

# Effects of Simulation Learning Using SBAR on Clinical Judgment and Communication Skills in Undergraduate Nursing Students

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**Abstract:** This study aimed to determine the effects of simulation learning program using SBAR (Situation, Background, Assessment, Recommendation) techniques on undergraduate nursing students' clinical judgment and communication skills. A quasi-experimental research design (one-group pretest-posttest design) was used in this study. The participants included 88 students from a nursing college. There were statistically significant differences in clinical judgment, communication clarity, and communication confidence between pre-simulation learning using SBAR and post ( $t=10.32, p<.0001$ ;  $t=6.05, p<.0001$ ;  $t=7.42, p<.0001$ ). The simulation learning program using SBAR was found to improve nursing students' clinical judgment as well as clarity and confidence in interprofessional communication.

**Keywords:** SBAR; Simulation; Clinical Judgment; Communication

## 1. Introduction

As communication is directly linked with patient safety and quality of care, its importance has received increasing interest in recent years. Communication is crucial for nursing professionals who provide whole-person care [1] and who play a pivotal role in communicating with fellow nurses, physicians, and other staff for interprofessional collaboration [2].

Inefficient communication about patients' health problems leads to omissions of key information [3] and may cause treatment delay, medical malpractice, extension of hospital stays, unanticipated readmission, increased cost, and work inefficiency [4].

While nursing curricula incorporate various types of communication training that are required for patient care [5], there is a lack of training in the interprofessional communication skills needed when faced by complicated emergencies in the clinical setting.

Nursing students struggle to clearly deliver information because they lack the ability to translate their theoretical knowledge into nursing practice; they also lack experience with interprofessional communication [1]. Even with adequate clinical clues and data present, incorrect clinical judgment and inefficient communication may threaten patient safety [6,7], so educational strategies to foster interprofessional communication skills need to be implemented in college curricula. Thus, standardizing the recognition of clinical signals and appropriate behavioral processes in accordance with SBAR (Situation, Background, Assessment, Recommendation) is important in promoting multidisciplinary communication and decision making [8].

SBAR is a concise and structured technique that uses a predictable format and can enable effective and immediate communication among health care professionals, even in emergencies [1].

Communication using SBAR among nurses and physicians leads to significantly increased communication satisfaction and interdepartmental collaboration [6]. Further, by providing clear and accurate feedback, SBAR enables consistent communication of information about patients' progress and promotes interdisciplinary collaboration [9].

Recent studies in Korea also reported that a program using SBAR improved nurses' communication clarity, satisfaction, and self-leadership [10], enhanced self-expression [11], and improved collaboration between physicians and nurses [12-14]. Recent studies on nursing students have also reported that SBAR improved their reporting clarity, confidence [15], and communication skills [16, 17].

These studies had analyzed the effectiveness of SBAR using lectures, role plays, and case-based learning. A study analyzing the effect on reporting and communicating the clinical situation according to the SBAR stage in a simulated situation that reproduces the clinical situation had been recently published. An examination of studies that conducted SBAR education using simulation revealed that communication skills, critical thinking[18], clinical decision-making ability[19], and clinical judgment[20] improved.

Simulation education requires not only simple techniques but also fast and accurate clinical judgment for the best results for the patient's condition[21]. Clinical judgment can be enhanced by developing standard responses to interpreting and determining patients' needs, health problems and behaviors, or new alternatives appropriate for patient response[22]. Clinical judgment skills such as determining and interpreting problems in clinical practice can be acquired through various experiences. Current clinical practice education has many limitations in helping nursing students acquire these various experiences; therefore, an educational strategy for students to improve their clinical judgment is essential. In clinical practice, unclear clinical judgment and communication of nursing students result in jeopardizing patient safety and lowering the quality of nursing care.

Although there are various educational strategies for standardized SBAR education, the application of simulation learning in this study is most ideal for reproducing a clinical situation similar to the real one. The realistic learning experience using the high-fidelity simulator enables long-term memory and in-depth study of the learning content with vividness of the clinical field[23].

Studies on SBAR education using simulation applied simulation learning to basic nursing practice, maternal and child nursing practice, and nursing for hypoglycemic patients. The results of domestic studies on the effects of SBAR education using simulation had been presented recently, but they are still insufficient. As nursing students who are expected to graduate from the current practical education system have very little opportunity to directly experience complex and urgent emergency situations, it will be possible to enhance their ability to make clear clinical judgment and communicate between medical staff in emergency situations by safely repeating learning through SBAR training in a simulation that can replicate such emergency situations.

In this study, an attempt was made to analyze the effect on clear clinical judgment, communication clarity and confidence in responding to urgent emergency situations by applying simulation learning that reproduces emergency situations before and after surgery.

## **2. Materials and Methods**

### **2.1 Design**

This quasi-experimental study used a one-group pretest-posttest design aimed at investigating the effects of a simulation learning program using SBAR on clinical judgment and communication skills among nursing students. Simulation learning that reproduces emergency situations by applying SBAR was conducted as a single group because it was not possible to separately set a control group due to the subject characteristics that had to be applied step-by-step for students of simulation subjects.

### **2.2 Participants**

Ninety-three fourth-year nursing students enrolled in a simulation course were selected as the study participants. The G\*power 3.1 program was used to calculate the study's sample size; a two-tailed test with .05 significance level( $\alpha$ ), .08 statistical power( $1-\beta$ ), and .61 effect size( $d$ ) showed that 88 subjects were needed.

The researcher in charge of the course explained the purpose and method of the study, guaranteed anonymity for study participation, and clarified that participation was voluntary and that participants were free to withdraw from the study at any time. With students, there was an assurance that withdrawing from the study would not affect their grade. After these explanations, consent was obtained from voluntary participants, and 88 subjects were selected as the final study participants after excluding five people who had omissions in the questionnaire.

## 2.3 Study Tools

### 2.3.1 Clinical Judgment

Clinical judgment refers to the presentation of opinions used to make decisions about nursing activities based on experience and knowledge in clinical practice. Individuals interpret or draw conclusions about the patient's health problem, decide on the use of standardized care guidelines or amendments, and determine the approach appropriate to the patient's response [22]. In this study, clinical judgment during simulation training was assessed using a tool developed by [21] and adapted and validated by a panel of experts [24]. The clinical judgment tool addresses four areas and includes a total of 11 questions, with three questions about cognition, two about interpretations, four about responses, and two about observations. Each question is rated on a 4-point scale, with total points for the toll ranging from 11 to 44. One assessor observed and evaluated these scores, and higher scores indicated better clinical judgment. In this study, Cronbach's alpha for the reliability of the tool was  $\alpha = .94$ .

### 2.3.2 Communication Skills

Communication refers to an exchange of thoughts and opinions [25]. In this study, it means communication clarity and communication confidence. Communication clarity was measured using 14 items modified and adapted by [11] out of 20 items developed by [26] to assess the content and clarity of reporting in medical students. This tool uses a 5-point Likert scale, with a total score ranging from 14 to 70. A higher score indicates better communication skills. In this study, Cronbach's alpha for the reliability of the tool was  $\alpha = .91$ . Communication confidence refers to the level of confidence an individual has when reporting clinical situations to a health care professional, and it was measured using five items developed by [20]. Each item is rated on a 10-point scale, with the score ranging from 5 to 50. A higher score indicates greater communication confidence. In this study, Cronbach's alpha for the reliability of the tool was  $\alpha = .93$ .

## 2.4 Simulation Learning Program using SBAR

The simulation learning program using SBAR consisted of 4 hours of learning per week for 8 weeks. Clinical situations simulated in the program were preoperative and postoperative emergency patient care, and each case consisted of both simple and complex problems. The problems were selected based on the theoretical education the students received according to the curriculum. Four to five students were randomly assigned to each group for simulation learning using SBAR, and each group was given an explanation about SBAR, core fundamental nursing skills for each case, and the disease involved, and underwent individual learning and skills practice. The students were also given an explanation about how to use the patient's room and supplies and devices in the room during the simulation, and each group was given an opportunity to practice using them. Every week, each team was given 40–50 minutes for discussion to analyze the problem presented in the case, nursing activities to resolve the problem, priority of nursing activities, role assignment for team members, and communication using SBAR. Each team underwent 15 minutes of simulation using SBAR, followed by 15 minutes of reflection while watching the recorded simulation. After the completion of team-based activities, the entire class came together for 20 minutes of reflection learning. For simulation learning based on SBAR, a high-efficiency simulator was used as a patient and each team member was organized in ways to experience SBAR by instructing each team not to assign the same role to each team member in the process of providing emergency situations before and after surgery a total of four times. The application process of simulation learning using SBAR in this study is shown in Table 1.

**Table 1.** Application process of simulation learning using SBAR.

Step	Domain	Learning Content
1	Orientation	Self-assessment (Communication Skill)
	Pre-test	Observational Assessment (Clinical Judgment)
2-3	Nursing Simulation	Explanation about SBAR
	Briefing/Practice	SBAR Script Making/Role Play
	SBAR Briefing/Practice	Briefing and Experience of the Patient's Room and Devices Briefing of Nursing Cases

Nursing Skills Practice/Test			
4-7	Pre- and Post- Operative Emergency Patient Care (Abdominal Pain)	Planning (50 min.)	Problem Analysis Planning of Nursing Activities/Communication using SBAR Role Assignment for Team Members
		Running	Running of Nursing Activities/Communication using SBAR (15 min./each team)
		Debriefing (50 min.)	Reflection Learning about Nursing Activities Reflection Learning about Communication using SBAR
8	Post-test		Self-assessment (Communication Skill) Observational Assessment (Clinical Judgment)

## 2.5 Data Collection and Analysis

The participants signed a consent form indicating their consent to participate. A research assistant distributed the questionnaire before and after the simulation learning program using SBAR, after providing verbal instructions. The participants were also informed that all data would only be used for research purposes and that anonymity and confidentiality would be ensured. To ensure ethical protection of the study participants, this study was approved by the institutional review board at D University (IRB accept number: 1040621-201905-HR-024-08). The researcher in charge of the simulation course distributed and collected the questionnaire and coded the questionnaires so that researchers could not identify the participants.

The collected data were analyzed using SAS 9.2 software. Participants' characteristics, clinical judgment, and communication skills were analyzed and the real number, percentage, mean, and standard deviation were calculated. Changes in clinical judgment and communication skills after the simulation program using SBAR were analyzed with paired t-tests.

## 3. Results

### 3.1 Participant Characteristics

The characteristics of the participants in this study are shown in Table 2. Regarding age, most participants were under 21 years (n=42, 47.73%), followed by 22 years (n=26, 29.55%) and 23 years and above (n=20, 22.72%). There were more female (n=75, 85.23%) than male (n=13, 14.77%) participants.

A total of 87 students (98.86%) reported being satisfied with their clinical practice, while 47 (53.41%) were highly satisfied.

**Table 2.** Characteristics of participants. (N=88)

Categories		N(%)
Age(years)	≥21	42(47.73)
	22	26(29.55)
	23≤	20(22.72)
Sex	Female	75(85.23)
	Male	13(14.77)
Satisfaction with Clinical Practice	High	47(53.41)
	Moderate	40(45.45)
	Low	1(1.14)

### 3.2 Clinical Judgment and Communication Skills

Changes in clinical judgment after the learning program were analyzed using paired t-tests (Table 3). After the program, the students showed a statistically significant improvement in the clinical judgment score ( $t=10.32$ ,  $p<.0001$ ). There were statistically significant improvements in communication clarity and confidence after the program as well ( $t=6.05$ ,  $p<.0001$ ;  $t=7.42$ ,  $p<.0001$ ).

**Table 3.** Clinical judgment and communication skills of participants. (N=88)

Variables	Pre-test	Post-test	t	p	
	M±SD	M±SD			
Clinical Judgment	26.97±2.59	32.87±3.49	10.32	<.0001	
Communication	Clarity	3.79±0.52	4.16±0.47	6.05	<.0001
Skill	Confidence	6.14±1.48	7.22±1.14	7.42	<.0001

## 4. Discussion

Our participants showed a statistically significant improvement in the clinical judgment score from 26.97 before the simulation learning program using SBAR to 32.87 after the program. This is consistent with the results of a study conducted on 55 nursing undergraduates [20], where students showed improved clinical judgment after undergoing a simulation-based communication training program using various nursing situations. Although the results cannot be directly compared due to differences in learning methods, prior reports that SBAR training using role play improved clinical judgment [1, 8] also support our results. Some studies also report that a simulation-based training program improved nursing undergraduates' clinical judgment [27, 28], even though SBAR was not used.

SBAR strengthens critical thinking skills by having individuals assess the problem at hand and decide on the effective solution before reporting a situation [29]. SBAR is a strategy that facilitates inference during the process of quickly organizing patient information and advances clinical judgment through a process of reflecting on clues or anticipated outcomes in a patient's situation [1, 8].

In a study [20] of 55 prospective graduates as research subjects, even in the control group that experienced simulation learning twice as a general reporting method, the clinical judgment ability was partially improved due to the maturity of the learner. And the clinical judgment ability in the experimental group that experienced SBAR-based simulation learning was found to be very high, from 28.21 before the learning to 38.28 after the learning, thus showing a significant difference between the two groups. The participants in our study also performed SBAR's phased practice through lectures on prior patient conditions and nursing cases, and, as they repeatedly experienced simulation learning in emergency situations four times, learner maturation may have affected the study results. It was found, however, that the degree of improvement in clinical judgment ability was significantly higher after SBAR-based simulation learning than before. Future research is needed to select a control group and consider the effect of learner maturation on research results.

In our study, recognizing the patient's situation, analyzing health problems according to priority, and planning and performing nursing activities to resolve the problem in a simulation that resembles the emergency clinical setting seem to have helped improve students' clinical judgment. Furthermore, students decided on the appropriate activity through SBAR-based communication with colleagues and other healthcare professionals and discussed the outcomes with their team members.

In this study, communication clarity and confidence were statistically significantly improved after the simulation program using SBAR. These results are consistent with previous findings on undergraduate nursing students [20, 30, 31]. In a study that administered a simulation-based communication program using various nursing situations [20], the control group that underwent simulation-based learning also showed improvements in communication clarity and confidence after learning, but the experimental group that received SBAR training showed significantly better improvements. Although a different tool was used, a study on nursing students where the experimental group receiving handover training using SBAR showed significantly better improvements in communication skills than the control group that received handover training without SBAR

[32] is also in line with these findings. Further, the results are consistent with previous findings that learning communication skills using SBAR improved nursing students' communication clarity, which led to increased communication confidence, thereby boosting their communication self-efficacy [1, 15, 33]. Using SBAR enhances the reliability of the delivered information as it is easy to understand and less is omitted; information delivery is also based on causality [32]. Further, SBAR enables clear communication among health care professionals [34] and increases the credibility of information delivery [1], thereby promoting efficient communication. Efficient communication among health care professionals is crucial in promoting interprofessional collaboration and resolving conflicts, and collaboration based on clear communication improves the quality of patient care [35].

As observed here, communication using SBAR seems to enable more accurate preparation before reporting in emergencies. It also enables more information to be delivered more concisely by offering a standardized format; this enhances the clarity of communication and confidence in the nurse's clinical judgment.

Nursing students lack an environment where they can practice emergency situations. SBAR-based simulation learning is expected to enhance their ability to accurately make clinical judgments and communicate in emergency situations through repeated learning of urgent emergency patient cases in a safe environment.

## 5. Conclusions

This study is a one-group pretest-posttest experimental study conducted on 88 nursing students to investigate the effects of a simulation learning program using SBAR on students' clinical judgment and communication skills. The program was found to improve nursing students' clinical judgment as well as clarity and confidence in interprofessional communication. These results suggest that a simulation learning program using SBAR would contribute to promoting patient safety and quality of care by improving nurses' clinical judgment and communication skills in various clinical situations. As this study was conducted on a single group within an 8-week course including the program, the results must be interpreted with caution. In addition, in the process of simulation learning using SBAR, it is necessary to select a control group and repeat the study while considering the effect of learner maturation on the research results. Further, studies examining the retention of learning from the simulation program are lacking, and thus more research is required on this area.

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**Conflicts of Interest:** The author declares no conflict of interest.

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