

Social Data Analysis on the Perception of Emergency Simulation Education of Nursing College Students Using the Q Method

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Abstract. This exploratory study applied Q-methodology to identify nursing students' awareness of emergency nursing simulation education. To extract the Q population, five nursing students who participated in emergency nursing simulation education were selected to conduct focus group interviews, and the interview analysis data and consideration of precedent research were integrated and reviewed to deduce 34 Q-samples. Based on the small sample theory, 24 samples were selected for the survey, and the PC-QUANL program was used to analyze the data. After analysis the data was classified into three unique types including 'emergency nursing educational value type,' 'emergency nursing special meaning type,' and 'motivation through preparation type.' There were 11 subjects in Type 1, 8 subjects in Type 2, and five subjects in Type 3. This study specifically confirmed the students' experience of emergency simulation that the learning goals to be achieved in the report and simulation education are being achieved efficiently. The research findings revealed the subjective perceptions of the students who participated in emergency nursing simulation education, and it is anticipated that research will contribute to the development of content for emergency nursing simulation education and the enhancement of simulation education quality.

Keywords: Emergency simulation, nursing education, subjectivity research, nursing student

1. Introduction

The growing interest in health, in addition to the development of medical technology, is increasing the demand for nursing care. The purpose of nursing education is to provide scientific knowledge and foster nursing staff with clinical nursing performance skills who are able to make reasonable decisions and provide appropriate nursing care (Nam, M. H, Lee, M. R., 2016). Clinical practice education, together with lectures on theory, is an essential aspect of nursing education.

However, the clinical settings nursing students encounter unfold very quickly because they are directly connected to patients' lives, so mistakes cannot be allowed and patients prefer nurses instead of inexperienced and unskilled nursing students even for minor nursing. Because of this, the opportunities for direct nursing implementation are reduced in clinical practice education and mostly consist of observation-centered practice (LIM, S. M, Yeom, Y. R., 2020).

To address these problems in reality, nursing education applies various education methods such as evidence-based learning, problem-based learning, and simulation-based learning to equip nurses with capabilities to be advanced nurses (Korean Accreditation Board of Nursing Education, 2020).

Simulation-based education is a learning method that is grounded on structured scenarios used to confirm and arbitrate physical assessment and physiological changes in a simulation situation designed to be like the clinical setting (Ko, E. J., 2017). Particularly in the case of clinical practice education, the importance is emphasized by the fact that it is the process of putting theoretical knowledge into action. However, nursing colleges in Korea have a limited number of training hospitals for clinical practice despite the rapid increase in the number of entrants following an increase in demand for healthcare personnel, so it is difficult to secure clinical practice sites (Ahn. M. K., 2019).

Moreover, in the nursing field, patients' stability and human rights are emphasized, so it is mainly observation-centered practice and nursing students' opportunities to experience direct nursing implementation are limited. As a result of these difficulties, simulation-based practice education, which is clinical case-based, is expanding, and is operated as a solution for problems such as the shortage of field practice sites in nursing education (Song, Y. A., 2020).

To achieve these educational goals, it is important to understand the experiences of students' as they participate in the education. In addition, education designed with this understanding is favorable for improving effectiveness. Emergency nursing simulation education is characterized by urgent emergency situations reenacted through simulations, where students could experience confusion as they cope with such situations. Accordingly, it is meaningful to investigate the subjective perceptions of students participating in emergency nursing simulation education to identify their unique experiences (Ko, S. J, Choi, E. H., 2017).

These efforts are essential to ensure the enhancement of the quality of emergency nursing simulation education, and they must precede effectiveness research. Therefore, Q-methodology, which is appropriate for the research goal, was applied to identify the subjective perceptions of nursing students about emergency simulation education and promote an advanced understanding of their experiences.

2. Methods

The Q methodology is a research method widely used for the study of human subjectivity throughout the social sciences, including nursing or psychology. It was introduced by William Stevenson, in 1935 and has been adopted in many studies in advertising and public relations including marketing, medicine, nursing, political journalism, communication, and counseling. The Q methodology has a philosophical foundation and is used to find correlations between people across the subjective attributes (Kim, H. G., 2003).

2.1. Design

This study is an exploratory study that applied Q-methodology to identify nursing students' perceptions of emergency simulation education.

2.2. Emergency simulation program

The operation of the emergency simulation-based education involved emergency nursing practice and critical care nursing practice, where one scenario normally took around three to four weeks. The program was operated by two professors in charge and two practicum assistants, and there was a total of five classes with five groups in each class. Each group consisted of five–six people, and the scenario topics were nursing patients in emergency situations with respiratory difficulties, cardiac arrest, and acute phase. Some of the diseases related to the scenarios were myocardial infarction, asthma, chronic obstructive pulmonary disease, cerebral stroke, and diabetes in adults.

2.3. Q population and Q sample constitution

To deduce the Q Population, RISS, CINAHL, and PubMed were used to examine precedent research about emergency nursing simulation from November 1, 2020, to December 30, 2020, and a focus group interview was conducted with five nursing students who joined the emergency nursing simulation education.

Each interview session took two-three hours. Interview questions included “Have you ever witnessed an emergency situation during the clinical practice?”, “Please describe the situation at that time”, “What did you feel when you watched the nurses responding to emergency?”, “What do you think is required of nurses to address patients' problem in emergency?” What do you need to prepare to become a nurse who responds to emergency?”, and “How have you changed after witnessing the

emergency?'. Open-ended questions were adopted so that participants could provide comprehensive answers.

The interview data and precedent research considerations were compared and analyzed synthetically, and 97 Q population statements were deduced. Two professors reviewed the 97 deduced Q statements and derived Q-samples, and one professor in the nursing department and two nursing students reviewed the statements and selected 34 statements.

2.4. P-Sample sampling method

Q-methodology based on small sample theory and selected 24 samples. The selected subjects were students who had experienced emergency nursing simulation education and were recommended by a supervising professor.

2.5 Q-sorting

24 nursing students who had experienced emergency nursing simulation education were instructed to read 34 Q-samples and classify them based on three stages. First, the students had to read all 34 statements and classify them into what they affirmed or disaffirmed. Next, they were told to read the statements that they affirmed and classify them in order of what they agreed with most strongly. Finally, students were told to read the statements that they disaffirmed and classified them in order of what they disagreed with most strongly. Each statement was classified on a 9-point scale based on the level of agreement.

2.6. Data analysis method

The PC-QUANL program was used to analyze the data. The number of statements was confirmed and -4 to +4 points were scored from 1 to 9 points. The PC-QUANL program was used to examine the results and to analyze the reasons for selecting the most affirmative or disaffirmative statements in the survey questionnaire, and the statements were classified into different types. The researchers exchanged opinions, revised, and supplemented them.

2.7 Ethical consideration

Before recruiting the 24 students from the nursing department, an explanation of the research purpose was provided and students were told that they could participate in the research voluntarily. All the data gained through the research were encoded and subjects were notified that they could suspend at any time during the research if they decided to no longer participate. This research was performed after the deliberation (1041493-A-2020-014) of the Institutional Review Board, where the researcher is affiliated.

3. Results

After operating emergency nursing simulation education for nursing students, their awareness types were investigated. The topics addressed in emergency scenario include nursing for patients with respiratory difficulties and for those with cardiac arrest in emergency situation, and for acute emergency. Specific diseases determined to be related to the scenario included myocardial infarction, asthma, chronic obstructive pulmonary disease, stroke, and diabetes in adults. The training was team-based and each team consisted of five students. A focus group interview was conducted from Nov. 1 to Dec. 30, 2020 to extract Q population statements based on the previous studies, and from the extracted 97 statements, 34 ones were selected as final statements.

Based on the small sample theory, 24 students who had experience of participating in emergency nursing simulation education and were recommended by the professor were selected as the P sample. To determine the configuration of the awareness type for emergency nursing simulation education, the ideal number of factors was selected when the eigen value of the factors calculated by inputting various number of factors into the PC-QUANL program and performing analysis is 1.0 or higher. The explanatory power for all variables, factor analysis table, factor value, and correlation were also considered in determining the type.

Table 1: Q-statement

Number	Statement
1	Even in emergency situations, I cannot participate in the practice enthusiastically because I worry that I might cause distraction.
2	I feel pathetic for myself when I walk on eggshells because I don't know when the golden time to properly execute CPR.
3	Emergency simulation education inspires me to challenge new things.
4	I often get stressed because the education contents are difficult.
5	Simulation education feels difficult because it requires a lot of major knowledge.
6	Studying the theories is hard enough, so adding simulation onto it is confusing and it hinders me from remembering what I learned.
7	The more I receive simulation education, I feel more burdened about (emergency treatment) becoming a nurse.
8	Even if I know theoretically how to deal with emergencies, I seem to lose confidence in the fear of making a mistake in real situation.

9	The more often practice seems to make me to be more confident in real situation.
10	Emergency room is not as hard as I thought.
11	I feel proud and excited to revive the life of a patient risky in an emergency.
12	I am often in panic and fail in determining what to do when I confront a situation I have not experienced in emergency simulation.
13	I feel like being judged by comparing with other students who cope well with emergencies since I am lacking in many ways.
14	The response to emergency situations is directly connected to the patients' lives, so teamwork is more important than performing exceptionally by myself.
15	For nursing students, the ratio of emergency simulation education connected to the actual situations should be emphasized as much as theory-based courses.
16	In emergency situations, smooth communication between medical personnel is important.
17	As a senior nurse, I have to keep my composure during emergency situations, so it would burden me.
18	In emergency situations, nurses have to make rapid decisions, so I should be experienced with different simulations.
19	I am trying hard to have confidence in my choice and judgment in emergency situation
20	I think it is important to have a respectful attitude between professors and nursing students in the simulation education process.
21	The precise division of roles should be prioritized because the organizational system to deal with emergency situation is clear.
22	When collaborating with other colleagues, it is necessary to make clear demands regardless of career or years of experience.
23	As the education is progressed in teams, I feel like my opinions or judgments are not considered so I sometimes feel a sense of isolation.
24	When there is a difference of opinion between the patient's caregiver and me, I am not sure how to deal with it, even if the patient's life is at risk.
25	After completing emergency training, I thought sometimes that becoming emergency nurse is worthwhile.

26	Since it is team-based education, it takes a long time and I get fewer opportunities for practice so it is a burden.
27	The smaller number of team members seems to be correlated with higher satisfaction with team-based emergency nursing simulation education.
28	The simulation effect seems to vary depending on how the professor leads the class.
29	The more I receive emergency simulation education, I become empowered to go up for new challenges.
30	Hospitals lack coherence about emergency situations, so it is difficult to adapt to simulation education.
31	I feel burdensome to have to deal with various situations in a short time.
32	I think that emergency nursing simulation education is essential before working in the field.
33	I am satisfied by the harmonious balance between theories and practice in simulation education.
34	It seems desirable to learn the attitude of cooperation due to the team-based composition.

3.1. Q type

The analytical findings from the data were categorized into different types including “emergency nursing educational value type,” “emergency nursing special meaning type,” and “motivation through preparation type.” There were 11 subjects in Type 1, 8 subjects in Type 2, and five subjects in Type 3. The total variation was 0.7137, and it was identified that it had a 71% explanatory power of the entire variation Table 2.

Table 2: General characteristics and factor weight of P-sample for each type

Type	Ranking	Research subject	Factor weight	Age	Gender	Grade	Religion	Clinical practice period	Emergency simulation experience	Number of experiences
I(n=11)	1	Participant 15	2.2455	32	Female	4	No religion	1 year	Y	2 times
	2	Participant 26	2.0768	25	Female	4	No religion	1 year	Y	2 times

	3	Participant 8	2.0567	30	Female	4	No religion	1 year	Y	2 times	
	4	Participant 19	1.7008	29	Female	4	Christian	1 year	Y	2 times	
	5	Participant 4	1.3640	23	Female	4	No religion	1 year	Y	2 times	
	6	Participant 13	1.1110	23	Female	4	No religion	1 year	Y	2 times	
	7	Participant 14	1.1074	23	Female	4	Christian	1 year	Y	2 times	
	8	Participant 21	1.0973	23	Female	4	No religion	1 year	Y	2~3 times	
	9	Participant 7	.9999	26	Female	4	No religion	1 year	Y	1 time	
	10	Participant 9	.9760	23	Female	4	Buddhist	1 year	Y	2 times	
	11	Participant 5	.6244	22	Female	4	No religion	1 year	Y	1~2 times	
	II(n=8)	1	Participant 10	2.8600	23	Female	4	No religion	1 year	Y	1~2 times
		2	Participant 20	2.6982	23	Female	4	No religion	1 year	Y	2 times
3		Participant 24	1.3158	23	Female	4	No religion	1 year	Y	2 times	
4		Participant 2	1.2115	23	Female	4	No religion	1 year	Y	1~2 times	
5		Participant 30	1.0620	25	Female	4	No religion	1 year	Y	2 times	
6		Participant 22	.7759	22	Female	4	Christian	1 year	Y	2 times	
7		Participant 12	.7592	22	Female	4	Buddhist	1 year	Y	2 times	

	8	Participant 1	.5262	22	Male	4	No religion	1 year	Y	2 times
III (n=5)	1	Participant 16	4.2573	23	Female	4	No religion	1 year	Y	2 times
	2	Participant 17	3.0386	23	Female	4	No religion	1 year	Y	2 times
	3	Participant 29	1.2837	25	Female	4	No religion	1 year	Y	2 times
	4	Participant 6	.8933	33	Female	4	No religion	1 year	Y	1~2 times
	5	Participant 18	.8530	23	Female	4	No religion	1 year	Y	3 times

3.2 Characteristics for each type

(1) Type 1: 'Emergency nursing educational value type'

The statements that the subjects of Type 1 agreed with most strongly were "16. In emergency situations, smooth communication between medical personnel is important (Z-score=1.659)", "14. The response to emergency situations is directly connected to the patients' lives, so teamwork is more important than performing exceptionally by myself (Z-score=1.609)", and "21. The precise division of roles should be prioritized because the organizational system to deal with emergency situation is clear (Z-score=1.009)." The statements that the subjects disagreed with most strongly were "1. Even in emergency situations, I cannot participate in the practice enthusiastically because I worry that I might cause distraction.(Z-score=-1.743)", "7. The more I receive simulation education, I feel more burdened about (emergency treatment) becoming a nurse (Z-score=-1.585)", and "26. Since it is team-based education, it takes a long time and I get fewer opportunities for practice, so it is a burden (Z-score=-1.375)."

Through lively simulation education, the subjects in Type 1 experienced vivid realism by participating in emergency situations that used to feel obscure, and they realized the importance of emergency nursing education as well as the reasons they should study. In the end, they considered education about emergency nursing to be important and that adaptability should be heightened through frequent education. Accordingly, Type 1 was named the "emergency nursing educational value type." [Table 3].

Table 3: Statements and a standard score of type 1 (above ± 1.00)

Number	Statement.	Standard score		
		Z-score	Average	Difference
16	In emergency situations, smooth communication between medical personnel is important.	1.659	.837	.822
14	The response to emergency situations is directly connected to the patients' lives, so teamwork is more important than performing exceptionally by myself.	1.609	1.229	.379
21	The precise division of roles should be prioritized because the organizational system to deal with emergency situation is clear.	1.009	.424	.585
28	The simulation effect seems to vary depending on how the professor leads the class.	.961	-.783	1.745
22	When collaborating with other colleagues, it is necessary to make clear demands regardless of career or years of experience.	.903	.369	.534
4	I often get stressed because the education contents are difficult.	-1.281	-.840	-.441
23	As the education is progressed in teams, I feel like my opinions or judgments are not considered so I sometimes feel a sense of isolation.	-1.338	-1.081	-.257
26	Since it is team-based education, it takes a long time and I get fewer opportunities for practice so it is a burden.	-1.375	-.780	-.595
7	The more I receive simulation education, I feel more burdened about (emergency treatment) becoming a nurse.	-1.585	-.629	-.956
1	Even in emergency situations, I cannot participate in the practice enthusiastically because I worry that I might cause distraction.	-1.743	-.838	-.904

(2) Type 2: "Emergency nursing special meaning type".

The statements that the subjects of Type 2 agreed with most strongly were, “11. I feel proud and excited to revive the life of a patient risky in an emergency (Z-score=2.038),” “25. After completing emergency training, I thought sometimes that becoming emergency nurse is worthwhile (Z-score=1.500),” and “9. The more often practice seems to make me to be more confident in real situation (Z-score=1.324).” The statements that the subjects disagreed with most strongly were “30. Hospitals lack coherence about emergency situations, so it is difficult to adapt to simulation education (Z-score=-1.585),” “6. Studying the theories is hard enough, so adding simulation onto it is confusing and it hinders me from remembering what I learned (Z-score=-1.447),” and “28. The simulation effect seems to vary depending on how the professor leads the class (Z-score=-1.396).”

Type 2 was characterized as a group that placed special meaning on emergency nursing and had a sense of duty about the job as an emergency nurse. Some of the participants testified to their dreams of becoming emergency nurses. Since they wanted to become an emergency nurse, the participants perceived that emergency simulation education was important. The participants in Type 2 felt that the emergency nursing simulation education was fun, exciting, and necessary, and they were characterized by how they were motivated and actively participated in the education. Accordingly, Type 2 was named the “emergency nursing special meaning type.” [Table 4].

Table 4: Statements and a standard score of Type 2 (above ± 1.00)

Number	Statement.	Standard score		
		Z-score	Average	Difference
11	I feel proud and excited to revive the life of a patient risky in an emergency.	2.038	1.453	.586
25	After completing emergency training, I thought sometimes that becoming emergency nurse is worthwhile.”	1.500	1.120	.381
9	The more often practice seems to make me to be more confident in real situation.	1.324	1.194	.131
15	For nursing students, the ratio of emergency simulation education connected to the actual situations should be emphasized as much as theory-based courses.	1.314	.849	.465
18	In emergency situations, nurses have to make rapid decisions, so I should be experienced with different simulations.	1.044	.698	.346

17	As a senior nurse, I have to keep my composure during emergency situations, so it would burden me.	-.830	-.357	-.473
10	Emergency room is not as hard as I thought.	-.893	-.004	-.890
28	The simulation effect seems to vary depending on how the professor leads the class.	-1.396	.395	-1.791
6	Studying the theories is hard enough, so adding simulation onto it is confusing and it hinders me from remembering what I learned.	-1.447	-1.141	-.305
30	Hospitals lack coherence about emergency situations, so it is difficult to adapt to simulation education.	-1.585	-.764	-.821

(3) Type 3: “Motivation through preparation type.”

The statements that the subjects of Type 3 agreed with most strongly were “19. I am trying hard to have confidence in my choice and judgment in emergency situation (Z-score=1.685)”, “29. The more I receive emergency simulation education, I become empowered to go up for new challenges (Z-score=1.581)”, and “3. Emergency simulation education inspires me to challenge new things (Z-score=1.581).” The statements that the subjects disagreed with most strongly were “2. I feel pathetic for myself when I walk on eggshells because I don’t know when the golden time to properly execute CPR. (Z-score=-2.007)”, “13. I feel like being judged by comparing with other students who cope well with emergencies since I am lacking in many ways (Z-score=-1.407)”, and “31. I feel burdensome to have to deal with various situations in a short time (Z-score=-.961).”

Type 3 perceived that emergency nursing is very important, and it is important to be prepared in advance since it requires urgent nursing activities, and they were aware that they should participate in emergency simulation education diligently and learn to be prepared. Therefore, Type 3 was named as the “motivation through preparation type.” [Table 5].

Table 5: Statements and a standard score of type 3 (above ± 1.00)

Number	Statement.	Standard score		
		Z-score	Average	Difference
19	I am trying hard to have confidence in my choice and judgment in emergency situation	1.685	.311	1.374

29	The more I receive emergency simulation education, I become empowered to go up for new challenges.	1.581	.515	1.066
3	Emergency simulation education inspires me to challenge new things.	1.581	.728	.853
33	I am satisfied by the harmonious balance between theories and practice in simulation education.	.975	-.124	1.099
10	Emergency room is not as hard as I thought.	.857	-.879	1.736
31	I feel burdensome to have to deal with various situations in a short time.	-.961	-.349	-.613
13	I feel like being judged by comparing with other students who cope well with emergencies since I am lacking in many ways.	-1.407	-.703	-.703
2	I feel pathetic for myself when I walk on eggshells because I don't know when the golden time to properly execute CPR.	-2.007	-1.397	-.610

4. Discussion

In this study, nursing students' perceptions of emergency simulation education were classified into three types. The participants classified as type I, 'Emergency Nursing Educational Value', thought that "smooth communication between medical staff in emergency situation" and "teamwork" were the most important factors, and emphasized that "precise division of roles should be prioritized because the organizational system to deal with emergency situation is clear." In addition, they reported that they recognized the importance of education on emergency nursing and were motivated to learn because they felt vividly through direct participation using realistic simulation education, an emergency situation that had been vague. Song (2018) found that participants realized the importance of team interaction and developed a sense of cooperation through simulation classes where they shared knowledge, skills, and attitudes, and, in the process, experienced improved learning through effective communication(Song, M, S., Jae, K, S., 2018).

The participants classified as type II, 'Emergency Nursing Special Meaning', responded most positively to statements such as "I feel proud and excited to revive the life of a patient risky in an emergency.", "After completing emergency training, I thought sometimes that becoming emergency nurse is worthwhile.", and "The more

often practice seems to make me to be more confident in real situations." They were characterized by giving special meaning to emergency nursing and having a sense of mission as an emergency nurse, and some participants stated that it was their dream to be an emergency nurse. The personal experiences of students and those through interaction with teammates confirmed in the results of this study are related to the experiences within the simulation education itself (Lasater, K., 2007).

The qualitative research method specifically described students' experiences of simulation and the results revealed positive experiences such as self-confidence and a sense of achievement (LEE, I. S., 2020). Confidence and sense of achievement as a positive personal experience obtained from simulation education, in addition to arousing interest in the teaching method itself, seem to contribute to maximizing educational effects as a student-centered teaching method (Park, S. J, Ji, E. S., 2018). In addition, emergency nursing education is considered helpful for students to develop into a nurses who, through role experience as a professional, are capable of properly recognizing and expanding the role of a nurse.

The participants classified as those from type III, 'Motivation through Preparation', responded most positively to statements such as "I am trying hard to have confidence in my choice and judgment in emergency situation." and "Emergency simulation education inspires me to challenge new things.", and more negatively to those such as "I feel pathetic for myself when I walk on eggshells because I don't know when the golden time to properly execute CPR.", "I feel like being judged by comparing with other students who cope well with emergencies since I am lacking in many ways.", "I feel burdensome to have to deal with various situations in a short time." This is consistent with negative experiences regarding simulation presented, who reported more specifically students' experiences with simulation methods. This may be perceived as a temporary negative experience with education, which is inevitable in the maximization of educational strategies and simulation educational effects to achieve various educational achievements (Lasater, K., 2007) (LEE, I. S., 2020). These results show that participants have a motivation for self-learning and that students, through self-assessment, also identified areas for further learning. By comparing their knowledge levels with those of colleagues, the participants had the opportunity to discover their own strengths and weaknesses and to promote a healthy sense of competition and motivation to learn, and acknowledged that they had to actively participate in emergency simulation training.

Nursing students have varying degrees of educational experience and awareness about simulation through the emergency simulation curriculum, and the simulation training method improves their ability to cope with emergency situations, which is one of the core goals of modern nursing education. The limitations of this study include the difficulty of ensuring data saturation due to the relatively small number of study participants and the focus group interview method, lower validity of the study results, and difficulty in claiming generalization. This is a basic study on the

experience of emergency simulation education, which is still rare in nursing education in Korea. It contributes to the literature on nursing education by presenting students' educational experiences from a wide range of perspectives and provides a concrete foundation for practical application and dissemination of simulation methods in the domestic nursing field.

5. Conclusion

This exploratory study applied Q-methodology to identify nursing students' perceptions of emergency simulation education. To extract the Q population, five nursing students who participated in emergency nursing simulation education were targeted for a focus group interview, and the interview content analysis data and the consideration of precedent research were integrated and reviewed to deduce 34 Q-samples. Based on the small sample theory, 24 samples were selected to perform a survey, and the PC-QUANL program was used to analyze the data.

The data was categorized into three unique types: "emergency nursing educational value type," "emergency nursing special meaning type," and "motivation through preparation type." There were 11 subjects in Type 1, eight subjects in Type 2, and five subjects in Type 3. The research findings revealed the subjective perceptions of the students who participated in emergency nursing simulation education, and it is anticipated that the results will contribute to the development of contents for emergency nursing simulation education and the enhancement of simulation education quality.

This study investigated the subjective perceptions of nursing students' experience of participation into emergency nursing simulation education. It is expected, based on these research results, that further research on the development of more efficient emergency simulation education contents will be conducted. It is also expected that, by improving the shortcomings of the current emergency simulation education, the educational contents that improve the students' emergency nursing competency and their satisfaction with the class.

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