International Journal of Innovations & Research Analysis (IJIRA)
e-ISSN :2583-0295, Impact Factor: (Cosmos 7.662 & I2OR 5.105), Volume 06, No. 01(II), January- March, 2026, pp 192-199

Enhancing Clinical Competence in Essential Newborn Care through Simulation-Based Education

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Citation: Kumar, P. & Bhide, N. (2026). Enhancing Clinical Competence in Essential Newborn Care through Simulation-Based Education. International Journal of Innovations & Research Analysis, 06(01(II)), 192–199. https://doi.org/10.62823/IJIRA/06.1(II).8994

ABSTRACT

Essential Newborn Care (ENC) is kind of like a basic piece in newborn healthcare, aimed at lowering neonatal morbidity and mortality. Lately, healthcare systems are getting more and more complicated, plus there's also that need for skilled nursing and medical professionals, so people keep searching for newer training style approaches. Simulation-Based Education (SBE) has turned into a pretty effective teaching strategy, because it lets learners practice essential newborn care in a realistic yet low risk environment, where nothing truly goes wrong, or well, usually not. In this study we examine how simulation based education affects healthcare professionals in terms of knowledge, practical skills, self belief, and decision making related to essential newborn care. To test this, we're proposing a quantitative research approach with a pre test and post test structure, focusing on nursing students as well as practicing healthcare workers. Based on what the current literature suggests, simulation interventions often lead to clear improvements in clinical performance, neonatal resuscitation capability, communication, teamwork, and even wider patient safety results. So, the overall takeaway is that simulation based education should be built into nursing and medical curricula, to reinforce essential newborn care competencies and, ultimately, support better neonatal health outcomes.

***Keywords**: Essential Newborn Care, Simulation-Based Education, Clinical Competence, Neonatal Nursing, Healthcare Training.*

Introduction

The neonatal period, which is usually seen as the first twenty-eight days after birth, is considered one of the most critical phases in the human life cycle. During that stage newborns do a whole lot of physiologic adjustments, basically needed to survive outside the womb. Even if maternal and child healthcare services have improved quite a lot around the world, neonatal mortality is still a major public health worry, most notably in low and middle income countries. The World Health Organization (WHO) says that millions of neonatal deaths happen each year, and many of those deaths are linked to causes that are often avoidable such as birth asphyxia, infections, prematurity, and also weak newborn care routines. So keeping Essential Newborn Care (ENC) at high quality, is really a key step for improving neonatal survival rates and supporting healthier later development.

Essential Newborn Care is a set of evidence based actions meant to guard newborn health right after delivery and across the neonatal time, kind of from the get go. It usually touches on thermal protection, early and exclusive breastfeeding, hygienic cord care, infection prevention, and even timely immunization. It also includes managing neonatal emergencies properly, say respiratory distress, or birth asphyxia, without delays.

But to make these measures actually work in real life, healthcare professionals need more than just theoretical understanding, they also have to show real clinical ability and confident decision making skills. When training is weak, or there is very limited hands on practice, the overall care quality may dip, and then that can easily turn into worse health outcomes for newborns..

Traditionally, nursing and medical education have leaned a lot on classroom based teaching, lectures, demonstrations, and supervised clinical practice. While those approaches do help a great deal with knowledge building, they sometimes don't really give learners enough chances to rehearse crucial clinical skills in a safe, controlled setting. Clinical placements can also hit this same problem where students see only a small number of neonatal cases, so there's less room for repetition, and it becomes harder to reach actual skill mastery. On top of that, there are these worries about patient safety, the ethical angle too, and the fact that healthcare keeps getting more complicated really has made it obvious that conventional teaching methods are a bit limited when it comes to preparing future professionals for the "real world" of clinical work. So in response to those kinds of obstacles simulation based education has shown up, kind of like a more novel, and generally very effective instructional strategy for healthcare training.

Simulation based education, basically is about using technologically advanced mannequins, virtual reality platforms, standardized patients, and task trainers to copy realistic clinical scenarios for learning. With this approach, learners can jump into patient care situations more directly, without putting anyone at actual risk. And since they get repeated practice, they can strengthen technical skills, sharpen critical thinking, improve communication, build teamwork routines, and reinforce clinical decision making, all in a structured but still supportive environment.

Simulation based education kind of sits on experiential learning theory, you know , learners do first, then they think back on it, and after that they try to use what they learned in actual practice. So when neonatal care simulation is used, the teams get placed into lifelike newborn scenarios, and then those lecture ideas plus the practical, hands on abilities kind of start to click together. With high fidelity setups, it is even possible to imitate newborn physiological reactions in a fairly convincing way. That point is big, because participants can notice clinical signals sooner, pick appropriate actions in the right moment, and carry out the necessary interventions without much hesitation. Also there's this extra benefit, they can attempt, stumble a little, receive quick feedback, then walk through it in a debriefing session that is structured, and somehow that whole cycle improves learning outcomes and also supports continuous professional development overall. In neonatal healthcare, simulation based education is now getting more attention because it works, it improves competencies for essential newborn care and neonatal resuscitation. Research has shown that training through simulations increases healthcare providers' confidence their readiness, and their ability to act appropriately when neonatal emergencies happen.

It doesn't stop there either, it also supports interdisciplinary teamwork and communication which are pretty much the backbone of safe and effective newborn care. Adding simulation to health education programs matches current teaching approaches that emphasize competency based learning and patient safety, so it feels aligned, rather than just extra. So the demand for capable healthcare professionals who can actually deliver real high-quality care for new born babies, kind of points to the need for newer learning interventions, rather than the old routine stuff we've been doing for years. And because healthcare systems keep evolving, educational institutions should really lean into evidence driven teaching approaches, so learners are prepared for what modern bedside practice throws at them, day to day. In that kind of context simulation based education starts looking like a useful answer because it sort of bridges the idea part with practical clinical application, at least in a more controlled way. That's why checking how simulation based education can improve clinical competence in essential newborn care matters a lot for nursing education, medical training, healthcare organizations, and even policymakers, who are trying to improve neonatal health outcomes and also reduce avoidable neonatal deaths.

Objectives of the Study

- To look into how well simulation based training works, and whether it truly boosts clinical competence in the basic essentials of newborn care.
- To judge how much learners knowledge seems to grow about newborn care after they go through the simulation sessions, sort of straight after.

- To see whether psychomotor skills connected with essential newborn care actually shift, not just in theory, but in hands on performance.
- To figure out what effect simulation based education has on learners confidence, and also how they make clinical decisions when it matters.
- To find out the educational wins and the little hitches, challenges really, that show up with simulation training in general.

Hypotheses

H_{01}: There seems to be no notable difference between the pre test and post test knowledge scores for participants who got simulation based education, like overall results didn't really shift much.

H_{02}: Simulation based education does not significantly improve clinical competence in essential newborn care. Full stop, it just doesn't show a clear gain.

H_{03}: There is no significant association between simulation training and the confidence level of learners, or at least the evidence does not point that way.

Limitations of the Study

- This study was kind of limited to chosen nursing colleges and healthcare facilities, so it might not be able to generalize the findings as much for other locations or contexts.
- With only 100 participants, it could be that the sample doesn't really cover the wider, more diverse group of nursing students who are involved in newborn care.
- The participants came in with different levels of prior hands-on clinical experience and different exposure to newborn care, and that sort of thing may have shaped their self-efficacy and what they did during the training.
- The research only looked at the immediate impact of simulation training, and it did not check what happened later, like long term retention of knowledge, skills, and self efficacy.
- There might have been differences between simulation labs, the kind of equipment that was available, and overall institutional support, which could reduce how consistent the intervention felt across sites.
- Faculty expertise and their teaching approaches during the simulation training, could also have played a role in the final outcomes. I mean, small shifts there might matter.
- Self-efficacy was collected using self-reported answers, so there is a chance for response bias, even if participants tried to be honest.
- Finally, the study mainly emphasized self-efficacy, and it didn't thoroughly evaluate real-world clinical performance when dealing with newborn care situations, which is sort of a gap

Review of Literature

Cant and Cooper (2017) kinda did this big systematic review, about how well simulation based learning actually works in healthcare education. I mean, their findings basically suggested that simulation does help a lot, especially for clinical knowledge, psychomotor abilities, confidence levels, and overall competency in both nursing students and healthcare professionals. They also sort of highlighted that these simulation interventions help learners go beyond just theoretical knowledge, and it turns into real applied clinical skills, like not only knowing something on paper but using it. On top of that they emphasized, simulation tends to increase learner satisfaction and engagement, so it can work as a strong alternative or maybe just a useful add on to more traditional teaching methods.

Then Liaw et al. (2014) looked at simulation a bit more through the lens of clinical decision making and patient safety competencies for nursing students. Their results showed that people who went through simulation training had better clinical judgment and problem solving skills compared to students who only received traditional instruction. The authors pointed out that simulation scenarios give learners a chance to inspect patient conditions, then determine what should be prioritized for interventions, and make evidence based decisions in realistic clinical situations. So, overall, they seem to land on the idea that simulation has a major part in shaping safer, and more effective healthcare practitioners.

Cook et al. (2013) did a meta analysis on technology enhanced simulation across a few health care disciplines, and honestly the overall results were pretty positive. They found that simulation based

education consistently supports better learning outcomes, like stronger knowledge retention, improved procedural skills, and even more professional behaviors. What stood out was that simulation seemed especially effective when it's paired with feedback, and also when deliberate practice is basically in the mix with it. By the end, the authors were pretty much saying that simulation should be treated as a core component of healthcare education, because it backs clinical competence and helps learners demonstrate better performance.

Then Sawyer et al. (2016) studied simulation based mastery learning in healthcare training. Their work pointed out that repeated practice, together with performance assessment, helps learners reach high competency levels before they enter real patient care. They also proposed the Learn-See-Practice-Prove-Do-Maintain model as a usable framework for building clinical skills. Their findings further suggested that mastery learning, if it's supported by simulation, can help with long term retention of clinical abilities, and it might also improve patient safety outcomes.

Mileder et al. (2014) focused pretty directly on simulation based neonatal resuscitation training. In their paper, they showed clinicians who took part in the simulation sessions had clear improvements in technical performance, but also in confidence and overall readiness for neonatal emergencies. The authors basically suggested that simulation allows people to rehearse key interventions over and over, and somehow that repetition can reduce anxiety while also improving how they respond in real resuscitation moments

Kirkpatrick and Kirkpatrick (2016) then came with a well used evaluation framework, the one people cite a lot. They said experiential learning, and yes simulation too, tends to create benefits across multiple layers. So not only learner satisfaction, but also knowledge growth, changes in everyday behavior, and even organizational advancement. That evaluation model has then been used a good deal in healthcare education studies, to see what simulation teaching programs actually deliver in real terms.

Roh et al. (2013) looked at how simulation based education changes nursing students confidence and also their clinical competence. What they report suggests there were tangible improvements in the cognitive areas as well as in psychomotor abilities after the simulation sessions, pretty clearly. The participants also described feeling more certain during clinical procedures, and in those patient care role situations. So it looks like simulation works well as a teaching method.

Lee and Oh (2015) then checked what happens when simulation is used to shape nursing students psychomotor performance along with their self-efficacy. In their study, the simulation experiences supported learners in performing clinical procedures with higher precision, and at the same time it strengthened confidence for handling complicated patient care moments. The authors essentially argued that simulation offers a meaningful contribution to professional skill development.

Research Methodology

- **Population and Sample**

For the population, the study targets nursing students, intern nurses, and healthcare professionals who are working with newborn care services. Then a sample of 100 participants, may be selected using purposive sampling methods from a few selected nursing colleges and healthcare institutions.

- **Data Collection Tools**

The data can be collected with the following tools, like

  - Structured Knowledge Questionnaire
  - Clinical Competence Assessment Checklist
  - Confidence Rating Scale
  - Simulation Performance Evaluation Tool

Intervention

Participants will go through simulation-based training sessions that cover essential newborn care practices such as immediate newborn assessment, thermal care, umbilical cord care, breastfeeding support, infection prevention, neonatal resuscitation, and handling newborn emergencies. High fidelity simulation scenario will be used along with structured debriefing sessions, to help learning move along properly.

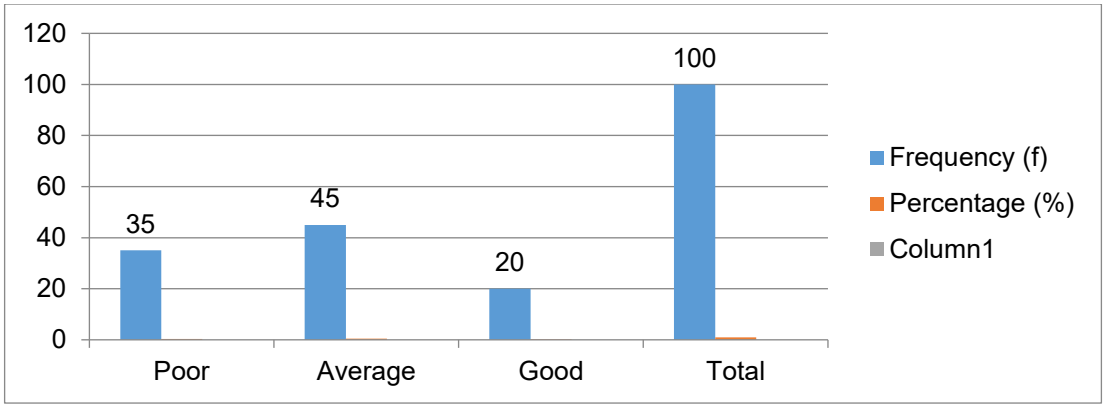
Data Collection Procedure

We will do a pre-test first, just to kinda see participants baseline knowledge, clinical competence, and their own confidence levels. After the pre-test, participants will get simulation based training. When the whole intervention is done, there will be a post test, using the same instruments, so we can look at how their performance and competency changed.

Data analysis

Table 1: Pre-test Clinical Competence Level of Participants (n = 100)

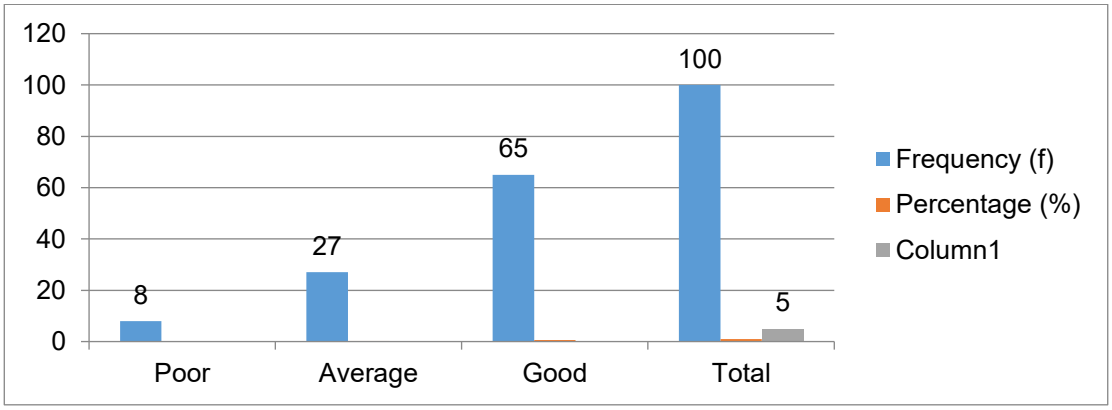
Clinical Competence Level	Frequency (f)	Percentage (%)
Poor	35	35%
Average	45	45%
Good	20	20%
Total	100	100%



The table shows that before simulation-based education, 45% of participants demonstrated an average level of clinical competence in essential newborn care, while 35% had poor competence and only 20% exhibited good competence. These findings indicate that a considerable proportion of participants required additional training to improve their clinical skills and competence in newborn care practices.

Table 2: Post-test Clinical Competence Level of Participants (n = 100)

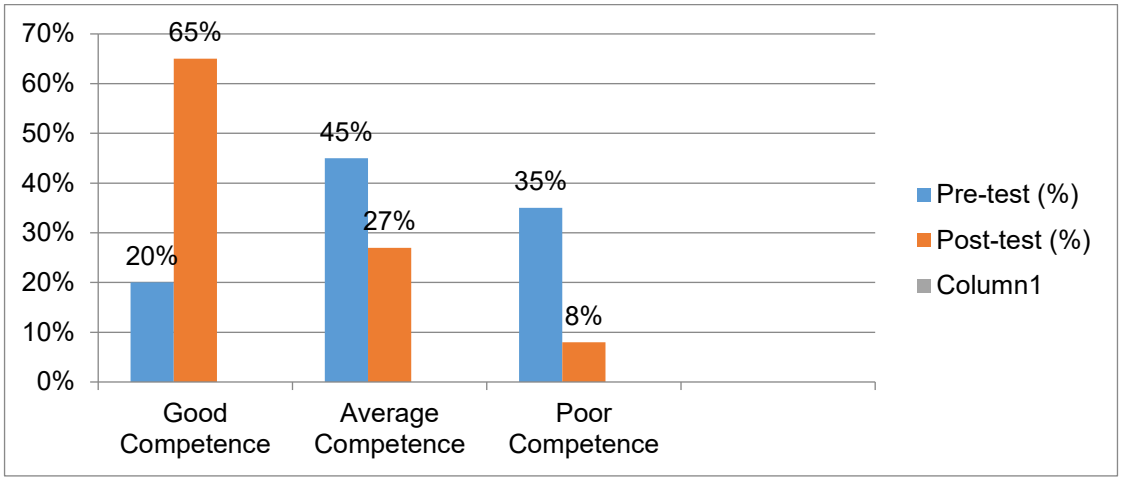
Clinical Competence Level	Frequency (f)	Percentage (%)
Poor	8	8%
Average	27	27%
Good	65	65%
Total	100	100%



The post test results show a clear improvement in clinical competence after simulation education. Basically, the share of participants with good clinical competence went up from 20% to 65%, and the group with poor competence dropped from 35% to 8%. So, it looks like simulation based education was very effective at strengthening participants ability in essential newborn care, especially the key parts.

Overall Percentage Improvement

Category	Pre-test (%)	Post-test (%)	Improvement (%)
Good Competence	20%	65%	+45%
Average Competence	45%	27%	-18%
Poor Competence	35%	8%	-27%



In the table it kind of looks like before any simulation based education, around 45% of the participants had an average level of clinical competence in essential newborn care and 35% showed poor competence. Only 20% had good competence. So it seems like the results suggest that a pretty big chunk of participants may have needed extra learning, or more practice, to sharpen their clinical skills and overall competence in newborn care routines.

Discussion

This present study was made to see how well simulation education works for boosting clinical competence in essential newborn care among nursing students, intern nurses, and other healthcare professionals. In the end, the results showed a real improvement in the participants' ability after the intervention, although not everyone started the same way. Before the simulation training most of them had average competence or even poor competence, so it looked like there was a clear need for more hands-on, practical learning in newborn care rather than just theory.

After the simulation-based education, we noticed a marked jump in the number of participants who reached good clinical competence. This kind of change could be because the learning setting felt realistic, since the high fidelity simulation scenarios were used. In those sessions participants could practice newborn assessment, thermal care, breastfeeding support, infection prevention, neonatal resuscitation, and emergency management, all in a safe and controlled environment. Also, the structured debriefing meetings seemed to help a lot, because they gave people the chance to think back on what they did, spot weaker points and plan how to do better next time.

The findings back up the growing set of proof that simulation based education is a pretty solid teaching strategy for healthcare training. It seems to promote active involvement, along with better critical thinking, stronger decision making, and lots of practical, in-the-moment practice. In other words, simulation helps narrow the gap between what learners know in theory, and how that knowledge actually shows up in the clinical setting. So, in a practical sense, simulation-based education can end up playing a crucial part in getting healthcare professionals ready to provide safe, capable, and evidence guided newborn care.

Suggestions

From what the study suggests, simulation based education really needs to be built in as a steady part of nursing and healthcare curricula, so it can bolster clinical competence for essential newborn care. Educational institutions also ought to set up simulation labs that are actually well equipped, and then they should make sure there are enough resources available, so the whole simulation learning experience works the way it should.

For what comes next, future work should try to involve bigger sample sizes, and include participants from more than one institution, so the results are easier to apply elsewhere. Researchers might also consider randomized controlled trial approaches, because that would give stronger proof about how well simulation based education truly performs. And it would help a lot if follow-up studies continue over the long term, basically to see whether clinical competence and skill performance are still held up, not just right after the program ends.

In practice, regular refresher simulation sessions should be run, in order to keep and improve essential newborn care competencies among both students and healthcare professionals. Faculty members should be offered specialized preparation for simulation facilitation, along with debriefing methods, to keep the learning sessions high quality, and not just “good enough”. It may also be useful to do comparative studies, where simulation based education is weighed against more traditional teaching routes, because that could guide further educational improvement.

Conclusion

The study came to a kind of conclusion, that simulation based education really did enhance clinical competence, especially for essential newborn care among the participants. When they compared the pre test with the post test results, there were clear improvements in how participants could carry out essential newborn care procedures effectively, also with more surety. A bigger share of participants showed good clinical competence after the intervention, whereas the poor competence levels dropped quite a lot, like noticeably.

Simulation based education gave learners realistic clinical exposure, which helped them with skill building, problem solving, and clinical decision-making. With repeated practice, plus the structured feedback that was given, participants ended up feeling more confident, and more competent in handling newborn care circumstances. The intervention also made it easier for participants to turn theoretical knowledge into real world, practical situations, so that their readiness for clinical practice improved too.

References The results kinda highlight that adding simulation based learning into nursing and healthcare education programs really matters. These kinds of teaching strategies don’t just boost competence, they also help with patient safety and overall quality of care. Simulation training gives a “safe room” for practicing tricky clinical abilities, without any danger for patients. Overall the study shows, simulation based education is a pretty effective and valuable path for reinforcing essential care of newborn competencies, and for getting healthcare professionals ready to deliver good neonatal care in actual clinical settings.

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