Effect of Simulation-Based Resuscitation Education on Nurses' Performance and Self-Efficacy regarding Neonatal resuscitation

Hoda Wahid Amer, Eman Abd-Elaziz Mohamed, Hala Samir Ahmed El-Husseiny, Nema Ragab Elsayed

Assistant Professor of Pediatric Nursing, College of Nursing, Misr University for Science & Technology, Egypt Assistant Professor of Pediatric Nursing, Faculty of Nursing, South Valley University Pediatric Nursing Department, Faculty of Nursing, Damietta University Lecture of Pediatric Nursing, College of Nursing, Misr University for Science and Technology

Abstract

Background: Simulation-based education serves as a link between classroom learning and clinical practice. It aids nursing competency before working with neonates in a real-life environment, hence improving the quality of care and ensuring neonates' safety. The use of simulation for teaching the knowledge, skills, and behaviors necessary for effective neonatal resuscitation has seen widespread growth and adoption across pediatric institutions. This study aimed to determine the effect of simulation-based resuscitation education on nurses' performance and self-efficacy regarding neonatal resuscitation. Method: A quasi-experimental research design (pre and post-test one group) was used. Setting: The study was conducted in the Neonatal Intensive Care Unit affiliated to South Valley University Hospital. Subjects: Included a convenient sample of all nurses (50) working in the neonatal intensive care unit. Tools for data collection: Tool (I): Nurses' personal data assessment sheet, Tool (II): Neonatal resuscitation nursing knowledge, Tool (III): Standardized Checklist for Neonatal Resuscitation adopted from (American Heart Association, 2015), and Tool (IV): Self-efficacy assessment was used to collect data. Results: There was a highly statistically significant difference between the studied nurses' knowledge, practice, and self-efficacy. The study results revealed that more than three-quarters of studied nurses had an unsatisfactory level of knowledge, and more than half had an incompetent level of practice regarding neonatal resuscitation pre-to-simulation-based resuscitation education implementation. The vast majority of the studied nurses had a satisfactory level of knowledge and most of them had a competent level of practice post simulation-based resuscitation education implementation. There was a highly statistically significant difference and improvement in nurses' performance after simulation-based resuscitation education than pre-education. Also, the study revealed a marked increase in nurses' total self-efficacy post-implementation compared to the pretest with statistically significant differences. Conclusion: The present study concluded that simulation-based resuscitation education had a significant effect on improving nurses' performance and selfefficacy regarding neonatal resuscitation. Recommendations: The study recommended that simulation-based education for nurses who are in close contact with neonates once with reevaluation and feedback after each update is very important as an effective method in nurses' training regarding neonatal resuscitation.

Keywords: Nurses' Performance, Neonatal resuscitation, Self-efficacy, Simulation- resuscitation based education

Introduction

Globally, about one-quarter of all neonatal deaths are caused by birth asphyxia. Birth asphyxia is defined simply as the failure to initiate and sustain breathing at birth. Effective resuscitation at birth can prevent a large proportion of these deaths (WHO, 2022). Cardiac arrest is defined as sudden cessation of cardiac activity and is associated with very high morbidity and mortality in high-risk neonates. Nearly 40% of cardiac arrests occur in hospitals of which only 27% are reported to survive. Providing high-quality neonatal resuscitation is one of the most important factors documented to influence on survival rates of neonates that need resuscitation (Jhuma, et al., 2023).

Pediatric healthcare providers require training opportunities to acquire the knowledge and skills to

appropriately manage children with critical illness and cardiac arrest. Nurses are often the first to discover neonates of cardiopulmonary arrest at neonatal intensive care units. Therefore, it is important to say that their competency in cardiopulmonary resuscitation is a critical factor in determining successful outcomes in neonates (Cheng & Lin, 2019).

Neonatal cardiopulmonary resuscitation is a procedure to support and maintain breathing and circulation for neonates who have stopped breathing (respiratory arrest) and stopped heart (cardiac arrest) (**Buckley& Gordon, 2021**). Effective and efficient resuscitation training of nursing staff is one of the essential elements in the translation of theoretical guidelines into clinical practice (**Soar, et al, 2020**). This training is crucial for high-quality interventions in complex situations, such as cardiopulmonary arrests. It is crucial to keep in mind that high-quality therapies can increase the infant survival rate by two or three times (**Almeida et al., 2021**)."An endeavor to mimic some or almost all of the fundamental characteristics of a clinical situation so that the issue may be more readily comprehended and controlled when it occurs for real in clinical practice" is the definition of clinical simulation (**Hall, 2023**).

The utilization of simulation training, a technology that is frequently employed in nursing education, has been shown to produce long-term learning results. One of the primary goals of nursing education is to successfully anticipate and address children's decline; students must start learning new skills and updating their knowledge to recognize signs of decline and take appropriate action (**Kose et al., 2019**).

In nursing, simulation-based clinical education encompasses more than just working with mannequins; it includes a range of activities utilizing pediatric patient simulators, technologies, skilled professionals, realistic virtual environments, and role-playing. "An activity or event replicating clinical practice using scenarios, high-fidelity manikins, medium-fidelity manikins, standardized patients, role-playing, skills stations, and computerbased critical thinking simulations" is how the National Council of State Boards of Nursing (NCSBN) defines clinical simulation, which has become a crucial component of nursing education. (Pandu et al., 2022)

According to **Cheng et al. (2018)**, self-efficacy is the sense of one's ability to perform at a variety of levels and is attained by using confidence to adjust appropriate teaching tactics, understanding, and experience that affect teaching behaviors and development.

In nursing education, simulation has been utilized to teach psychomotor skills, practice critical thinking, assess nursing competencies, correct deficiencies in clinical performance, develop clinical judgment and practice with high-risk, infrequent patient scenarios that cannot be scheduled in a clinical setting (Martins et al., 2022). The World Health Organization (WHO) has suggested the use of simulation and established guidelines for nursing education (WHO, 2022). Simulation training is necessary for pediatric nurses because it offers the best learning environment for newborn resuscitation. According to Gary et al. (2019), simulation has been demonstrated to be a highly effective educational intervention for improving nurses' selfefficacy with the learning process, self-efficacy, and skill performance. Patient safety concerns, since simulation enables medical professionals to gain the knowledge and expertise needed to safeguard patient safety (Rakshasbhuvankar & Patole, 2021).

There is a gap between scientific understanding and ordinary practice, as evidenced by the various findings that nurses frequently carry out treatments in a traditional or routine manner. Pediatric nurses must possess knowledge and skills based on reliable scientific data in order to provide neonatal resuscitation care, as incomplete performance of the technique can injure neonates (Suresh et al., 2019)

Significance of the study

Resuscitation is necessary for about 6% of newborns at delivery; if the baby weighs less than 1500 g at birth, the incidence rises sharply. The rate of newborn mortality was 14 per 1,000 live births. These figures, when compared to the total under-five mortality rate of 27 deaths per 1,000 births, show that about 80 percent of Egypt's early childhood deaths occur before the child's first birthday, with half of those deaths occurring in the first month of life (**Elzanaty**, **2024**). Approximately 5 to 8 million newborns require resuscitation. Globally, 1% (1,3 million) and 5% moderate resuscitation

A neonatal resuscitation stimulation program that uses technology and an educational curriculum can Excellent instruction that allows nurses to correctly follow the process step-by-step, resulting in dependable and assured outcomes, and that boosts nurses' self-efficacy through repeated training to enable successful neonatal resuscitation responses (Smith et al., 2019). Because of the high-risk newborns' vulnerability and the availability of specialized equipment, practice in the neonatal intensive care unit (NICU) prohibits trainees from interacting with patients. There is a search for alternative learning approaches (Stephens & Mosser, 2023). Therefore, the study was conducted to determine effect simulation-based the of resuscitation education on nurses' performance and self-efficacy regarding neonatal resuscitation.

Aim of the study

To determine the effect of simulation-based resuscitation education on nurses' performance and self-efficacy regarding neonatal resuscitation **Research Hypotheses**

Total mean nurses' knowledge, practice, and self-efficacy regarding neonatal resuscitation is expected to be improved post-simulation-based resuscitation education than pre-education. **Subject and methods**

Research design

A quasi-experimental research design (pre and post-test one group) was used.

Settings

The study was conducted in the Neonatal

Intensive Care Unit affiliated to South Valley University Hospital.

Subjects

Included a convenient sample of all nurses (50) working in the neonatal intensive care unit regardless of their age, education, and years of experience.

Tools for data collection

Four tools were utilized for collecting data in the current study.

Tool (I): Nurses' personal data assessment sheet: It included data about nurses' demographic characteristics such as nurses' age,gender, education, and years of experience.

Tool (II): Neonatal resuscitation nursing knowledge: The neonatal resuscitation nursing knowledge measurement tool has been standardized by Yoo (2013) through tests of reliability and validity, based on the requirements of the NRP by the American Heart Association (Hazinski et al., 2015). It comprises 30 questions on the following: appearance, pulse, grimace, activity, respiration (APGAR) score measurement (2), initial assessment and intervention (1), aspiration (3), oxygen saturation measurement (2), nasogastric tube insertion (1), oxygen supply (2), chest compression (7), endotracheal intubation (7), medication (4), and anatomical knowledge (1). Each question is processed as "incorrect or unknown (zero points)" or "correct (one point)." Higher scores indicate greater knowledge of neonatal resuscitation nursing. The Kuder-Richardson estimator formula 20(KR-20) was 0.87 at the time of tool development and 0.78 in this study. The nurses' knowledge level was categorized as follows: unsatisfactory less than 75% and satisfactory more than 75%.

Tool III: Standardized Checklist for Neonatal Resuscitation adopted from (American Heart Association. 2015) (pre/post-test). Standardized Neonatal Checklist for Resuscitation: (American Heart Association, 2022) to assess the nurse's and intern nursing students" skills regarding neonatal resuscitation baseline and immediate post-simulation training which was updated after reviewing related literature. Scoring system The Standardized Checklist for Neonatal Resuscitation consisted of 24 steps. These steps were positively marked with zero marks for not done, one mark for each incompletely done step, and 2 marks for each completely done step. The maximum performance score is 48, The level of skill is divided competent (85 % and into: more) and incompetent(less than 85 % and more).

Tool IV: Nurses' Self-efficacy assessment: This tool aims to assess neonatal resuscitation practice retention on self-efficacy and the level of confidence of nurses regarding performing neonatal resuscitation skills pre and post-application of stimulation training. This scale was developed by (Byun, 2014), (Neumar, et al., 2015) & (Park et al., 2016) then modified by (Qalawa et al., 2020). **Scoring system:** The scale of self-efficacy included six items (one to two scores as high confidence, and low self-confidence)

Method

Validity and reliability:

Three pediatric nursing specialists evaluated the content validity of the instruments and made revisions for comprehensiveness, application, relevance, and clarity. The results of Cronbach's alpha coefficient test for internal consistency reliability were as follows: tool I had a reliability score of 0.953, tool II had a score of 0.878, tool III had a score of 0.90.

Ethical considerations

The Ethical Scientific Research Committee of the Faculty of Nursing gave its approval to this work. The Dean of the Faculty of Nursing sent a letter formally authorizing permission. To explain the goal of the study and obtain their consent and cooperation for carrying it out, the researchers met with the NICU administrators.

Following an explanation of the purpose and advantages of the current study, nurses gave their informed consent to participate. The nurses under study were advised by the researchers that they might leave the trial at any moment. Additionally, they received assurances that the information they provided would remain private.

Pilot study

The pilot study was conducted. Five nurses, or ten percent of the sample, participated in the test to evaluate the generated tools' usability, simplicity, clarity, and applicability. The required adjustments were made. The study's overall sample includes the pilot study.

Field of work

Approval was obtained from the director of Sohag University Hospital. The study was conducted within the period from the beginning of May 2023 to the end of October 2023. At the beginning of the interview, the researchers greeted each nurse, introduced themselves, and explained the aim and nature of the study.

Phases of the study: The following four phases were used to carry out the study:

: I-Assessment Phase

Prior to the program, each nurse was interviewed in order to gather information about their characteristics using an instrument (I) part (1).

- Tool (I) part (2), tool II, tool III, and Tool IV were used to evaluate nurses' knowledge, practice, and self-efficacy with newborn resuscitation.

II. Planning phase:

Based on the results of the previous phase, the goals, priorities, and expected results were developed to address the practical requirements, knowledge gaps, and self-efficacy of the nurses in relation to neonatal resuscitation. For the nurses under study, the researchers organized five sessions: two theoretical and three practical.

The educational program

An educational program was created and updated. There were both theoretical and hands-on sessions about neonatal resuscitation.

The general objective of simulation-based resuscitation education sessions:

At the end of the sessions, the nurses were expected to acquire knowledge and practices that improve their performance and self-efficacy with neonatal resuscitation in the NICU

Specific objectives of the program:

- Identify appearance, pulse, grimace, activity, respiration (APGAR) score measurement

- Demonstrate initial assessment and intervention
- -Know aspiration and oxygen saturation measurement
- -List nasogastric tube insertion steps
- Know the oxygen supply stops
- Identify chest compression
- -Enumerate endotracheal intubation steps
- Know prescribed medication
- Identify anatomical knowledge
- Perform the appropriate documentation
- **III. Implementation phase:**
- Five sessions—two theoretical and three practical of simulation-based resuscitation instruction were implemented with the goal of enhancing nurses' performance and self-efficacy in neonatal resuscitation at NICUs. Each session lasted around 35 to 40 minutes.
- The researchers began each session by gathering feedback regarding the previous one, and they provided a summary at the conclusion of each session.
- The researchers were available in the study settings 3 days per week from 9 a.m. to 12 p.m. Each nurse was individually interviewed using the previously mentioned study tools.
- The studied nurses were classified into subgroups, with varying numbers (6-5 nurses in each group).
- A simplified booklet covering all topics related to neonatal resuscitation knowledge and practice was given to nurses in the Arabic language after the literature was reviewed based on the actual needs of the nurses under study. Various teaching methods were used, including lectures, small group discussions, brainstorming, demonstration, and redemonstration using the necessary equipment and using simulation manikin that was available in a hospital teaching class faculty clinical lab to apply

for the simulated education program. A variety of teaching media, including handouts, PowerPoint, figures, flipcharts, and illustrated videos about neonatal resuscitation were used.

The theoretical and practical sessions were carried out as the following.

The first session (Theoretical): The researchers gave an introduction, greeted the nurses, thanked them for participating in the study, and went over the goals of these training sessions at the start of the session. The following topics were discussed in the first session; appearance, pulse, grimace, activity, respiration (APGAR) score measurement, initial assessment, and intervention.

Second session (Theoretical): This session addressed topics such as aspiration, nasogastric tube insertion, oxygen supply, oxygen saturation measurement, chest compression, endotracheal intubation, medication, and anatomical knowledge.

Third session (Practical): During these sessions, the nurses under study received instruction on how to prepare and evaluate neonates before performing neonatal resuscitation.

Fourth session (Practical): The study nurses' clinical demonstration and re-demonstration of the infant resuscitation technique were performed at the faculty clinical lab during this session. During this session, the simulation manikin was used. Following the faculty lab sessions, the trainees were moved to the neonatal intensive care unit at South valley University Hospitals, where they received a real-time re-demonstration under the researchers' supervision to reassure them of their competency in carrying out the procedures for their neonates.

Fifth session (Practical): The researcher distributed the post-test after first collecting feedback regarding the previous sessions and responding to any questions about neonatal resuscitation. The researcher then thanked each participant's nurse for participating in the study.

IV-Evaluation phase:

In order to analyze the impact of the simulated-based resuscitation education program, nurses' performance and self-efficacy were reviewed immediately following its implementation (posttest) using the previously mentioned instruments. **Statistical analysis:**

In order to compare the same group on the pretest and posttest, quantitative data were reported as mean and SD and evaluated using a t-test. The data were tabulated, coded, and translated into a specially designed form that could be entered into a computer. Pearson correlation was used to explain the relationship between normally distributed quantitative variables and a P-value of 0.05 was used to determine the significance as follows: • A P-value less than 0.05 was considered to be statistically significant; • A P-value less than or equal to 0.001 was considered to be highly statistically significant. Results

Table 1 indicates that 80% of the nurses in the study were female, and 56% of them were over 25 years old, with a mean age of 28.7 ± 3.9 years. Seventy percent of the nurses in the study had degrees from a technical institute of nursing. In terms of years of experience, 20% had more than five years, while 54% had between five and less than ten years.

Figure (1): In relation to previous simulation-based resuscitation education, it is found that all (100%) of the studied nurses haven't had previous simulation-based resuscitation education.

Table (2) Illustrates an improvement with a highly statistically significant difference found between the total neonatal resuscitation nursing knowledge mean score of studied nurses regarding neonatal resuscitation pre and immediate post-simulation-based resuscitation education implementation (P<0.001).

Figure 2 shows that prior to obtaining the simulated-based resuscitation training, 60% of nurses possessed inadequate knowledge of neonatal resuscitation. However, nurses' knowledge level improved to a satisfactory level after receiving simulated-based resuscitation education, with a highly significant difference discovered between nurses' knowledge levels before and immediately after the implementation of simulated-based resuscitation education (P<0.001).

Table (3) Illustrates an improvement with a highly statistically significant difference found between the total practice mean score of studied nurses regarding neonatal resuscitation pre and immediate post-simulation-based resuscitation education implementation (P<0.001).

Figure (3) shows a highly statistically significant difference between the pre-and immediately post-implementation of simulation-based resuscitation education. This table made it evident that 46% of the nurses in the study practiced neonatal resuscitation incompetently before the implementation of simulation-based resuscitation

education, while 100% of them practiced competently immediately after the implementation of simulation-based resuscitation education.

Table (4): clarifies that there were highly statistically significant differences in immediate post-simulation-based resuscitation education implementation compared to pre-implementation of Self-Efficacy of the studied nurses regarding neonatal resuscitation.

Figure (4): represented that 16% of nurses were highly confident in pre-simulation-based resuscitation education implementation and increased immediately post to more than three quarters (78%) among the studied nurses.

Table (5) demonstrates that, both before and right after the implementation of simulationbased resuscitation education, there were highly statistically significant positive correlations between overall knowledge, practice, and self-efficacy.

Demographic characteristics	No.	%	
Age (Years)			
< 25 years	28	56	
$25 - \ge 36$ years	22	44	
Mean ± SD	28.7 ± 3.9		
Gender:			
Male	10	20	
Female	40	80	
Qualifications:			
Technical Institute of nursing	35	70	
Baccalaureate degree in nursing	15	30	
Years of experience:			
< 5 years	10	20	
5 – <10 years	27	54	
10 - ≥15 years	13	26	

Table (1): Personal data distribution of the studied nurses (n=50)



Figure (1): The studied nurse's distribution according to Previous simulation-based resuscitation education (n=50)

Table (2) Comparison of total neonatal resuscitation nursing knowledge mean score of studied nurses regarding neonatal resuscitation pre and immediately post-simulation-based resuscitation education implementation (No= 50)

Nurses' knowledge	Pre-	Post-	t-test	Р
	implementation	implementation		value
Total knowledge mean	12.33 ± 2.89	26.56 ± 4.33	14.7	.001
score				

(**)is highly significant at the <0.001



Figure (2) Total knowledge level among the studied nurses regarding neonatal resuscitation pre and immediate post-simulation-based resuscitation education implementation (No= 50)

 Table (3) Comparison of total practice mean score of studied nurses regarding neonatal resuscitation pre and immediately post-simulation-based resuscitation education implementation (No= 50)

Nurses' practice	Pre-	Post-	t-test	Р
	implementation	implementation		value
Total practice mean scor	12.33 ± 2.89	26.56 ± 4.33	14.7	.001

(**)is highly significant at the <0.001



Figure (3) Total practice level among the studied nurses regarding neonatal resuscitation pre and immediate post-simulation-based resuscitation education implementation (No= 50)

Table (4) Comparison of total nurses' Self-efficacy mean score regarding neonatal resuscitation pre and immediately post-simulation-based resuscitation education implementation (No= 50)

Nurses' Self-efficacy	Pre-	Post-	t-test	Р
	implementation	implementation		value
Total Self-efficacy mean score	5.89±1.02	9.97±1.44	23.6	<.001
(李敏)'				

(**)is highly significant at the <0.001



Figure (4) Total Self-efficacy level among the studied nurses regarding neonatal resuscitation pre and immediately post-simulation-based resuscitation education implementation (No= 50)

Table	(5):	Correlation	between	Knowledge,	practice,	and	Self-Efficacy	pre	and	immediately	post-
simula	tion-	based resusci	tation edu	cation implei	mentation	(No=	50)				

		Pretest		Posttest				
Variables	Knowled e score	Self- Efficacy score	Neonata resuscitat on Practice score	Variables	Knowled ge score	Self- Efficacy score	Neonata resuscita ion Practice score	
	r [p]	r [p]	r [p]		r [p]	r [p]	r [p]	
Knowledge score		0.013 [0.894]	0.024 [0.837]	Knowledge score		0.004 [0.973]	-0.087 [0.385]	
Self- Efficacy score	0.015 [0.876]		-0.067 [0.538]	Self-Efficacy score	0.003 [0.976		0.283 [0.005]	
Neonatal resuscitation	0.023 [0.834]	-0.065 [0.534]		Neonatal resuscitation	-0.089 [0.389	0.282 [0.005]		
r ractice score				Practice score				

Discussion:

In order to combat one of the main causes of newborn mortality globally, neonatal resuscitation is an essential intervention. Despite its importance, there is still insufficient attention paid to healthcare professionals' self-efficacy in performing newborn resuscitation. Healthcare professionals' approaches to resuscitation efforts are greatly influenced by selfefficacy or the conviction that one can carry out activities successfully, which ultimately affects newborn outcomes (**Khalique S, Singh, 2019**). The purpose of this study was to ascertain the impact of simulation-based resuscitation education on nurses' performance and self-efficacy regarding neonatal resuscitation. With simulation as an educational tool, neonates and pediatric trainees can address relevant issues related to resuscitation training in a risk-free environment.

Based on the results of this study, the majority of nurses were female, and less than two-thirds of them were younger than 25. The average age group was 25 years old, according to Xu et al. (2020), which is in line with a cross-sectional survey. Jhuma et al. (2023) also found that 62% of the nurses in their study had less than one year of experience, and the average age of the nurses was thirty years, accounting for 7% of the total.

The current study's findings regarding nurses' educational backgrounds showed that fewer than three-quarters of them possessed a technical nursing degree. According to the results of the current study, the high proportion of female students may be explained by the fact that, until recently, nursing was only offered to girls in Egyptian institutions.

Regarding years of experience, it was discovered that over half of the nurses in the study had worked in the NICU for more than five and fewer than ten years. **Deshnukh and Shinde (2024)** observed that the majority of participants had less than five years of clinical experience, which contradicted the results. In a similar vein, **Issa et al. (2018)** found that about onethird of the nurses they looked into had one to five years of experience.

The current study revealed that the majority of the nurses under study had never received simulation training. Furthermore, the results of the study conducted by Brown et al. (2020) showed that approximately one-third of the studied nurses had a simulation experience of one or two times, while more than half had no simulation experience. As for prior simulation-based resuscitation education, it was found that all of the nurses under study had never received simulation-based resuscitation education. This could be because they did not have time to train using highfidelity simulation methods, faculty members, or the expense. This contrasts with a study conducted by Jhuma et al. (2023), which discovered that nurses' prior knowledge of resuscitation steps led to 57% of them administering drugs and 42.8% performing chest and airway compressions. Additionally, 20% of nurses have received prior resuscitation training.

The present results showed that the mean score of the nurses' total neonatal resuscitation nursing knowledge before and right after the implementation of simulation-based resuscitation education improved, with a highly statistically significant difference. This may have something to do with the benefits of simulation as a teaching tool that enhances nurses' expertise. The results of the study conducted by Shepherd et al., (2020) provided support for these findings, demonstrating a noteworthy enhancement in the information acquisition of athletic training students in the post-test. This is consistent with research by Jhuma et al. (2023) that showed an improvement in skills scores right after training. Furthermore, research done by (Maurya, 2019) showed that the study group (simulation instruction) improved nursing students' post-test psychomotor scores and simulation teaching was more effective for nursing students.

According to the current research, prior to undergoing the simulated-based resuscitation training, three-fifths of nurses possessed unsatisfactory knowledge about neonatal resuscitation. However after undergoing simulated-based resuscitation education, nearly all of them saw an improvement in their level of knowledge, and a highly significant difference between the nurses' knowledge levels before and immediately after the implementation of simulated-based resuscitation education was found. This shows how successful the simulation-based resuscitation education implementation was, according to the researchers. This demonstrated how important it is to comprehend how the implementation of simulated-based education is intended to enhance knowledge. **Cerra et al. (2019)** provided support for this finding, stating that simulation training improved nursing students' performance and knowledge.

The findings showed that nurses' practice improved, with a highly statistically significant difference between the mean score of all nurses' practice in neonatal resuscitation before and right after the implementation of simulation-based resuscitation education. From the researcher's perspective, nurses' abilities need to be improved, and the success of preand post-implementation simulation-based training was represented. The results of a study conducted by **Pfitzinger and Heather (2019)** provided support for these conclusions, demonstrating that the study participant's practice level significantly improved following the simulation training.

According to the current study's findings, all of the nurses under investigation demonstrated competent practice right after simulation-based resuscitation education was implemented. From the perspective of the researchers, this demonstrated how the deployment of simulation-based resuscitation instruction improved practice among the nurses under study and succeeded in raising their clinical practice level scores. **Gomes et al. (2020)** discovered that simulation-based teaching enhanced their performance, which was consistent with earlier research investigations. Additionally, in contrast to alternative teaching methods, **Beal et al. (2019)** discovered that clinical simulation was an effective tactic for raising the performance of the students under study.

When comparing the self-efficacy of the nurses in the study before and after the implementation of simulation-based resuscitation education, the results of the current study showed highly statistically significant differences. According to the study, simulation is essential for boosting nurses' abilities. It boosts practice and is a great instructional tool for raising nurses' self-efficacy and elevating their skill performance. According to **Pauly-O'Neill & Prion's (2023)** study, nursing students who participated in simulation-based learning demonstrated high levels of self-efficacy and gained the requisite knowledge and abilities. The experimental group's clinical self-efficacy score was greater, according to **Tuttle's (2019)** findings.

This result is consistent with the findings of **Zapko et al. (2019)**, who found that participants felt confident in their practice, were satisfied with the simulated education experience, and believed the simulations were essential for learning and based on sound

educational techniques. Additionally, **Saied's (2019)** study, "The Impact of Simulation on Pediatric Nursing Students' Knowledge, self-efficacy, satisfaction, and Confidence," found that students improved their selfconfidence scores after the simulation session and were satisfied with the simulation experience. Additionally, according to **Mattson (2023)**, the pupils expressed great satisfaction with the simulated learning exercise.

Bandura's Self-Efficacy Theory (1999) offers a paradigm for comprehending how self-assurance might affect performance in crucial tasks like the resuscitation of a newborn. Findings from the study highlight the necessity of focused interventions, such as frequent training, sufficient supervision, and guaranteeing the availability of required equipment, to improve healthcare professionals' self-efficacy.

According to the current study, less than one-fifth of nurses had high confidence prior to the implementation of simulation-based resuscitation education. This confidence immediately jumped to more than three-quarters of the nurses in the study. According to the researchers, this demonstrated that the use of simulation-based resuscitation education was successful. Additionally, this result is consistent with studies by Abdu and colleagues and Kc et al., (2022) who found that recent training has a beneficial effect on practical skills and self-efficacy. This implies that maintaining high self-efficacy among healthcare professionals requires ongoing training and real-world experience.

It is impossible to overestimate the significance of recent and ongoing training. Studies conducted in Nepal and Indonesia have shown that healthcare workers who participate in frequent cycles of quality improvement and receive targeted training have greater levels of self-efficacy (Daniel et al., 2019). This reaffirms the need for continuous professional development and training programs that are thorough and updated frequently to incorporate the most recent methods and recommendations in neonatal resuscitation.

These findings aligned with the findings of Weaver (2021), who observed that participants express a high level of self-confidence in simulation, which is indicative of the simulated environment's safety. Additionally, according to (Elsayed & Soliman, 2019), none of the nurses in either group had high levels of confidence prior to the intervention. This percentage rose right after the intervention, rising to 54% for the traditional group 94% for the simulated group, and then to 94% for both groups after three months. Additionally, according to feedback about simulation instruction, 86% of nursing students highly agreed that it helped them increase their self-confidence (Maurya, 2019).

According to the current study, self-efficacy, practice, and overall knowledge, all showed highly statistically significant positive correlations both before and immediately after the implementation of simulationbased resuscitation teaching. According to the study by **Plackett et al. (2020)**, there is a favorable association between participants' perceptions and selfefficacy about obstetric abilities after training. These results were consistent with those findings.

The current study's findings are in line with those of **Abd Elbaky (2018)**, who found that following the simulation education program, knowledge, procedural intervention, and overall performance all showed positive correlations.

Moreover, these outcomes were consistent with the research conducted by Abdu et al., (2019), which found that there was a statistically significant difference in overall performance and knowledge following simulation-based learning (SBL). After SBL, most students' responses were accurate. Every student expressed satisfaction with SBL, and the majority of them gained confidence and self-efficacy as a result. Increased self-efficacy among healthcare workers is positively connected with better knowledge levels. Furthermore, Akhu-Zaheya et al. (2023) noted that significantly differed self-efficacy between simulations and conventional methods.

Conclusion:

Based on the current study's findings, it can be said that simulation-based resuscitation education had a significant effect on improving nurses' performance and self-efficacy regarding neonatal resuscitation.

Recommendations:

The results of the current study suggest that:

- Simulation-based education is a very important and effective way to train nurses in neonatal resuscitation for nurses who have close contact with neonates.
- The study also suggested that nurses receive feedback and reevaluation after each update.
- Written policies, procedures, and guidelines for nursing measures for newborn resuscitation for both normal and preterm infants must be established and evaluated on a regular basis.
- NICU nurses should get ongoing education on the latest developments in neonatal resuscitation.
- For the purpose of determining quantifiable simulation outcomes and producing results with a diverse set of nurses, this study should be repeated with other nurses.

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