use of SP in the clinical practice training of nursing students has the advantage of realizing the situation most similar to the actual situation and having the advantage of actual communication, but it has disadvantages in that the performance of education differs according to the education and operation capacity of the operating SP.

The results of previous study suggested that TE perceived by nursing students depends on the design of simulation lecture, especially particularly relevant to the debriefing phase of simulation module and the design of simulation lecture affect CNP and clinical judgement [22].

The results of this study suggest that the development of specialized training programs and programs that trained standard patient instructors can lead to improvements in the performance of the standard practice patient training, and it can be seen that the advice and participation of multi-disciplinary experts are essential for development and operation of simulation education.

In this study, the difference in CNP between the experimental group and the control group was not statistically significant, but the post-training score was improved in the experimental group and the control group was not changed before and after the experiment. These results are similar to those of Park [23], which suggests that the breast examination training method by SPI affects the learner's CNP, and it can be interpreted as similar to the study of Park [24], who showed improved nursing self-confidence in the group that experienced peer learning using video in standardized patient simulation exercise before and after surgery compared with control group without peer learning.

On the other hand, factor affecting CNP include learner's anxiety and psychological factors. Learners experience mild anxiety due to lack of preparation for class, lack of information from instructors, fear of mistakes and burden of evaluation[24]. The results of this study suggest the need for a strategy that can reduce the psychological factors of learners.

Simulated clinical practice training and structured program development by trained standard patient instructors not only improves TE and CNP of nursing students, but this will also help improve nurse competencies by strengthening critical thinking and clinical judgment skills in various clinical cases and crisis situations encountered at the nursing field after graduation.

It is also necessary to develop a structured checklist and a criterion for fair evaluation to provide verbal

feedback to students during this standardized patient simulation clinical practice, and it is suggested that pre-learning guidelines and documented training tools such as pocket cards are needed to enhance the learner's educational effectiveness.

For this, it is necessary to develop a systematic training course, a structured evaluation checklist, and a training development guideline for the instructor who is in charge of education, and to carry out various further studies on the performance of standardized patient simulation education.

REFERENCES

- [1] M.Y. Park and S.Y. Kim, "A qualitative study of nursing students' first clinical experience," *The Journal of Korean Academic Society of Nursing Education*, 3(1), pp. 23-35, 2000.
- [2] J.A. Yang, "Study of the influencing factors on assertiveness, clinical stress and nursing performance in nursing students," *Journal of Kwangju Health College*, 25(25), pp. 393-417, 2000.
- [3] C.H. Lee, Y.H. Sung, and J.S. Kim, "Analysis of nursing care activities of nursing students in clinical experience," *The Journal of Korean Academic Society of Nursing Education*, 4(2). Pp. 249-63, 1999.
- [4] O.H. Woo, "The effects of a PBL (Problem-Based Learning) on the problem solving process of students by their meta-cognitive levels," Master's thesis, Korea National University of Education, Cheongwon, 2000.
- [5] J.J. Yang, "The Effects of a Simulation-Based Education on the Knowledge and Clinical Competence for Nursing Students," *Journal of Korean academic society of nursing education*, 18(1), pp. 14-24, 2012.
- [6] M.S Lee and S.W. Han, "Effect of Simulation-based Practice on Clinical Performance and Problem Solving Process for Nursing Students," *Journal of Korean academic society of nursing education*, 17(2), pp. 226-34, 2011.
- [7] Jeffries P.R, "Simulation in nursing education: From conceptualization to evaluation," *National League for Nursing*, 2012.
- [8] J. Hayden "Use of simulation in nursing education: National survey results," *Journal of Nursing Regulation*, 1(3), pp. 52-7, 2010.
- [9] D.H. Kim, Y.J. Lee, M.S. Hwang, J.H. Park, H.S. Kim and C.K. Cha, "Effects of Simulation-based Integrated Practice Program on Problem Solving Process, Nursing Ability and Critical Thinking of University Nursing Students," *Journal of Korean academic society of nursing education*, 18(3), pp. 499-509, 2012.
- [10] Y.E. Kim and H.Y. Kang, "Development and application of simulation-based learning scenario using standardized patients: Caring for neurological patients in particular," *International Journal of contents*, 13(11), pp. 236-48, 2013.
- [11] M.R. Kim, H.S. Kim and G.Y. Sung, "Effects of Teaching Method using Standardized Patients on Nursing Competence in Subcutaneous Injection, Self-Directed Learning Readiness, and Problem Solving Ability," *Journal of Korean Academy of Nursing*, 40(2), pp. 151-160, 2010.
- [12] I.H. Park and S.J. Shin, "The Effects of Video-based Peer assisted Learning in Standardized Patients Simulation: Pre and Post Operative Care," *The Journal of Korean Academic Society of Adult Nursing*, 27(1), pp. 73-82, 2015.
- [13] H. Kim, "Effects of simulation-mixed maternity nursing practicum on learning attitude, learning satisfaction and clinical practice performance," *Journal of Korea Society for Simulation in Nursing*, 1(22), pp. 45-53, 2014.
- [14] G.Y. Kim and B.Y. Lee, "Correlation between for nursing students in satisfaction with clinical practice and clinical performance ability," *International Journal of contents*, 14(10), pp. 885-896, 2014.

- [15] E. Erdfelder, F. Faul and A. Buchner, "G POWER: a general power analysis program. Behavior Research Methods," *Instruments & Computers*, 28, pp. 1-11, 1996.
- [16] M.M. Reeve, "Development of an instrument to measure effectiveness of clinical instructors," *Journal of Nursing Education*, 33(1), pp. 15-20, 1994.
- [17] M.A. Kim, "A Study of Teaching Effectiveness on Clinical Nursing Education," *Journal of Korean Academy of Nursing*, 26(4), pp. 946-962, 1996.
- [18] Y.H. Lee, J.J. Kim, J.S. YU, H.K. Hur, K.S. Kim and S.M. Lim, "A Study on the Development of Clinical Performance Measurement Tool for Nursing Students," *Nursing Journal of Yonsei University*, 13, pp. 17-29, 1990.
- [19] P.M. Schwirian, "Evaluating the performance of nurses: A multidimensional approach," *Nursing research*, 27(6), pp. 347-350, 1978.
- [20] M.S. Choi, "A Study on the relationship between Teaching Effectiveness of Clinical Nursing Education and Clinical Competency in Nursing Students," master's thesis, Ewha Womens University, Seoul. 2005.
- [21] M.S. Chung, J.S. Park, E.J. Ryu, G.Y. Shin, H.Y. Jun and B.J. Kim, "Teaching Effectiveness and Adequacy of Practical Training in Nursing Students," *The Journal of Korean Academic Society of Nursing Education*, 21(4), pp. 549-559, 2015.
- [22] S.M. Kwon, J.H. Lee, R.W. Kwon and J.H. Lee, "The influence of nursing professionalism and teaching efficiency on clinical competence of nursing students," *Journal of the Korea Academia-industrial cooperation society*, 21(8), pp. 267-276, 2021.
- [23] J.H. Park, J.Y. Son, S. Kim, S.A. Lee, and S.J. Lee, "Breast Examination Instruction by a Standardized Patient Instructor," *Korean Journal of Med Education*, 22(4), pp. 283-289, 2010.
- [24] I.H. Park and S.J. Shin, "The Effects of Video-based Peer assisted Learning in Standardized Patients Simulation: Pre and Post Operative Care," *Korean Journal of Adult Nursing*, 27(1), pp. 73-82, 2015.
- [25] E.I. Ko and E.I. Kim, "Relationship of ambiguity tolerance, anxiety nursing competency, and satisfaction with simulation with simulation training," *Journal of the Korean Data Analysis Society*, 22(4), pp. 1413-1425, 2020.