

Effects on Nursing Students' Clinical Judgment, Communication, and Skill Performance Following Debriefing using a Clinical Judgment Rubric

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Abstract

In this study, nursing students underwent simulation training with the aim of assessing the effects of post-simulation debriefing using a clinical judgment rubric to evaluate clinical judgment, communication, and skill performance. There were statistically significant differences between-group differences in participants' clinical judgment and communication. However, no statistically significant difference was observed between the groups in terms of skill performance.

Keywords: *Debriefing, Clinical Judgment, Communication, Skill Performance, Simulation*

1. Introduction

After the U.S. Institute of Medicine released the "To Err is Human" report in 1999, the importance of patient safety has been increasingly emphasized. Moreover, the rise in the importance of accurate, comprehensive, and situation-specific problem solving abilities has led to application of simulation education in the education of medical personnel. Specifically, this allows students to apply cognition, judgment, and administer medication without fear of causing damage to patients, experience the immediate effect of their decisions, and change implementation plans based on these effects [1, 2].

As the result of recent changes in the hospital environment such as decreased hospitalization length, increased numbers of critically ill patients, changes in medical consumers' awareness, and increased patient demand, it is difficult for nursing students to receive first-hand clinical practice. Furthermore, conditions such as the gap between theory and practice, lack of opportunities to acquire nursing techniques, lack of clinical training professors, and a decline in students' willingness to receive clinical training are preventing nursing students from acquiring diverse clinical experiences [3].

Simulation training consists of two components. In scenario simulation, students practice nursing in various situations. Subsequently, in debriefing, students' performance is improved through debate, feedback, and reflection between students and instructors related to the simulation experience [4, 5].

Additionally, instructors guide students to understand and decrease the gap between their theoretical knowledge and practical skills, while assisting them in active participation [6]. However, simulation alone cannot induce learning. Instead, this only effectively occurs when debriefing methods such as reflection and feedback are included, as these are essential processes in developing professional competence [4].

Despite the importance of debriefing, it is difficult to debrief about all students' experiences within the limited timeframe involved in simulation training. Therefore, there is a need for research about ways to effectively provide students the opportunity to attain reflection and feedback.

However, current research in simulation training is focused on the development and application of scenarios as well as the design and application of simulation training. In contrast, only a few simulation training design studies on simulation also provide suggestions about debriefing methods. Thus, despite the importance of debriefing in students' learning, studies on simulation training methods debriefing methods and their effects are lacking.

Simulation training is a teaching method that improves students' learning and judgment in clinical situations and helps students to reflect on their own experiences and gain new knowledge by debriefing with colleagues. Moreover, simulation training is also known to improve students' satisfaction with learning as well as confidence, critical thinking, and clinical performance [7]. As a way to evaluate these effects of simulation training, a clinical judgment rubric was developed.

The four steps in Tanner's [8] clinical model were used to develop the clinical judgment rubric by separating the model into 11 specific subdomains [9]. This model is widely used as a nursing simulation evaluation tool and for education and research purposes [7, 9, 10].

Clinical judgment is a core component of nursing knowledge and is an approach to nursing that results from critical thinking [11]. Additionally, it involves the ability to make appropriate clinical decisions in real nursing environments via critical thinking based on nursing education [12]. To improve nursing students' clinical judgment abilities through simulation education, a valid and reliability tool for evaluating clinical judgment is required. Based on this need, the clinical judgment rubric was developed.

In addition to evaluating the simulation education of nursing students, the clinical judgment rubric can also be applied to debriefing process [7]. To achieve this, the debriefing process was structured based on the elements of the clinical judgment model including observation, cognition, interpretation, and response, resulting in research reporting the enhancement of students' clinical judgment [13]. In addition to its use in evaluation, the clinical judgment rubric allows instructors access to consistent metrics, as well as a means to identify students' stage of clinical judgment development in the debriefing process [14, 15]. However, there are very few cases where the clinical judgment rubric has been used in the simulation education debriefing process as a way to improve clinical judgment.

While there are a number of domestic studies that have reported on the effects of simulation education on nursing students' clinical judgment [16–19], very little research has been conducted on the effect of debriefing [20].

As such, this study will carry out simulation education for nursing students, apply a structuralized debriefing process that utilizes the clinical judgment rubric, and assess its effects on nursing students' clinical judgment, communication, and skill performance. Using these results, this study aims to provide the empirical basis required to evaluate the effects of the debriefing method on the educational outcomes of nursing simulation.

2. Methods

2.1. Study Design

The study was designed as a non-equivalent control group pretest-posttest study.

2.2. Study Participants

This study used convenience sampling and a total of 48 fourth-year nursing students living in Metropolitan City A agreed to participate. The required sample size was calculated to be 48 (25 in the experimental group and 23 in the control group) using G*Power 3.1 for between-group comparisons (t-tests) at a significance level of 0.05, statistical power of $(1 - \beta)$ 0.8, and effect size of (d) .83.

2.3. Study Instruments

2.3.1. Clinical Judgment

Clinical judgment includes using opinions to make nursing decisions for patients based on experience and knowledge in a real clinical environment. Specifically, it involves decisions about how to improve patient care based on their responses, decisions about utilizing or amending standard nursing practices, and decisions related to interpreting, reaching conclusion, and acting on the patients' needs and health problems [8]. To evaluate clinical judgment in simulation education, this study utilized an amended and improved clinical judgment tool that was originally developed by Laster [7] and amended by Shim [21]. This tool was determined to have content validity (CVI = 0.75), as established by a group of experts. Following observation of nursing actions, the assessment results were quantified. This tool covers addresses four areas and includes a total of 11 questions, with 3 questions addressing cognition, 2 addressing interpretation, 4 addressing response, and 2 addressing observation, respectively. Each question is rated on a 4-point scale and the range of total points is between 11 and 44. One assessor observed and evaluated these points, and higher points indicate higher clinical judgment. In this study, the Cronbach's alpha for the reliability of the tool was $\alpha = .735$.

2.3.2. Communication

Communication is the ability to effectively function in a clinical situation through appropriate knowledge, judgment, and skill performance [22]. This study measured communication using a tool initially developed to assess students' communication abilities with standard patients at II university medical school in Metropolitan City A. Subsequently, this tool was modified by Oh, Jang, Jang, Jeon, Han and Bae [23] for specific application to nursing students. This tool consists of 7 questions, and each is measured on a 4-point scale. The range of points is from 0 to 21. In this study, the Cronbach's alpha for the reliability of this tool was $\alpha = .661$.

2.3.3. Skill Performance

The blood transfusion skills required in the simulation scenario were evaluated based on the core nursing skill evaluation protocol developed by the Korean Accreditation Board of Nursing Education [24]. There were 28 elements to be performed in the transfusion, and each element was scored out of 2. The total score ranged from 0 and 100, and higher scores indicated better skill performance.

2.4. Data Collection

This study was approved by the Ethics Committee for Life Sciences at Daegu University (1040621-201503-HR-005-02) and the data collection occurred from April to June 2015. The details of the process are as follows.

Prior to the beginning of this study, the study purpose, process, and confidentiality were sufficiently explained to the participants. Written consent to participate in the study was received from all participants. An assistant researcher verbally explained the survey to participants. Subsequently, surveys were distributed prior to simulation education and after debriefing, and were filled out by the study participants. Using a random numbering program, the 48 fourth-year students who had been exposed to the simulation curriculum were divided into the experimental group (n = 25) and the control group (n = 23). The experimental group members completed the debriefing process utilizing the clinical judgment rubric, and the control group completed a standard debriefing procedure. Data was collected in a pre-test prior to simulation education, and a post-test phase after two simulation situations that used a high-quality simulator and debriefing. One assessor viewed the recordings of each simulation education situation and debriefing process and evaluated these cases. The assessor was a doctoral nursing student with over 10 years of clinical experience and prior experience utilizing clinical rubric tools. Addition, the assessor was unaware of what group study participants belonged to. The nursing cases consisted of patients reporting stomach pain and post-surgery pain and symptoms of nausea. Each simulation education case consisted of 10 minutes of pre-education for scenario analysis, 10 minutes of simulation implementation, 10 minutes of post-simulation observation, and 10 minutes for individual debriefing.

2.5. Data Analysis

Collected data were analyzed using SAS 9.2 Participant characteristics were analyzed in real numbers and percentages. T-tests were used to test and analyze the homogeneity between experimental and control groups in terms of participants' clinical judgment, communication, and skill performance.

T-tests were also used to measure and analyze differences between the experimental and control groups in regard to participants' clinical judgment, communication, and skill performance.

3. Results

3.1. Study Participants' General Characteristics

As shown in Table 1, the age of participants ranged between 21 and 24 with a mean of 21.69. There was no statistically significant difference in age distribution between the experimental and control groups.

Table 1. Participant Characteristics

Characteristic	Categories	Experimental group	Control group
		(n = 25)	(n = 23)
		n(%)	n(%)
Age (year)	21	18(72.0)	11(47.8)
	22	4(16.0)	7(30.4)
	23	3(12.0)	2(8.7)
	24	-	3(13.1)

3.2. Tests of Homogeneity between Experimental and Control Groups

Table 2 shows the results of tests of homogeneity for clinical judgment, communication, and skill performance between the experimental group (debriefed using the clinical judgment rubric) and control group (debrief using other methods). No statistically significant differences were observed, indicating group homogeneity.

Table 2. Homogeneity Tests between Experimental and Control Groups

Variables	Experimental group	Control group	t(p)
	M ± SD	M ± SD	
Clinical judgment	17.88 ± 2.60	16.61 ± 1.73	2.01(0.051)
Communication	18.39 ± 1.31	17.66 ± 1.41	1.84(0.072)
Skill performance	72.20 ± 11.45	71.48 ± 9.39	0.24(0.812)

3.3. Differences in Clinical Judgment, Communication, and Skill Performance between Experimental and Control Groups

Table 3 and Table 4 shows the analyses of differences in clinical judgment, communication, and skill performance between the experimental and control groups.

There was a statistically significant between-group difference in participants' clinical judgment, with the experimental group showing a greater increase in clinical judgment ($F = 2.21$, $p = 0.022$). In addition, there was a significant within-group difference, in that the experimental group attained a score of 25.88 for the first post-debriefing and a score of 33.16 for the second post-debriefing. Similarly, there was a significant within-group difference in the control group, as results revealed an increase from 24.61 at the first post-debriefing to 29.52 at the second post-debriefing.

There was also a statistically significant difference between the experimental and control groups in communication ($F = 12.20$, $p < 0.001$). However, there was no significant within-group difference observed in either communication scores for the experimental or control group.

The difference between experimental and control groups in skill performance was non-significant ($F = 0.09$, $p = 0.926$). However, there was a statistically significant difference in skill performance within the experimental group. Specifically, they attained a pre-simulation score of 72.20 and a post-simulation score of 81.25. Similarly, the control group showed a statistically significant within-group difference in skill performance with scores of 71.48 pre-simulation and 80.43 post-simulation, respectively.

Table 3. Differences in Clinical Judgment between Experimental and Control Groups

Variables	Group	First scenario	Second scenario	t(p)	F(p)
		Post-debriefing	Post-debriefing		
		M ± SD	M ± SD		
Clinical judgment	Experimental	25.88 ± 2.60	33.16 ± 3.05	26.85 (<.001)	2.21 (0.022)
	Control	24.61 ± 1.73	29.52 ± 2.33	23.27 (<.001)	

Table 4. Differences in Communication and Skill Performance between Experimental and Control Groups

Variables	Group	Pre-debriefing	Post-debriefing	t(p)	F(p)
		M ± SD	M ± SD		
Communication	Experimental	18.39 ± 1.26	18.90 ± 1.50	1.94 (0.059)	12.20 (<.001)
	Control	17.66 ± 1.34	17.68 ± 1.46	1.12 (0.269)	
Skill performance	Experimental	72.20 ± 11.45	81.25 ± 7.73	3.59 (0.001)	0.09 (0.926)
	Control	71.48 ± 9.39	80.43 ± 7.96	2.97 (0.006)	

4. Discussion

This study was conducted to evaluate the effects of a debriefing process that utilized a clinical judgment rubric on nursing students' clinical judgment, communication, and skill performance.

In this study, the debriefing method that utilized the clinical judgment rubric was effective in improving clinical judgment in cases of patients reporting stomach pain and post-surgery pain and dizziness. This study's results were similar to those reported by Hur and Roh [16] and Ha [20]. Specifically, in Hur and Roh's [16] study, the clinical judgment rubric was used to measure clinical judgment for third-year nursing students in eight simulation education cases and enhanced clinical judgment was found (pre-test = 17.76, post-test = 30.76). Similarly, in Ha's [20] study of second-year nursing students, there was a statistically significant difference in clinical judgment between experimental and control groups after one case of simulation. In particular, the experimental group that was debriefed using the clinical judgment rubric had a post-test score of 22.5, while the control group that experienced standard debriefing scored 18.95 on the post-test.

The current study targeted fourth-year students who had taken simulation education courses and utilized two cases of simulation education and subsequent debriefing. The results of debriefing utilizing the clinical judgment rubric after one case of simulation revealed that the experimental group scored 25.88. This score improved by a wide margin following the second case (33.16). In Ha's [20] study,

debriefing of second-year nursing students using the clinical judgment rubric only occurred after one case, while Hur and Roh's [16] study evaluated third-year nursing students with clinical practicum experience and used the rubric to assess eight cases of simulation education. A study by Mariani, Cantrell, Meakim, Prieto and Dreifuerst [25] assessed 86 nursing students. The researchers found that the score for the experimental group who underwent structured debriefing with the clinical judgment rubric was 28.48 after one case and improved to 29.36 following the second application. For the control group that received standard debriefing, the score was 28.97 after one case and improved to 29.07 after two. Thus, this group demonstrated less improvement compared to the experimental group. Moreover, there was no statistically significant difference between the experimental and control groups, suggesting that the study results were influenced by the number of debriefing applications and simulation education scenarios as well as the sample size.

The present study assessed fourth-year nursing students with simulation education experience as part of their third-year curriculum and clinical practicum experience, and applied simulation education and debriefing a total of two times. The result was a large improvement in the clinical judgment scores. Therefore, the results of this and previous studies show that the improvements of clinical judgment scores are dependent on the number of clinical judgment rubric debriefing experiences and participants' clinical practicum experience. Consequently, these factors require further research.

For the control group that underwent the standard debriefing process, the two applications of debriefing score of 29.52 in clinical judgment, which signified improvement. This seems to result from the fact that standard debriefing consists of a learning process based on critical thinking and self-observation. It is difficult to facilitate clinical judgment through the existing teaching and learning methods. That said, while the combination of simulation and standard debriefing was found to be effective in developing and improving clinical judgment, the clinical judgment rubric debriefing showed larger improvements in clinical judgment.

For the experimental group that was debriefed using the clinical judgment rubric, there was a statistically significant difference in communication scores compared to the control group. The debriefing process that utilizes the clinical judgment rubric is divided into four areas, including cognition, interpretation, response, and observation. This structure allows for the assessment of a diverse range of communication processes, such as focused observation of the patient and determining their issues, explaining the issue to the patient and measuring their understanding, and providing comfort to the patient and their family. Consequently, it seems that the nursing students improved their communication abilities by experiencing these debriefing processes. Similarly, in a study by Kim [26] that assessed 44 fourth-year nursing students, the experimental group who went through neurological patient simulations using a simulator in addition to a debriefing process showed a higher average score for communication compared to the control group that utilized practice models.

Additionally, there were no statistically significant differences between the experimental group that experienced debriefing and clinical judgment compared to the control group in terms of skill performance scores. However, the pre-test and post-test scores within each group did demonstrate statistically significant differences. As there are virtually no studies on the effect of debriefing process on skill performance, a direct comparison with this study is difficult.

In another study, Jung [27] evaluated 48 students in health sciences. Here, the experimental group went through debriefing after simulation education, and the control group did not. Subsequently, this study reported that the cardiopulmonary

resuscitation (CPR) performance scores between two groups differed significantly, and the experimental group that underwent debriefing had a higher CPR performance score compared to the control group.

In the current study, the skill performance of both the experimental group that experienced structuralized debriefing and the control group that received standard debriefing were improved compared to scores prior to education. After simulation education, the debriefing stage allows the nursing students to observe if the correct skills were used based on patient-specific situations, and then comprehensively self-evaluate items for amendment in the skill application process. This leads to the conclusion that the debriefing process improves skill performance.

This study has assessed nursing students from one university by applying debriefing that utilizes a clinical judgment rubric to evaluate its effects on clinical judgment, communication, and skill performance. Consequently, caution should be used when generalizing results to other samples.

5. Conclusions

This study attempted to verify the effects of applying nursing students' with a structured debriefing process using the clinical judgment rubric following simulation education to determine its effect on their clinical judgment, communication, and skill performance.

Study participants included 48 current fourth-year nursing students in Metropolitan City A that had agreed to participate. After simulation education, it was found that the structuralized debriefing process that utilized the clinical judgment rubric improved nursing students' clinical judgment and communication scores and impacted their skill performance. Therefore, the use of structured clinical judgment rubric debriefing can be used as an effective teaching and learning strategy to achieve learning goals related to clinical judgment, communication, and skill performance. To do this, future standardization of a debriefing process that utilizes clinical judgment rubric is required.

Based on the results of this study, the following proposals can be made. First, replication of this study on the effect of structuralized debriefing using a clinical judgment rubric with a larger sample size is required. Second, a study that verifies the effect of structuralized clinical judgment rubric debriefing is necessary for diverse nursing scenarios and standard patients.

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