ACIBADEM MEHMET ALI AYDINLAR UNIVERSITY
INSTITUTE OF HEALTH SCIENCES

EVALUATING THE EDUCATIONAL EFFICACY OF HIGH-FIDELITY SIMULATION IN NEONATAL EMERGENCIES AND RESUSCITATION TRAINING

Serdar Beken
M.Sc. THESIS

DEPARTMENT OF MEDICAL EDUCATION

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DECLARATION

I declare that this thesis work is my own work, I had no unethical behavior at any stages from the planning to the writing of the thesis, I obtained all the information in this thesis in accordance with academic and ethicel rules, I cited all the information and comments that were not obtained with this thesis work, and I provided resources in the list of references. I also declare that there was no violation of any patents and copyrights during the study and writing of this thesis.

14.08.2025

Serdar Beken

PREFACE AND ACKNOWLEDGEMENT

While working as a neonatologist, I gradually came to recognize that clinical excellence alone is not sufficient to ensure high-quality care. The ability to teach effectively, lead teams, and foster a culture of continuous learning plays an equally critical role in improving outcomes for our most vulnerable patients. Motivated by this realization—and inspired by exemplary educators who demonstrated the transformative power of good teaching—I felt a growing need to strengthen my understanding of medical education. With the encouragement and guidance of my mentors, I embarked on this MSc journey.

I would like to express my deepest gratitude to my thesis advisors, Dr. Dilek Kitapçıoğlu and Dr. Melike Şahiner, for their insightful mentorship, unwavering support, and constructive feedback throughout every stage of this study. My heartfelt thanks also go to Dr. Levent Altıntaş, whose ongoing encouragement and vision have profoundly influenced my path in medical education.

I am also sincerely grateful to the entire team at the Center of Advanced Simulation and Education (CASE) at Acıbadem University for their logistical support, collaboration, and commitment to excellence in simulation-based training. I extend my appreciation to the pediatric residents and NICU nurses who participated in the study with dedication and enthusiasm.

Serdar Beken

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ABBREVIATIONS AND SYMBOLS

CASE	Center of Advanced Simulation and Education
ELT	Experiential Learning Theory
IPAS	Interprofessional Attitudes Scale
IPE	Interprofessional Education
LCJR	Lasater Clinical Judgment Rubric
NICU	Neonatal Intensive Care Unit
NRP	Neonatal Resuscitation Program
SBME	Simulation-Based Medical Education
SITAT	Simulation-Based Interprofessional Teamwork Assessment Tool
WHO	World Health Organization

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ABSTRACT

EVALUATING THE EDUCATIONAL EFFICACY OF HIGH-FIDELITY SIMULATION IN NEONATAL EMERGENCIES AND RESUSCITATION TRAINING

Neonatal resuscitation requires rapid decision-making, technical expertise, and seamless interprofessional collaboration—especially during the critical “Golden Hour.” High-fidelity simulation-based medical education, when grounded in experiential learning theory, offers an effective educational method to enhance clinical preparedness. This study aimed to evaluate the impact of high-fidelity, simulation-based training on the clinical performance and teamwork skills of pediatric residents and neonatal nurses during neonatal emergencies. A prospective educational intervention was conducted with 21 participants (7 pediatric residents, 14 NICU nurses) works in the same hospital. The training model followed Kolb’s Experiential Learning Theory and included two simulation sessions—before and after a structured educational intervention incorporating theoretical instruction, video-assisted self-reflection, and debriefing. Clinical performance was assessed using a scenario-specific checklist and the Lasater Clinical Judgment Rubric. Teamwork competencies were evaluated using the SITAT, IPAS, and TeamSTEPPS tools. Pre- and post-intervention outcomes were statistically analyzed. Significant improvements were observed in clinical decision making (LCJR: $21.10 \rightarrow 39.00$; $p < 0.001$) and scenario performance ($13.33 \rightarrow 27.43$; $p < 0.001$). SITAT scores also showed substantial enhancement ($1.42 \rightarrow 3.50$; $p < 0.001$), indicating improved teamwork. While IPAS and TeamSTEPPS scores did not change significantly overall, patient-centeredness and communication domains showed modest gains. Bland-Altman analyses confirmed consistent improvements across participants. High-fidelity, simulation-based training significantly enhances both technical and non-technical competencies in neonatal resuscitation. When combined with reflective debriefing and structured feedback, this educational strategy fosters skill retention, behavioral change, and improved clinical readiness.

Keywords: Neonatal resuscitation, Simulation based education, High fidelity simulator, Interprofessional education

ÖZET

GERÇEĞE UYGUNLUĞU YÜKSEK SİMÜLATÖRLERİN YENİDOĞAN ACİLLERİ VE CANLANDIRMA EĞİTİMİNDE ETKİNLİĞİNİN DEĞERLENDİRİLMESİ

Yenidoğan resüsitasyonu, özellikle kritik olan “Altın Saat” içerisinde, hızlı karar verme, teknik beceri ve kusursuz takım çalışması gerektirir. Deneyimsel öğrenme kuramına dayanan yüksek gerçeklikli simülasyon temelli tıp eğitimi, klinik hazırlığı artırmak için etkili bir eğitim yöntemidir. Bu çalışmanın amacı, yüksek gerçeklikli simülasyon temelli eğitimin, pediatri asistanları ve yenidoğan hemşirelerinin yenidoğan acillerindeki klinik performans ve ekip çalışması becerileri üzerindeki etkisini değerlendirmektir. 7 pediatri asistanı ve 14 yenidoğan yoğun bakım hemşiresinden oluşan, aynı hastanede çalışan toplam 21 katılımcı ile prospektif bir eğitimsel müdahale çalışması yürütülmüştür. Eğitim modeli Kolb’un Deneyimsel Öğrenme Kuramı çerçevesinde tasarlanmış ve teorik eğitim, video destekli öz-değerlendirme ve yapılandırılmış geribildirim içeren iki simülasyon oturumunu içermiştir. Klinik performans, senaryo bazlı bir kontrol listesi ve Lasater Klinik Karar Verme Ölçeği ile değerlendirilmiştir. Ekip çalışması SITAT, IPAS ve TeamSTEPPS ölçekleriyle ölçülmüş; öncesi ve sonrası sonuçlar istatistiksel olarak analiz edilmiştir. Klinik karar verme (LCJR: 21.10 → 39.00; $p < 0.001$) ve senaryo performansında (13.33 → 27.43; $p < 0.001$) anlamlı düzeyde gelişmeler gözlenmiştir. Takım çalışmasını yansıtan SITAT puanları da belirgin biçimde artmıştır (1.42 → 3.50; $p < 0.001$). IPAS ve TeamSTEPPS genel puanlarında istatistiksel olarak anlamlı fark bulunmamakla birlikte, hasta odaklılık ve iletişim alt başlıklarında sınırlı düzeyde gelişme kaydedilmiştir. Bland-Altman analizleri, tüm katılımcılar arasında tutarlı gelişimi doğrulamıştır. Yüksek gerçeklikli, simülasyon temelli interprofesyonel eğitim, yenidoğan resüsitasyonunda hem teknik hem de teknik olmayan yeterlilikleri anlamlı şekilde artırmaktadır. Reflektif debriefing ve yapılandırılmış geribildirimle desteklendiğinde, bu eğitim stratejisi beceri kalıcılığını, davranış değişimini ve klinik hazırlığı güçlendirir.

Anahtar Kelimeler: Yenidoğan resüsitasyonu, Simülasyon temelli eğitim, Yüksek gerçeklikli simülatör, Interprofesyonel eğitim

1. INTRODUCTION AND AIM

The neonatal period represents one of the most vulnerable phases in the human lifespan, where immediate clinical decisions can have life-long consequences. Approximately 10% of newborns require resuscitative efforts at birth, and about 1% need advanced interventions. These figures are considerably higher among preterm infants, where the initial "Golden Hour" of life is critical for ensuring thermal stability, respiratory adaptation, and hemodynamic balance. Neonatal resuscitation differs markedly from adult and pediatric protocols, as it involves the physiologic transition from intrauterine to extrauterine life—a process that demands technical precision, situational awareness, and well-coordinated team-based action. Despite the existence of standardized guidelines such as the Neonatal Resuscitation Program, gaps persist in translating this theoretical knowledge into consistent clinical performance. These discrepancies often arise not from lack of knowledge, but from deficits in communication, leadership, and decision-making under pressure—competencies which are rarely fostered through traditional didactic education alone.

Simulation-based medical education, particularly when using high-fidelity neonatal simulators, offers a promising educational strategy to close this gap. When grounded in experiential learning models, simulation based education provides a safe, controlled, and reproducible environment in which healthcare professionals can rehearse both technical and non-technical skills. Moreover, interprofessional simulation enables teams to develop shared mental models, clarify roles, and enhance communication—key factors in neonatal emergencies where seconds matter.

This study aims to evaluate the educational efficacy of high-fidelity simulation-based education on the clinical performance and teamwork skills during neonatal emergencies. Specifically, the study investigates whether such training improves clinical judgment, procedural accuracy, interprofessional communication, and team coordination. The intervention is conceptually grounded in Kolb's Experiential Learning Theory and supported by validated assessment tools.

2. BACKGROUND

The neonatal period is recognized as the most critical phase in the human lifespan, with the highest associated risks of mortality and morbidity. Approximately 10% of all newborns require some form of resuscitation at birth, while nearly 1% necessitate advanced resuscitative interventions (1). These rates increase considerably in the presence of risk factors such as prematurity, perinatal asphyxia, meconium aspiration, and intrauterine infection. The first few minutes of life—often described as the defining moments between life and death—are crucial in determining both immediate survival and long-term neurodevelopmental outcomes (2). Neonatal resuscitation is distinct from adult or pediatric resuscitation in that it centers around the physiological transition from intrauterine to extrauterine life. This complex and dynamic process requires not only technical expertise but also rapid clinical reasoning, prioritization of interventions, and seamless interprofessional collaboration. As such, equipping healthcare professionals with adequate knowledge, procedural skills, and professional attitudes is essential for reducing neonatal mortality and morbidity.

The delivery of consistent and effective neonatal resuscitation requires the implementation of well-structured, evidence-based training programs that are responsive to clinical demands and aligned with current care standards (3). In this regard, the Neonatal Resuscitation Program (NRP) has been globally recognized as the gold standard for neonatal resuscitation education. Widely adopted across diverse healthcare systems, the NRP enhances practitioners' algorithmic fluency, clinical preparedness, and ultimately improves patient outcomes (4,5).

2.1 Simulation-Based Medical Education

Traditional paradigms of medical education—most notably the "see one, do one, teach one" model—are increasingly recognized as insufficient in meeting the evolving demands of modern healthcare, particularly in relation to patient safety, ethical accountability, and educational efficacy (6). Rare but high-stakes clinical situations such as neonatal resuscitation necessitate pedagogical approaches that foster competence through deliberate, standardized, and realistic practice. Didactic teaching, when not complemented by structured, scenario-based reinforcement, has been shown to result in significant declines in both cognitive retention and procedural proficiency over time (7,8). This erosion is especially pronounced in high-pressure, time-sensitive settings where both the precision and timing of clinical actions are directly linked to patient outcomes. In such contexts, merely knowing the resuscitation algorithm is inadequate; healthcare professionals must be able to fluidly and confidently implement that knowledge under acute stress.

Scenario-based simulations serve as a dynamic bridge between theory and practice, enabling learners to apply clinical knowledge within a safe and controlled environment. These simulations support the development of critical competencies, including clinical reasoning, situational awareness, and psychomotor coordination. Without repeated exposure to such context-rich rehearsal opportunities, these essential skills tend to deteriorate, thereby undermining the long-term effectiveness of traditional instruction (6,9).

Simulation-Based Medical Education (SBME) has therefore emerged as a robust and pedagogically validated alternative to conventional teaching strategies, especially in preparing healthcare providers for high-risk, time-critical interventions such as neonatal resuscitation (6). SBME enables learners to engage deeply with complex clinical scenarios in a structured, low-risk environment, promoting the concurrent acquisition of technical skills and higher-order cognitive functions. Engaging in simulated resuscitation scenarios before direct patient care not only improves procedural accuracy but also fosters learner confidence, reduces performance anxiety, and enhances readiness for real-world application (10).

Moreover, when coupled with real-time feedback, SBME significantly narrows the gap between theoretical instruction and practical performance (11). Immediate, context-specific feedback allows learners to internalize key concepts, refine techniques, and cultivate adaptive responses under pressure—skills rarely developed through didactic methods alone. As a result, learners become more resilient, self-aware, and clinically competent—better prepared to respond to the demands of high-acuity clinical environments (12). Neonatal resuscitation, in particular, demands not only rapid and accurate assessment but also coordinated team-based execution. Mastery in such scenarios requires more than individual knowledge and technical acumen; it hinges equally on non-technical competencies including leadership, role clarity, effective communication, and situational awareness (13,14).

2.2 Educational models in simulation based education

A robust theoretical foundation for SBME is provided by David A. Kolb's Experiential Learning Theory (ELT), which conceptualizes learning not as a static product but as a continuous, cyclical process grounded in active engagement with real-world experiences (15,16). Kolb's model outlines four essential stages through which learners develop and consolidate new knowledge: (1) concrete experience, where learners actively participate in clinical scenarios; (2) reflective observation, during which they analyze and interpret their actions and team dynamics; (3) abstract conceptualization, wherein they integrate theory with insights drawn from practice to generate new frameworks of understanding; and (4) active experimentation, where these new strategies are tested in subsequent encounters or learning environments (Figure 1). In medical education—particularly in high-stakes disciplines such as neonatology—Kolb's framework offers a structured approach to transforming clinical experience into professional growth. Simulation-based learning environments align exceptionally well with this cycle. For example, during a neonatal resuscitation simulation, learners engage in hands-on procedures (concrete experience), participate in structured debriefings to process the event (reflective observation), link their performance to theoretical principles such as the NRP algorithm or physiological transitions at birth (abstract conceptualization), and then apply improved strategies in follow-up simulations or clinical care (active experimentation).

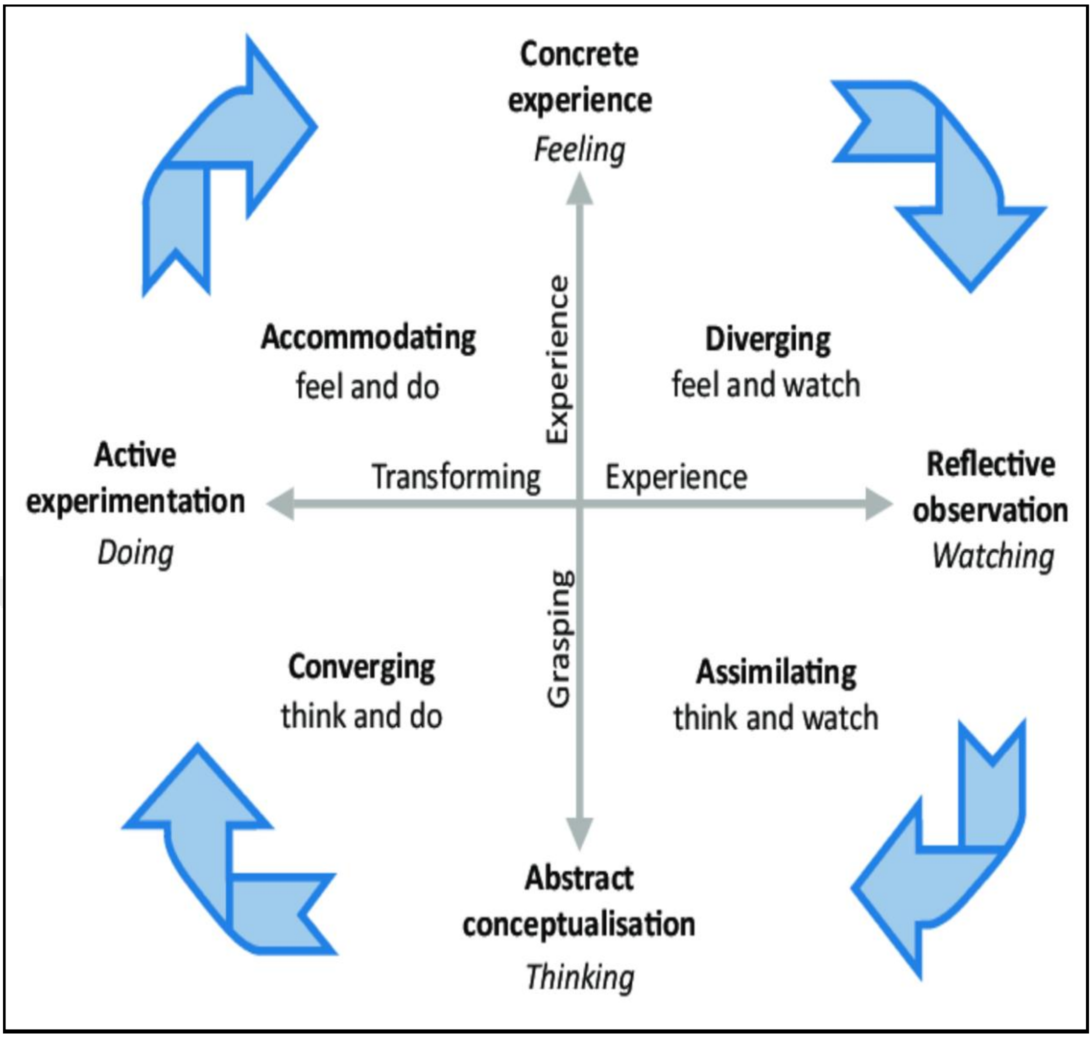

Figure 1. Kolb's learning styles.

2.3 High-fidelity Simulators

High-fidelity simulation has emerged as a cornerstone of simulation-based medical education, offering a comprehensive solution to the multifaceted learning needs of healthcare professionals—particularly in high-risk, time-sensitive clinical situations such as neonatal resuscitation. Compared to earlier low- or medium-fidelity models, which were often instructor-dependent and provided limited physiological feedback, modern high-fidelity simulators incorporate advanced computer-driven physiologic and pharmacologic modeling that accurately replicates real-time clinical responses (17). Devices such as *Paul*, *SimNewB*, and *Premature Anne* exemplify the practical application of high-fidelity simulation technology. These tools are particularly valuable in neonatology education, where clinical precision, rapid decision-making, and coordinated team dynamics are essential (18,19). These simulators not only reflect the anatomical size and weight of preterm and term neonates, but also include dynamic features such as skin color changes, spontaneous breathing, heart rate variability, pupillary reactions, and umbilical pulse. This degree of realism enables learners to perform critical procedures—such as tracheal intubation and umbilical venous catheter placement—repeatedly and safely, while receiving immediate feedback based on their clinical decisions (13,17).

Moreover, high-fidelity simulation provides an immersive learning environment that supports the development of not only technical proficiency but also essential non-technical skills such as clinical reasoning, teamwork, leadership, communication, and situational awareness (20). When integrated with structured case scenarios, expert facilitation, and well-designed debriefing processes, simulation becomes a powerful pedagogical framework that promotes both skill acquisition and long-term professional growth (21).

High-fidelity simulators have become indispensable in training programs focused on neonatal resuscitation and critical care. Beyond enhancing individual learner outcomes, they also contribute to the overall effectiveness, measurability, and sustainability of educational interventions—ultimately improving clinical preparedness and patient safety outcomes (17).

2.4 Debriefing and Reflective Practice

The educational value of simulation-based training extends beyond cognitive and psychomotor gains; it also enhances learners' self-confidence, reduces performance anxiety, and supports their professional development. One of the most impactful components contributing to this holistic benefit is the structured debriefing process, which reinforces learning through guided reflection and feedback (22,23). Far from being a simple post-activity review, debriefing serves as a critical pedagogical tool that fosters reflective practice, encourages learners to analyze their decision-making processes, and facilitates the development of clinical insight.

Recent studies have highlighted the increasing relevance of post-resuscitation debriefing in neonatal care. A national survey of neonatal–perinatal medicine fellows revealed that the majority of trainees perceive structured debriefing as instrumental in improving team communication, clarifying clinical roles, and reinforcing adherence to NRP algorithms (24). The use of emerging technologies, such as 360-degree video capture, has further enhanced the quality of debriefing sessions by enabling comprehensive and objective review of clinical events (25). Likewise, low-cost video monitoring setups have proven to be feasible tools for evaluating team performance and supporting quality improvement efforts, particularly in resource-limited settings (26).

Moreover, structured debriefing has been formally integrated into updated versions of the NRP curriculum, where it is emphasized not only as a feedback mechanism, but also as an opportunity for shared learning and interprofessional team reflection (27). A growing body of evidence supports that well-facilitated debriefing significantly contributes to knowledge retention and the successful transfer of skills into real clinical environments (22,27). When implemented consistently and thoughtfully, debriefing elevates simulation from a procedural exercise to a transformative educational experience—one that shapes clinical judgment, strengthens team dynamics, and reinforces the development of professional identity.

2.5 Clinical Decision-Making

Effective clinical decision-making in neonatal resuscitation requires a rapid synthesis of patient-specific information, evidence-based protocols, and contextual judgment—often under conditions of time pressure, uncertainty, and high emotional stakes (28,29). In such critical scenarios, decisions must be made not in isolation but through coordinated team dialogue, where shared situational awareness, distributed cognition, and role-appropriate input contribute to optimized outcomes.

Simulation-based training environments provide an ideal platform for fostering these decision-making competencies. By exposing learners to realistic, high-stakes scenarios, simulations allow them to practice clinical reasoning, adapt algorithms to complex situations, and navigate ethical dilemmas under supervision (20). Moreover, team-based simulation enhances group decision-making processes by reinforcing communication loops, flattening hierarchical barriers, and facilitating the development of shared mental models (30).

2.6 Teamwork

Contemporary medical education goes beyond the transmission of individual knowledge and technical skills; it also aims to systematically cultivate collaborative, adaptable, and multidimensional professional behaviors in alignment with the complex, uncertain, and rapidly evolving nature of healthcare systems (31,32).

Teamwork requires healthcare professionals to function within a coordinated structure that is grounded in open communication, role and task clarity, mutual trust, adaptability, and effective leadership, all directed toward patient-centered goals (33). In increasingly complex healthcare environments, failure to establish effective interaction among multidisciplinary team members has been identified as one of the leading causes of patient safety incidents (34).

Interprofessional education (IPE) refers to structured educational approaches that promote shared learning, mutual understanding, and joint decision-making among healthcare professionals from different disciplines (35). The World Health Organization (WHO) defines IPE as an approach in which “two or more students from different health professions learn about, from and with each other to enable effective collaboration and improve health outcomes,” emphasizing it as a key strategy for the sustainability of healthcare systems (36). IPE enhances not only learners’ knowledge and skill acquisition, but also fosters essential professional values such as communication, mutual respect, role awareness, and shared responsibility (37).

These competencies are of particular relevance in the field of neonatal care. Neonatal resuscitation, especially within the first few minutes after birth, is a time-critical process that demands the rapid assessment of multiple parameters and the synchronized execution of precise interventions. The postnatal stabilization of a premature infant requires effective coordination among professionals from various disciplines—including neonatologists, pediatric residents, nurses, anesthesiologists, and support staff (38). Errors in teamwork during this process—such as delays in ventilation, unclear role distribution, or communication breakdowns—may directly lead to increased morbidity and mortality (2).

High-fidelity simulation-based training enables healthcare teams to experience and repeatedly practice such scenarios in a structured and safe environment. A growing body of evidence confirms that team-based simulation training yields greater improvements in performance and leads to better patient outcomes than traditional, didactic learning approaches (39,40). The literature suggests that these interventions enhance adherence to resuscitation algorithms, reduce time to effective ventilation, improve interpersonal communication, and significantly boost learners' self-confidence and team performance (38,41).

2.7 Design Rationale

This study was initiated in response to an observed increase in admission hypothermia rates among preterm infants in a tertiary-level NICU. To systematically address this clinical concern, a structured learning needs assessment was conducted as a foundational step in designing a targeted, context-sensitive educational intervention. Rather than focusing solely on individual knowledge or skill deficits, the assessment adopted a systems-based lens and revealed critical shortcomings in interprofessional collaboration, adherence to neonatal resuscitation algorithms, and clarity in role delineation during delivery room stabilization.

These insights emphasized the need for a competency-based, team-oriented educational approach that strengthens integrated clinical performance in real-time, high-stakes settings. The first hour after birth "Golden Hour" represents a crucial period requiring not only technical precision but also seamless teamwork and coordinated decision-making to optimize neonatal outcomes.

Structured clinical observations conducted in 2024 indicated a 16% incidence of hypothermia (body temperature <36.0°C) among preterm infants at the time of NICU admission (unpublished data). These findings were compounded by a noted shift away from the use of T-piece resuscitators toward self-inflating bag-mask ventilation—an equipment change that may have undermined both the delivery of positive pressure ventilation and the maintenance of thermal stability in the immediate postnatal period.

All neonatal teams are certified in the Neonatal Resuscitation Program which is a well-established and evidence-based course that provides foundational knowledge and skills. Standard training is typically offered as a one-time or infrequently repeated experience. While effective in building core competencies, this format raises concerns regarding long-term skill retention and the successful transfer of learned behaviors into clinical practice, particularly during emergent and unpredictable situations.

Accordingly, this study aims to evaluate the impact of a high-fidelity, simulation-based education program on the collaborative performance of pediatric residents and neonatal nurses. By focusing on teamwork, clinical decision-making, and communication, the study seeks to assess immediate learning outcomes and determine whether such structured interventions facilitate the transfer of these competencies into everyday clinical practice—ultimately improving neonatal care during the Golden Hour.

3. MATERIALS AND METHODS

3.1 Study Design

This study was designed as a prospective educational intervention and conducted at the Simulation Center of Acıbadem Mehmet Ali Aydınlar University School of Medicine (Center of Advanced Simulation and Education – CASE). The simulation environment was carefully constructed to replicate a real delivery room setting, fully equipped with neonatal resuscitation tools, a high-fidelity neonatal simulator, and staffed by a multidisciplinary team including pediatric residents and neonatal nurses. Figure 2 provides a visual overview of the physical layout and equipment used during the simulation sessions.

The training aimed to provide participants with an immersive, team-based experience in managing neonatal resuscitation and delivery room stabilization scenarios. The effectiveness of the simulation-based interprofessional training was evaluated across multiple domains to capture a comprehensive view of its educational impact. Specifically, the study sought to assess:

1. Clinical performance during simulation sessions, focusing on adherence to neonatal resuscitation algorithms and the timely execution of critical tasks;
2. Diagnostic reasoning skills in simulated neonatal emergencies, reflecting participants’ ability to synthesize information, prioritize actions, and respond appropriately to evolving clinical situations;
3. Teamwork attitudes, including trust, cohesion, and collective efficacy in high-stakes clinical environments;
4. Interprofessional communication and coordination skills, such as closed-loop communication, leadership-followership dynamics, and situational awareness during the simulations.

These outcome domains were selected based on their alignment with the core competencies required for effective neonatal resuscitation and teamwork practice.

3.2 Study Participants

A total of 21 volunteer healthcare professionals participated in the study, consisting of 7 pediatric residents and 14 NICU nurses, all of whom held valid NRP certification. Teams were randomized, each including one physician and two nurses. Sample size estimation was conducted using the G*Power 3.1 software, assuming 80% power (1-β = 0.80), a significance level of α = 0.05, and a medium effect size (d = 0.5).

Figure 2. The physical setup of the simulation environment.

3.3 Simulation Model and Educational Process

The simulation-based training was designed and implemented in accordance with Kolb's ELT, which conceptualizes learning as a cyclical process involving four key stages: concrete experience, reflective observation, abstract conceptualization, and active experimentation (42). The Paul® high-fidelity neonatal simulator was used throughout the program to provide a realistic and immersive clinical experience. The process was structured into the following stages:

3.3.1 Preparation phase

Prior to the simulations, participants were organized into interprofessional teams consisting of neonatal nurses and pediatric residents (one pediatric resident, two nurses in each group). Simulation scenarios, assessment rubrics, and all necessary equipment were prepared in advance to ensure standardization and consistency. Participants received a brief orientation on the simulation environment, including the use of equipment and safety considerations.

3.3.2 First simulation session

The first simulation session served as the concrete experience stage of Kolb's model. Each team managed a standardized scenario depicting the delivery and initial stabilization of a $24^{3/7}$ weeks gestation, 650 gram extremely preterm neonate. The scenario was designed to assess clinical performance, decision-making, communication, and teamwork under real-time pressure. Each simulation lasted approximately 15 minutes and was followed by a brief feedback session without formal instruction.

3.3.3 Educational intervention

One week after the first simulation, participants engaged in a structured educational intervention aligned with the reflective observation and abstract conceptualization stages of experiential learning.

The session began with a theoretical lecture covering neonatal resuscitation algorithms, Golden Hour management strategies, and principles of interprofessional collaboration. Immediately following the lecture, participants were provided access to video recordings of their own simulation performances. They were encouraged to conduct a critical self-assessment focusing on clinical actions, communication efficiency, and team coordination.

Subsequently, small-group facilitated reflection sessions were conducted. Each group (7 participants) discussed their experiences under the guidance of a faculty facilitator, whose role was limited to prompting reflection and clarifying content when needed. These discussions fostered peer learning, self-awareness, and the development of shared mental models for effective neonatal care. Participants reflected not only on their individual performance but also on team dynamics, communication challenges, and decision-making processes.

Through this reflective process, learners transitioned into abstract conceptualization**,** integrating theoretical knowledge with the practical insights gained from their simulation experiences. The structured reflection encouraged the formulation of new strategies and mental models to improve future performance.

3.3.4 Second simulation session

Following the educational intervention, participants reconvened to repeat the initial scenario. This second simulation represented the active experimentation phase, allowing learners to apply the insights gained from their previous experience and group reflections.

Each simulation lasted 15 minutes, followed by a structured debriefing session lasting 15–20 minutes. During debriefing, participants revisited the learning objectives, discussed their evolving clinical approach, and examined the impact of improved communication and team coordination. The debriefing sessions were guided using evidence-based frameworks to enhance reflective learning and facilitate the transfer of newly acquired knowledge into clinical practice (Figure 3).

EVALUATION

Participants' Performance Evaluation

Lasater Clinical Judgment Rubric

Interprofessional Attitudes Scale

Teamwork Attitudes Questionnaire

Simulation-Based Interprofessional Teamwork Assessment Tool

FIRST SIMULATION

→ one week later

EDUCATIONAL INTERVENTION

Theoretical Instruction

Self assessment from video recordings

Small-Group Reflective Sessions

→ one week later

SECOND SIMULATION

EVALUATION

Participants' Performance Evaluation

Lasater Clinical Judgment Rubric

Interprofessional Attitudes Scale

Teamwork Attitudes Questionnaire

Simulation-Based Interprofessional Teamwork Assessment Tool

Figure 3. Simulation model and educational process of the study.

3.4 Scenario Content

The simulation scenarios were designed in accordance with the principles and protocols outlined in the recent NRP guidelines (1). The scenario flow chart is presented in Appendix 2. Participants were expected to perform the following critical interventions:

- Preparation of the delivery room, equipment check, and team role assignment
- Thermoregulation measures (use of polyethylene wrap, radiant warmer)
- Positive pressure ventilation, endotracheal intubation if necessary
- Initiation of chest compressions when indicated
- Umbilical catheter placement, administration of epinephrine and fluid resuscitation
- Implementation of closed-loop communication and team coordination

3.5 Assessment Tools

3.5.1 Participants' performance evaluation

Participants' clinical performance during the simulation sessions was assessed using an observational checklist that was structured based on the current NRP guidelines (1). The form was adapted to align with the scenario flow and included all key resuscitation steps, each assigned with a predefined score. This checklist enabled objective evaluation of both individual clinical tasks and team-based procedural accuracy. The form (Appendix 3) includes 30 items grouped under five main sections: preparation, initial interventions, advanced interventions, teamwork and communication, and general evaluation. Each item was scored on a scale of 0-1.

3.5.2 Lasater clinical judgment rubric (LCJR)

The LCJR, adapted and validated for Turkish use (43), was employed to assess simulation-based clinical judgment skills. It comprises 11 evaluation items across four dimensions: noticing, interpreting, responding, and reflecting (Appendix 4). Each item was scored from 1 to 4.

3.5.3 Interprofessional attitudes scale (IPAS)

The IPAS, validated for Turkish use (44), was used to evaluate healthcare professionals' attitudes towards interprofessional collaboration and patient-centered care. The scale includes 27 items covering four domains: patient-centeredness, diversity and ethics, teamwork, and community-centeredness (Appendix 2). Each item was scored from 1 to 5.

3.5.4 Teamwork attitudes questionnaire

This validated Turkish version of the TeamSTEPPS Teamwork Attitudes Questionnaire (45) assesses participants' attitudes toward teamwork. It includes 30 items grouped into five subscales: team structure, leadership, situation monitoring, mutual support, and communication (Appendix 3). Each item was scored from 1 to 5.

3.5.5 Simulation-based interprofessional teamwork assessment Tool (SITAT)

The SITAT, a validated Turkish observational tool (46), was applied to assess interprofessional communication, coordination, and teamwork skills during simulation sessions. The tool includes 16 items under five main domains: team structure, leadership, communication, mutual support, and situation monitoring (Appendix 5). Each item was scored from 1 to 5.

3.6 Data Collection and Statistical Analysis

Pre- and post-intervention data were collected from participants. All statistical analyses were performed using IBM SPSS Statistics v16.0 and Python 3.10 (scipy, seaborn, matplotlib, numpy, pandas). Pre- and post-intervention comparisons were assessed using the Wilcoxon signed-rank test due to the small sample size and non-parametric data distribution. Effect sizes (r) for Wilcoxon tests were calculated to assess the magnitude of observed changes, with thresholds for interpretation defined as small ($r = 0.10$), medium ($r = 0.30$), and large ($r = 0.50$). In addition, Spearman's rank correlation coefficients were computed to explore the relationships between the changes in LCJR, SITAT, TeamSTEPPS, and IPAS scores.

Bland-Altman analyses were performed to assess agreement and bias between pre- and post-intervention scores for LCJR and SITAT outcomes. The mean difference (bias) and 95% limits of agreement (mean ± 1.96 SD) were calculated for each outcome. Bland-Altman analysis does not test for statistical significance but provides a visual and descriptive assessment of whether the changes were consistent across participants and whether there was evidence of proportional bias.

A two-tailed p-value of <0.05 was considered statistically significant for all Wilcoxon and correlation analyses.

3.7 Ethical Approval

The study was approved by the Acıbadem Mehmet Ali Aydınlar University Clinical Research Ethics Committee (ATADEK) (Approval No: 2024-11/469). Informed consent was obtained from all participants. The study was conducted in accordance with the principles of the Declaration of Helsinki.

4 . RESULTS

4.1 Participant Characteristics

A total of 21 healthcare professionals (7 pediatric residents and 14 neonatal nurses) participated in the study. The majority of participants were female (95.2%) and nurses (66.7%). Regarding age distribution, 14.3% were under 25 years, 61.9% were between 25–30 years, and 23.8% were over 30 years. The mean total work experience was 4.32±1.58 years (Table 1).

Table 1. Characteristics of participants

Age	<25	8 (38%)
	25-30	8 (38%)
	>30	5 (24%)
Gender	Male	1 (5%)
	Female	20 (95%)
Job	Doctor	7 (33%)
	Nurse	14 (67%)
Total work experience (year)		4.32±1.58

4.2 Clinical Judgment and Performance

Significant improvements were observed in clinical judgment and simulation performance after the training. The overall LCJR total score increased from 21.10 ± 2.81 to 39.00 ± 3.05 ($p < 0.001$). Noticing (5.52 ± 0.87 vs. 10.29 ± 1.52; $p < 0.001$), interpreting (5.57 ± 1.33 vs. 9.57 ± 1.08; $p < 0.001$), responding (4.52 ± 0.87 vs. 7.86 ± 1.01; $p < 0.001$), and reflecting (5.48 ± 0.75 vs. 11.29 ± 1.19; $p < 0.001$) scores showed statistically significant improvements. Scenario performance scores also improved markedly, from 13.33 ± 3.71 before training to 27.43 ± 1.80 after training ($p < 0.001$) (Table 2, Figure 4).

Table 2. Comparison of clinical judgement and performance

	Categories	Before training	After training	p
Lasater Clinical Judgment Rubric (LCJR)	Total	21.10 ± 2.81	39.00 ± 3.05	<0.001
	Noticing	5.52 ± 0.87	10.29 ± 1.52	<0.001
	Interpreting	5.57 ± 1.33	9.57 ± 1.08	<0.001
	Responding	4.52 ± 0.87	7.86 ± 1.01	<0.001
	Reflecting	5.48 ± 0.75	11.29 ± 1.19	<0.001
Scenario Performance		13.33 ± 3.71	27.43±1.80	<0.001

4.3 Teamwork, Communication Skills, and Interprofessional Attitudes

There was a modest increase in IPAS total scores (96.57 ± 4.50 vs. 97.24 ± 4.83; p = 0.208), with patient-centeredness showing a significant improvement (p = 0.041). No statistically significant changes were observed for teamwork, community-centeredness, or respect subscales (Table 3, Figure 5).

TeamSTEPPS scores showed a trend towards improvement, with the total score increasing from 122.33 ± 12.88 to 128.05 ± 9.10 (p = 0.064), although this was not statistically significant. Among subdomains, communication had the greatest improvement trend (p = 0.060) (Figure 6).

A highly significant improvement was detected in SITAT scores, increasing from 1.42 ± 0.78 to 3.50 ± 0.32 (p < 0.001), reflecting enhanced interprofessional teamwork performance after simulation training (Figure 7).

We explored secondary relationships between outcome variables but found no significant correlations.

Table 3. Comparison of teamwork, communication skills and interprofessional attitude

	Categories	Before training	After training	p
Interprofessional Attitudes Scale (IPAS)	Total	96.57 ± 4.50	97.24 ± 4.83	0.208
	Patient-centeredness	24.10 ± 1.41	24.24 ± 1.22	0.618
	Diversity and ethics	24.24 ± 1.30	24.71 ± 0.78	0.041
	Teamwork	24.29 ± 1.10	24.05 ± 1.99	0.858
	Community-centeredness	23.95 ± 1.63	24.24 ± 1.84	0.474
TeamSTEPPS Teamwork Attitudes	Total	122.33 ± 12.88	128.05 ± 9.10	0.064
	Team structure	28.67 ± 2.01	29.19 ± 1.57	0.298
	Leadership	27.52 ± 2.34	28.10 ± 1.92	0.312
	Situation monitoring	17.86 ± 4.84	19.19 ± 4.49	0.441
	Mutual support	21.67 ± 5.70	24.00 ± 2.24	0.060
	Communication	26.62 ± 2.04	27.57 ± 2.29	0.057
SITAT-TR		1.42 ± 0.78	3.50 ± 0.32	<0.001

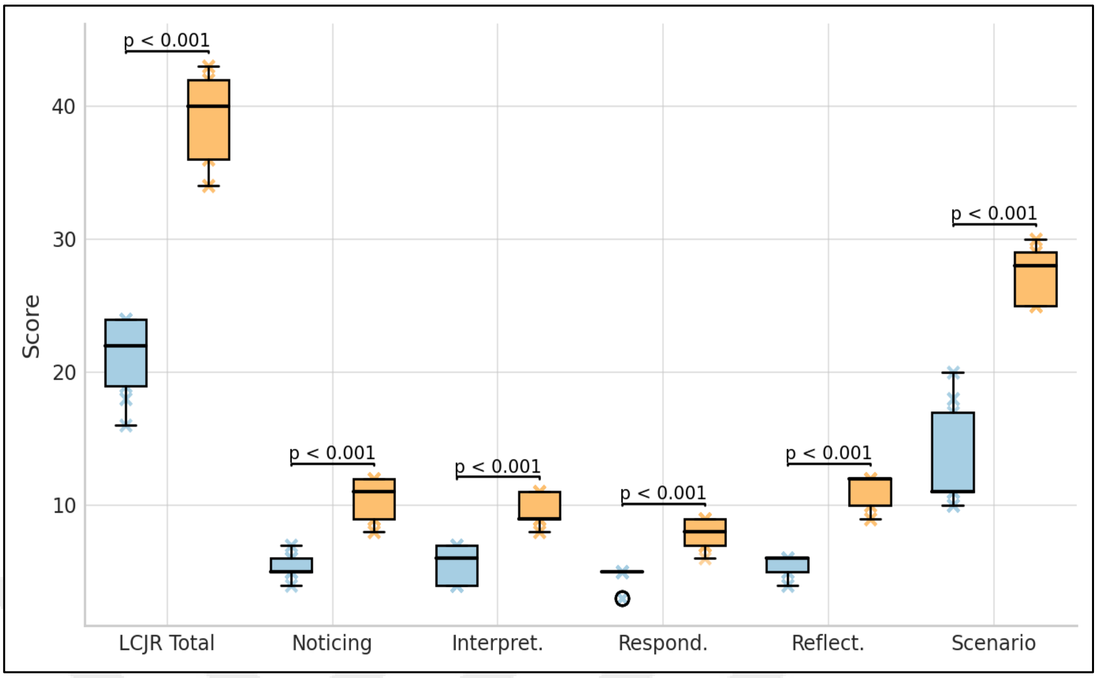

Figure 4. LCJR and Scenario Performance Boxplots (Pre- and Post-Simulation Training). Boxplots show pre- and post-intervention scores for LCJR total, noticing, interpretation, responding, reflecting, and scenario performance. Individual data points are superimposed. The solid black lines represent the medians. Light blue boxes indicate pre-training values; orange boxes indicate post-training values.

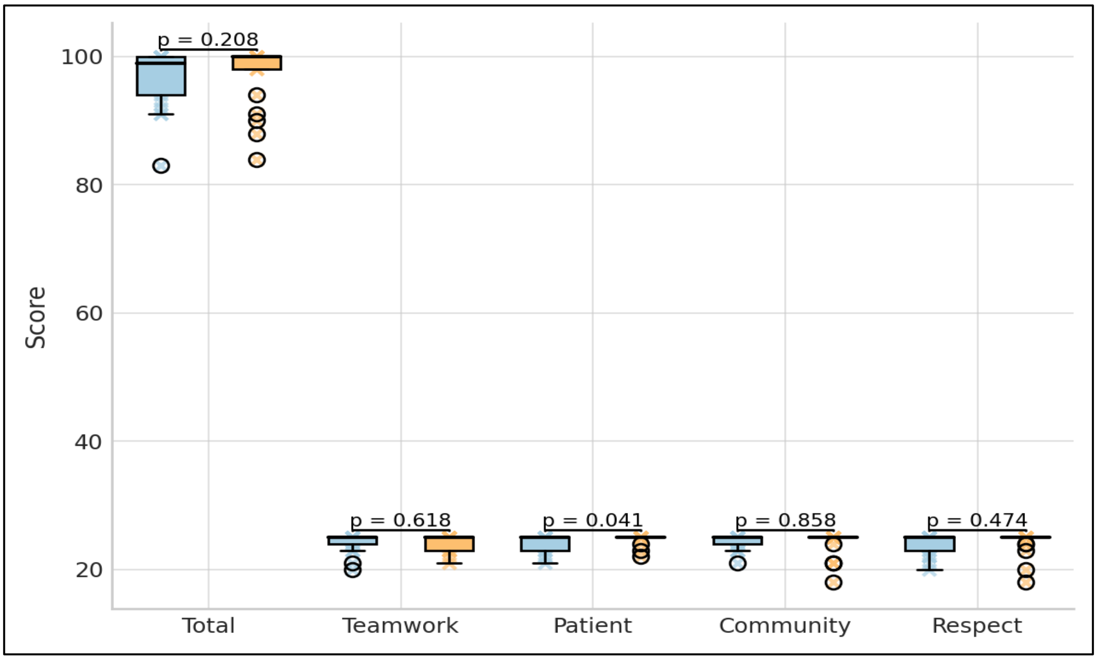

Figure 5. IPAS Boxplots (Pre- and Post-Simulation Training)**.** Boxplots show pre- and post-intervention scores for the Interprofessional Attitudes Scale (IPAS) total and subdomains

(teamwork, patient-centeredness, community-centeredness, respect for others). Individual data points are superimposed. The solid black lines represent medians. Light blue and orange colors indicate pre- and post-training values, respectively.

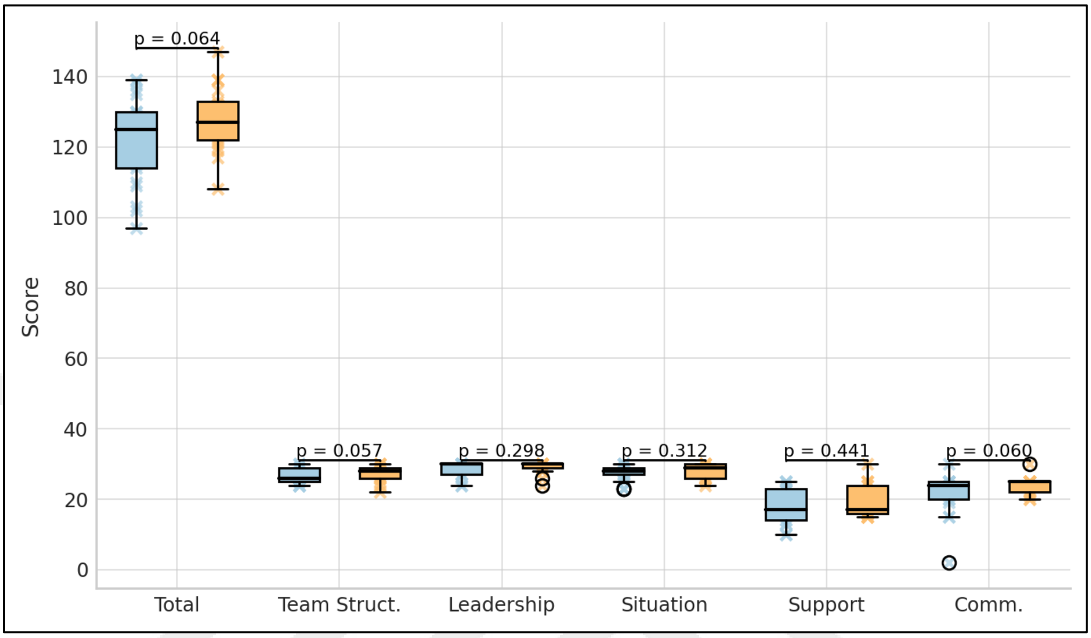

Figure 6. TeamSTEPPS Boxplots (Pre- and Post-Simulation Training) Boxplots illustrate pre- and post-intervention scores for the TeamSTEPPS total and subdomains (team structure, leadership, situation monitoring, mutual support, communication). Individual scores are shown as dots. Boxes are colored light blue (pre) and orange (post). Median lines are shown in black.

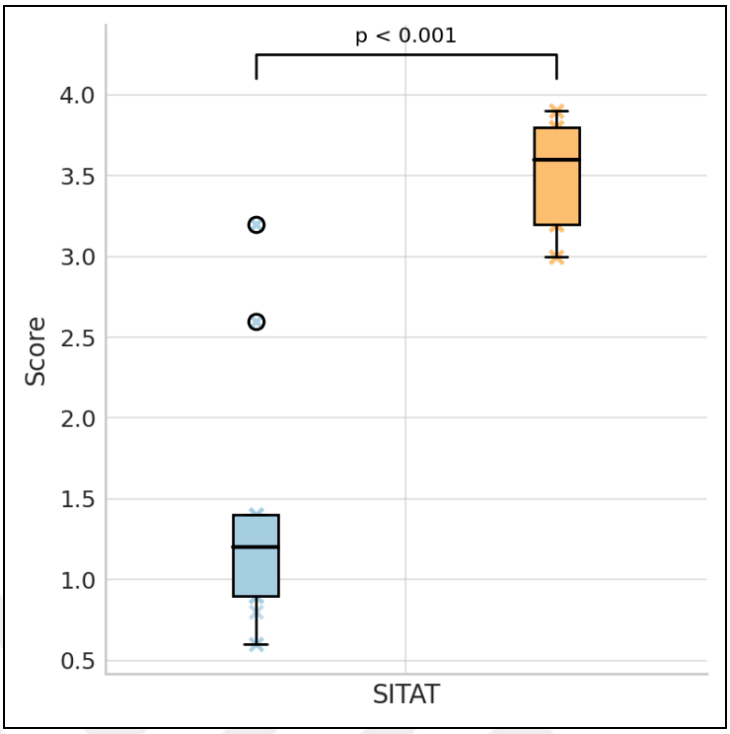

Figure 7. SITAT Boxplot (Pre- and Post-Simulation Training) Boxplot shows pre- and post-intervention SITAT scores. Data points are shown as dots. Boxes represent interquartile ranges, with median lines shown in black. Light blue represents pre-training, and orange represents post-training values.

To assess the agreement between pre- and post-intervention scores and to determine the consistency of improvement across participants, Bland-Altman analyses were performed for both LCJR and SITAT measurements. This method provides a visual and statistical estimation of the extent to which simulation-based training altered performance scores.

For the LCJR, the mean difference (bias) between pre- and post-intervention scores was –17.90, indicating a substantial increase in clinical judgment scores following the simulation-based training. The 95% limits of agreement ranged from –25.81 to –9.99, suggesting that most participants experienced improvements within this interval (Figure 8). Importantly, the absence of proportional bias indicates that this improvement was consistent across all participants, regardless of their baseline performance.

Similarly, for the SITAT, the mean difference was –2.08, with limits of agreement spanning from –3.65 to –0.50 (Figure 9). This finding reflects a moderate yet statistically consistent enhancement in interprofessional teamwork skills after the training. As with the LCJR, no evidence of proportional bias was found, further supporting that the observed gains were uniform across the cohort.

Collectively, the Bland-Altman plots provide robust evidence that the high-fidelity, interprofessional simulation intervention led to measurable and consistent improvements in both clinical decision-making and team-based performance domains.

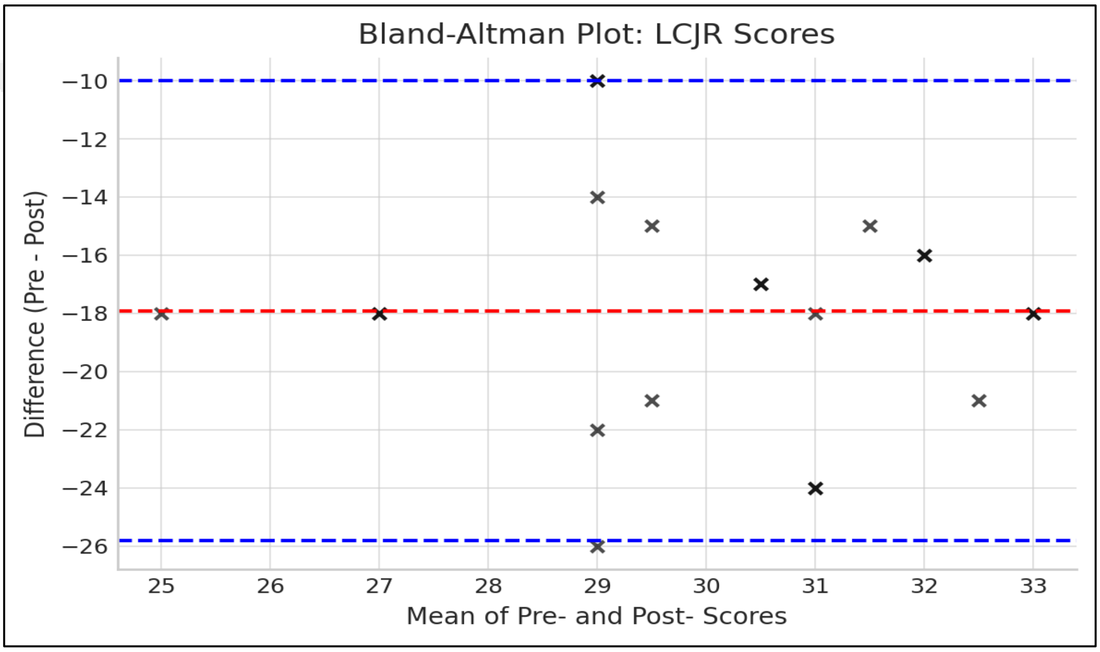

Figure 8. Bland-Altman plot showing the agreement between pre- and post-intervention LCJR scores. The solid red line represents the mean difference (bias); dashed blue lines represent the 95% limits of agreement (mean ± 1.96 SD).

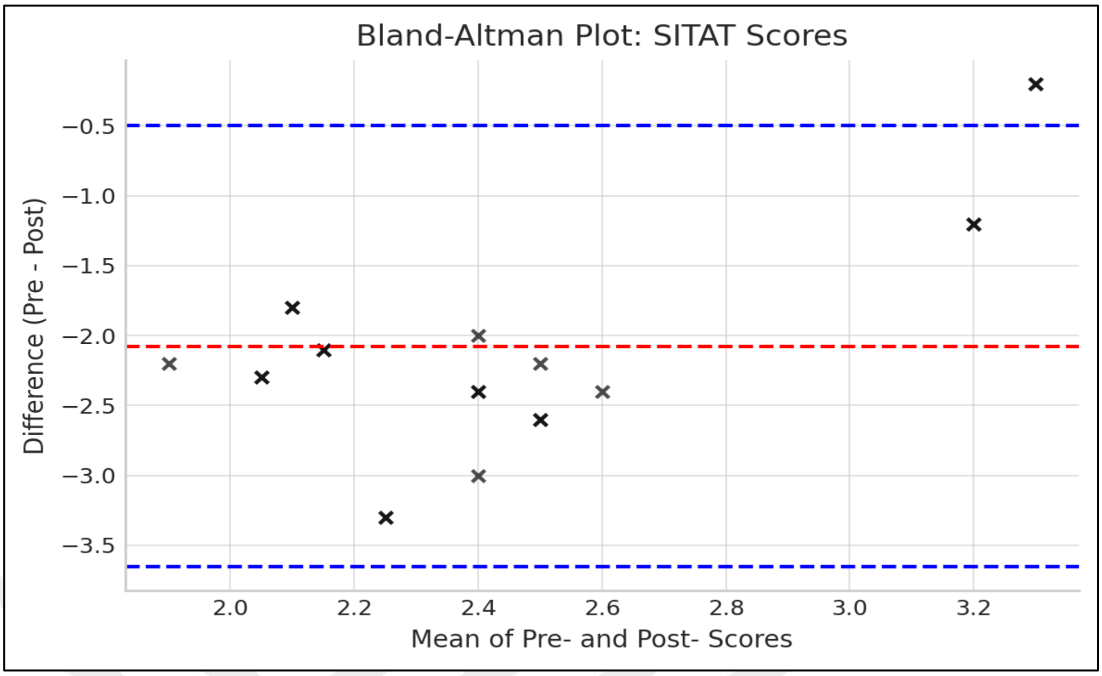

Figure 9. Bland-Altman plot showing the agreement between pre- and post-intervention SITAT scores. The solid red line represents the mean difference (bias); dashed blue lines represent the 95% limits of agreement.

5. DISCUSSION

This study was initiated in response to an observed increase in admission hypothermia rates among preterm infants in a tertiary-level NICU. To systematically address this clinical concern, a structured learning needs assessment was conducted as a foundational step in the design of a targeted, context-sensitive educational intervention. Rather than focusing solely on individual knowledge or skill deficits, the assessment adopted a systems-based lens and identified critical gaps in interprofessional collaboration, adherence to neonatal resuscitation algorithms, and clarity in role delineation during delivery room stabilization. These insights underscored the need for a competency-based, team-oriented educational approach that emphasizes integrated clinical performance within real-time, high-stakes environments Educational planning based on needs assessment transforms learning interventions from arbitrary activities into practice-driven strategies, thereby enhancing their relevance and potential to drive behavior change (47). In doing so, it enables the development of educational responses directly linked to identified clinical problems, allowing learners to engage in authentic experiences and observe tangible improvements in clinical outcomes.

The educational design of this intervention was intentionally grounded in Kolb’s ELT, which emphasizes a cyclical model of learning through four stages: concrete experience, reflective observation, abstract conceptualization, and active experimentation (16). In this study, the initial high-fidelity neonatal resuscitation simulation served as the concrete experience, immersing participants in a realistic clinical scenario. This was followed by structured debriefing sessions and guided peer video reviews, facilitating reflective observation. Subsequent theoretical instruction and faculty-facilitated group discussions encouraged abstract conceptualization by allowing learners to link their experiences with evidence-based knowledge. The process culminated in a second simulation session, enabling participants to apply newly formed insights through active experimentation. By moving through the stages of Kolb’s ELT, participants developed a deeper understanding of both clinical procedures and interprofessional dynamics. In this context, simulation emerged as a vital bridge between theory and practice. Particularly in high-stakes environments like neonatal resuscitation, traditional didactic methods often fall short. Simulation addresses these gaps by offering a safe, immersive, and repeatable learning environment that fosters both technical proficiency and essential non-technical skills, such as communication, leadership, and collaboration (48).

Despite significant advances in diagnostic technologies and treatment modalities, preventable adverse events and critical incidents continue to occur (49). These do not stem solely from a lack of knowledge, but rather from the inability to effectively apply that knowledge in high-pressure, team-based clinical environments. This underscores the growing demand for educational strategies that bridge the gap between theoretical understanding and real-time clinical performance—an area where simulation-based training offers distinct advantages. Simulation provides a safe and controlled environment in which healthcare professionals can repeatedly practice complex procedures, refine interprofessional communication, and receive structured feedback without jeopardizing patient safety. Through repeated exposure and guided reflection, learners are better equipped to transform cognitive knowledge into behavioral competence, reinforcing clinical decision-making and supporting the development of adaptive attitudes under stress (6,48).

In this context, simulation has become increasingly central to neonatal resuscitation education, where clinical decisions must be executed within seconds and effective teamwork directly influences outcomes. Unlike traditional didactic methods, simulation-based training allows learners to engage in life-saving interventions—such as positive pressure ventilation, endotracheal intubation, and chest compressions—within a realistic yet risk-free environment. This experiential approach improves not only procedural proficiency but also non-technical skills including leadership, role clarity, and interprofessional collaboration (38). Moreover, when paired with structured debriefing and repetition, simulation has been shown to enhance both knowledge retention and clinical performance in neonatal resuscitation (20). Importantly, by creating space for learners to safely make and learn from mistakes, simulation fosters a culture of reflection and continuous improvement, ultimately contributing to improved patient safety and neonatal outcomes (6).

Although both high-fidelity and low-fidelity simulation models are widely used in neonatal resuscitation training, current evidence suggests that high-fidelity simulators may offer specific advantages, especially in the acquisition of both technical and non-technical competencies. High-fidelity simulators are engineered to replicate real-life neonatal emergencies through physiological feedback, realistic scenario progression, and advanced monitoring interfaces—factors that enhance learner immersion and support more accurate clinical decision-making (17). However, studies also report that when educational objectives are clearly defined and instructional quality is high, low-fidelity simulation can yield comparable benefits. For example, Nimbalkar et al. found that while HF simulation improved knowledge scores in undergraduate students, skill performance outcomes did not differ significantly from those of the low-fidelity group (50). Similarly, Finan et al. showed that although both simulator types triggered stress responses in neonatology fellows, neither was clearly superior in terms of actual skill execution under stress (51). These findings highlight that simulation fidelity, while impactful, is only one of many variables influencing learning effectiveness.

The outcomes of our own study are consistent with these observations. In a prospective pre-post design, we found that participants who underwent high-fidelity neonatal resuscitation simulation exhibited significant improvements in both technical and non-technical skills. Notably, gains in leadership, teamwork, and task management mirrored those reported by Lee et al. (52), whose findings emphasized the added value of structured debriefing and reflective practice. Our data reinforce the role of simulation not only as a skills acquisition tool but also as a diagnostic instrument for identifying gaps in clinical judgment and team dynamics. Moreover, the potential of simulation-based IPE to foster collaboration in neonatal emergencies has been increasingly recognized (53). While emerging technologies such as virtual reality offer promising alternatives the current evidence on their comparative effectiveness in long-term skill retention and transfer to real-world settings remains inconclusive (54).

The clinical need that initially motivated the simulation-based intervention was further substantiated by participants' low scores in the first simulation session, particularly in clinical judgment domains as measured by the LCJR. These findings highlighted not only a gap in clinical decision-making under pressure but also reinforced the value of high-fidelity simulation as a diagnostic educational tool for identifying such deficits and guiding targeted improvements through structured observation and feedback.

In the initial simulation, participants also demonstrated suboptimal performance, in team coordination, as measured by the SITAT. Structured observational tools such as SITAT have demonstrated particular value in capturing individual-level performance within team-based learning environments. Daulton et al emphasized that using SITAT to assess individual students—rather than relying solely on aggregate team performance—enables educators to identify nuanced differences in communication, leadership, and collaborative behaviors that may otherwise go unnoticed in global assessments (55). Their findings suggest that objective assessment by trained observers adds critical depth to simulation-based evaluation, especially in interprofessional settings where team dynamics can mask individual variation.

Self-reported interprofessional competencies, as measured by the IPAS and TeamSTEPPS Teamwork Attitudes instruments, did not align with the observed deficiencies in clinical judgment and team coordination. This disconnect between perceived and actual performance has been consistently reported in the literature on interprofessional SBME. Yang et al. demonstrated that emergency medical technicians frequently rated their mechanical cardiopulmonary resuscitation skills more favorably than their objectively assessed performance during simulation, underscoring the limitations of self-assessment tools in high-stakes, procedural contexts (56). Similarly, Fenske et al. reported marked discrepancies between nurses' confidence in their clinical judgment and their actual performance, as evaluated through a standardized rubric during simulated care scenarios (57). Such discrepancies reveal a critical dimension of SBME: the limited capacity of learners to accurately self-appraise under cognitively demanding, emotionally charged conditions. In these contexts, reliance on self-assessment alone proves inadequate, as metacognitive processes may be compromised. Davis et al. systematically reviewed 17 studies comparing physician self-assessments with external evaluations and found that the majority demonstrated minimal or inverse relationships, with less competent individuals frequently overestimating their abilities (58). These findings reaffirm the limited validity of self-assessment and highlight the need for integrating structured external evaluation mechanisms into competency assessment frameworks. Further evidence by Sadosty et al. supports this conclusion. Their study showed that while high-performing emergency medicine residents were better at evaluating their own performance, video-assisted review did not significantly enhance the overall accuracy of self-assessment. This suggests that self-awareness may be inherently tied to baseline performance and cannot be improved solely through passive reflection (59). Externally rated assessments consistently provide a more accurate representation of learner competence compared to self- or peer-based ratings (60). In a study by Pini et al., participants tended to rate their teamwork performance higher than did external observers, illustrating the persistent presence of self-assessment bias in SBME (61). In our study, the application of SITAT yielded critical insights into individual learners' interprofessional behaviors—insights that would have otherwise been missed through self-report measures alone. All these findings support the efficacy of simulation-based IPE in enhancing not only clinical and behavioral competencies but also fostering greater self-awareness regarding interprofessional collaboration and communication.

This study offers several distinctive strengths. It is one of the few neonatal resuscitation education explicitly grounded in Kolb's ELT and supported by a robust assessment strategy. By integrating validated tools the study provided a triangulated understanding of learner progress across cognitive, behavioral, and affective domains. The use of high-fidelity simulation, combined with guided video debriefing and facilitated reflection, transformed clinical practice drills into meaningful learning opportunities. Debriefing, in particular, acted as a hinge in the education process, turning isolated events into cumulative, transformative learning—consistent with growing literature advocating for structured debriefing as a catalyst for behavioral change.

A unique strength of this study lies in its demonstration of real-world transferability. While causality cannot be conclusively determined, the trend strongly supports the educational relevance and potential clinical impact of SBME. Furthermore, existing meta-analyses affirm that simulation with deliberate practice, especially when longitudinally implemented, enhances not only skill retention but also clinical outcomes (9).

Nonetheless, the study also has limitations. The single-center design and modest sample size limit the generalizability of the findings. Additionally, the absence of a control group (e.g., a low-fidelity simulation arm) precludes direct comparison. The short timeframe between intervention and reassessment also limits insights into long-term behavior change and sustainability.

6. CONCLUSION

This study underscores the educational and clinical value of high-fidelity simulation in neonatal resuscitation training. By combining experiential learning, interprofessional collaboration, and structured debriefing, the intervention fostered meaningful improvements in both technical procedures and critical non-technical domains such as clinical judgment, teamwork, and leadership. These findings highlight the educational necessity of adopting triangulated assessment strategies that integrate self-perception, structured observational tools, and guided debriefing. Such multifaceted approaches not only offer a more valid representation of competence but also actively contribute to the learning process by fostering reflection and insight. High-fidelity simulation environments thus serve not only as platforms for procedural rehearsal, but also as mirrors that reveal gaps learners may not yet recognize—strengthening both clinical reasoning and professional identity formation. The observed post-intervention clinical improvements in hypothermia and pneumothorax rates further suggest that such educational strategies hold promise not only in classrooms and simulation centers, but also at the bedside. As healthcare systems increasingly prioritize team-based care in complex, high-risk settings, simulation-based IPE stands as a compelling, evidence-based tool for preparing future clinicians. Future research should aim to explore the longitudinal sustainability of these gains, compare fidelity levels, and examine scalability across diverse institutional contexts.

7. REFERENCES

1. Weiner GM, Zaichkin J, Kattwinkel J. Resuscitation and stabilization of babies born extremely preterm. In: Weiner GM, Zaichkin J, Kattwinkel J, eds. *Neonatal Resuscitation Textbook.* 8th ed. Itasca, IL: American Academy of Pediatrics; 2021:213-228.
2. Patel A, Khatib MN, Kurhe K, Bhargava S, Bang A. Impact of neonatal resuscitation trainings on neonatal and perinatal mortality: a systematic review and meta-analysis. BMJ Paediatr Open 2017; 1(1):e000183.
3. Zaichkin J, Kamath-Rayne BD, Weiner G. The NRP 8th Edition: Innovation in Education. Adv Neonatal Care 2021; 21(4):322-332.
4. Sihota D, Lee Him R, Dominguez G, Harrison L, Vaivada T, Bhutta ZA. Effectiveness of Neonatal Resuscitation Training Programs, Implementation, and Scale-Up in Low- and Middle-Income Countries. Neonatology 2025; 122(Suppl 1):52-83.
5. Dempsey E, Pammi M, Ryan AC, Barrington KJ. Standardised formal resuscitation training programmes for reducing mortality and morbidity in newborn infants. Cochrane Database Syst Rev 2015; 2015(9):CD009106.
6. McGaghie WC, Issenberg SB, Petrusa ER, Scalese RJ. Revisiting 'A critical review of simulation-based medical education research: 2003-2009'. Med Educ 2016; 50(10):986-91.
7. Soni P, Nagalli MM. Enhancing neonatal resuscitation outcomes: bridging theory and practice. Eur J Pediatr 2025; 184(4):258.
8. Kamath-Rayne BD, Tabangin ME, Taylor RG, Geis GL. Retention of Basic Neonatal Resuscitation Skills and Bag-Mask Ventilation in Pediatric Residents Using Just-in-Place Simulation of Varying Frequency and Intensity: A Pilot Randomized Controlled Study. Hosp Pediatr 2019; 9(9):681-689.
9. McGaghie WC, Issenberg SB, Cohen ER, Barsuk JH, Wayne DB. Does simulation-based medical education with deliberate practice yield better results than traditional clinical education? A meta-analytic comparative review of the evidence. Acad Med 2011; 86(6):706-11.
10. Wayne DB, Butter J, Siddall VJ, Fudala MJ, Wade LD, Feinglass J, McGaghie WC. Mastery learning of advanced cardiac life support skills by internal medicine residents using simulation technology and deliberate practice. J Gen Intern Med 2006; 21(3):251-6.
11. Kim E, Song S, Kim S. Development of pediatric simulation-based education - a systematic review. BMC Nurs 2023; 22(1):291.
12. Cook DA, Hatala R, Brydges R, Zendejas B, Szostek JH, Wang AT, Erwin PJ, Hamstra SJ. Technology-enhanced simulation for health professions education: a systematic review and meta-analysis. JAMA 2011; 306(9):978-88.
13. Aydin MY, Curran V, White S, Peña-Castillo L, Meruvia-Pastor O. A comparative study of the use of extended reality simulation in neonatal resuscitation training. Adv Simul (Lond) 2025;10(1):15.

14. Lee J, Lee JH. Effects of simulation-based education for neonatal resuscitation on medical students' technical and non-technical skills. PLoS One 2022; 17(12):e0278575.
15. Kolb A, Kolb D. In: The SAGE Handbook of Management Learning, Education and Development. Armstrong SJ, Fukami CV, editors. Thousand Oaks: SAGE Publications; 2009. Experiential learning theory: a dynamic, holistic approach to management learning, education and development; pp. 42–68.
16. Kolb DA. Experiential learning: experience as the source of learning and development. 2nd ed. New Jersey: Pearson FT Press; 2015.
17. Huang J, Tang Y, Tang J, Shi J, Wang H, Xiong T, Xia B, Zhang L, Qu Y, Mu D. Educational efficacy of high-fidelity simulation in neonatal resuscitation training: a systematic review and meta-analysis. BMC Med Educ 2019; 19(1):323.
18. Issenberg SB, McGaghie WC, Petrusa ER, Lee Gordon D, Scalese RJ. Features and uses of high-fidelity medical simulations that lead to effective learning: a BEME systematic review. Med Teach 2005; 27(1):10-28.
19. Lengua Hinojosa P, Eifinger F, Wagner M, Herrmann J, Wolf M, Ebenebe CU, von der Wense A, Jung P, Mai A, Bohnhorst B, Longardt AC, Hillebrand G, Schmidtke S, Guthmann F, Aderhold M, Schwake I, Sprinz M, Singer D, Deindl P. Anatomic accuracy, physiologic characteristics, and fidelity of very low birth weight infant airway simulators. Pediatr Res 2022; 92(3):783-790.
20. Lewis R, Strachan A, Smith MM. Is high fidelity simulation the most effective method for the development of non-technical skills in nursing? A review of the current evidence. Open Nurs J 2012; 6:82-9.
21. Woda A, Costello A, Pena S, Baeza KR, Dreifuerst KT. A Process for Successfully Integrating Weekly Simulation Into the Prelicensure Nursing Curriculum. Nurs Educ Perspect 2025. doi: 10.1097/01.NEP.0000000000001420 (Online ahead of print).
22. Fanning RM, Gaba DM. The role of debriefing in simulation-based learning. Simul Healthc 2007; 2(2):115-25.
23. Rudolph JW, Simon R, Dufresne RL, Raemer DB. There's no such thing as "nonjudgmental" debriefing: a theory and method for debriefing with good judgment. Simul Healthc 2006; 1(1):49-55.
24. Guo L, Sather NK, Khan N, Zinns LE, Havalad V, Brennan G. National Survey of Neonatal-Perinatal Medicine Fellows on Postresuscitation Debriefing. Am J Perinatol 2025 May 12. doi: 10.1055/a-2591-8200. (Epub ahead of print)
25. Park N, Rowe M, Gray MM, Ficco E, Sawyer T, Umoren RA. 360° Camera Versus Two-View Standard Video Camera Capture of Neonatal Resuscitation: Optimizing Recording for Observation of Resuscitation Steps. Cureus 2025; 17(4):e81625.
26. Olson L, Bui XA, Mpamize A, Vu H, Nankunda J, Truong TT, Byamugisha J, Dempsey T, Lubulwa C, Winroth A, Helldén D; NeoSupra & NeoSpirit Teams; Nguyen AD, Alfvén T, Pejovic N, Myrnerts Höök S. Neonatal resuscitation monitoring: A low-cost video recording

setup for quality improvement in the delivery room at the resuscitation table. Front Pediatr 2022; 10:952489.

27. Ades A, Lee HC. Update on simulation for the Neonatal Resuscitation Program. Semin Perinatol 2016; 40(7):447-454.
28. Croskerry P. A universal model of diagnostic reasoning. Acad Med 2009; 84(8):1022-8.
29. Norman GR, Eva KW. Diagnostic error and clinical reasoning. Med Educ 2010; 44(1):94-100.
30. Salas E, Rosen MA, Burke CS, Nicholson D, Howse WR. Markers for enhancing team cognition in complex environments: the power of team performance diagnosis. Aviat Space Environ Med 2007; 78(5 Suppl):B77-85.
31. Frenk J, Chen L, Bhutta ZA, Cohen J, Crisp N, Evans T, Fineberg H, Garcia P, Ke Y, Kelley P, Kistnasamy B, Meleis A, Naylor D, Pablos-Mendez A, Reddy S, Scrimshaw S, Sepulveda J, Serwadda D, Zurayk H. Health professionals for a new century: transforming education to strengthen health systems in an interdependent world. Lancet 2010; 376(9756):1923-58.
32. Thoma B, Karwowska A, Samson L, Labine N, Waters H, Giuliani M, Chan TM, Atkinson A, Constantin E, Hall AK, Gomez-Garibello C, Fowler N, Tourian L, Frank J, Anderson R, Snell L, Van Melle E. Emerging concepts in the CanMEDS physician competency framework. Can Med Educ J 2023; 14(1):4-12.
33. Ashour HMAA, Abou Hashish EAO, Awad NHA. From awareness to action: investigating the impact of big-five teamwork model awareness on rationing of nursing care and patient-centered care. BMC Nurs 2025; 24(1):133.
34. Lingard L, Espin S, Whyte S, Regehr G, Baker GR, Reznick R, Bohnen J, Orser B, Doran D, Grober E. Communication failures in the operating room: an observational classification of recurrent types and effects. Qual Saf Health Care 2004;13(5):330-4.
35. Reeves S, Perrier L, Goldman J, Freeth D, Zwarenstein M. Interprofessional education: effects on professional practice and healthcare outcomes (update). Cochrane Database Syst Rev 2013; 2013(3):CD002213.
36. Gilbert JH, Yan J, Hoffman SJ. A WHO report: framework for action on interprofessional education and collaborative practice. J Allied Health 2010; 39 Suppl 1:196-7.
37. He Q, Dizon JIWT, Tipoe GL, Shen X, Ganotice FA. Exploring pathways to develop interprofessional identity: a moderated mediation study. Adv Health Sci Educ Theory Pract 2025. doi: 10.1007/s10459-025-10441-8. (Epub ahead of print)
38. Sawyer T, Umoren RA, Gray MM. Neonatal resuscitation: advances in training and practice. Adv Med Educ Pract 2016; 8:11-19.
39. Mileder LP, Urlesberger B, Szyld EG, Roehr CC, Schmölzer GM. Simulation-based neonatal and infant resuscitation teaching: a systematic review of randomized controlled trials. Klin Padiatr 2014; 226(5):259-67.
40. Felton A, Cheshire K. Using Simulation-Based Training to Improve Neonatal Resuscitation Clinical Competency, Confidence, and Comfort Level of NICU Caregivers. J Contin Educ Nurs 2024; 55(4):175-180.

41. Chae S, Shon S. Effectiveness of simulation-based interprofessional education on teamwork and communication skills in neonatal resuscitation. BMC Med Educ 2024; 24(1):602.
42. Kolb DA. Experiential learning: Experience as the source of learning and development. Englewood Cliffs, NJ: Prentice-Hall; 1984.
43. Sezer E, Çelik HY, Karabacak Ü, Lasater K. Lasater clinical judgment rubric in nursing education: a Turkish validity and reliability study. *BMC Nurs* 2025; 24(1):70.
44. Baser Kolcu MI, Karabilgin Ozturkcu OS, Kolcu G. Turkish adaptation of the interprofessional attitude scale (IPAS). *J Interprof Care* 2022; 36(5):684-690.
45. Yardımcı F, Başbakkal Z, Beytut D, Muslu G, Ersun A. Ekip çalışması ve tutumları ölçeğinin geçerlilik ve güvenilirlik çalışması. *Anadolu Pskiyatri Dergisi* 2012; 13:131-137.
46. Kolcu MİB, Kolcu G. Turkish adapration of "Simulation-Based interprofessional Teamwork Assessment Tool": SITAT-TR. *BMC Med Educ* 2025; 25(1):14.
47. Grant J. Learning needs assessment: assessing the need. BMJ 2002; 324(7330):156-9.
48. Zeng Q, Wang K, Liu WX, Zeng JZ, Li XL, Zhang QF, Ren SQ, Xu WM. Efficacy of high-fidelity simulation in advanced life support training: a systematic review and meta-analysis of randomized controlled trials. BMC Med Edu. 2023; 23(1):664.
49. Makary MA, Daniel M. Medical error-the third leading cause of death in the US. BMJ 2016; 353:i2139.
50. Curran V, Fleet L, White S, Bessell C, Deshpandey A, Drover A, Hayward M, Valcour J. A randomized controlled study of manikin simulator fidelity on neonatal resuscitation program learning outcomes. Adv Health Sci Educ Theory Pract 2015; 20(1):205-18.
51. Finan E, Bismilla Z, Whyte HE, Leblanc V, McNamara PJ. High-fidelity simulator technology may not be superior to traditional low-fidelity equipment for neonatal resuscitation training. J Perinatol 2012; 32(4):287-92.
52. Lee J, Lee JH. Effects of simulation-based education for neonatal resuscitation on medical students’ technical and non-technical skills. *PLoS One* 2022; 17(12):e0278575.
53. Chae S, Shon S. Effectiveness of simulation-based interprofessional education on teamwork and communication skills in neonatal resuscitation. *BMC Med Educ* 2024; 24:602.
54. McAdams RM, Trinh G. Using virtual reality–based simulation in Neonatal Resuscitation Program training. *NeoReviews* 2024; 25(9):e567–e576.
55. Daulton BJ, Romito L, Weber Z, Burba J, Ahmed RA. Application of a Simulation-Based Interprofessional Teamwork Assessment Tool (SITAT) to Individual Student Performance in a Team-Based Simulation. J Med Educ Curric Dev 2021; 8:23821205211042436.
56. Yang WS, Yen P, Wang YC, Chien YC, Chie WC, Ma MH, Chiang WC. Objective performance of emergency medical technicians in the use of mechanical cardiopulmonary resuscitation compared with subjective self-evaluation: a cross-sectional, simulation-based study. BMJ Open 2022; 12(6):e062908.

57. Fenske CL, Harris MA, Aebersold ML, Hartman LS. Perception versus reality: a comparative study of the clinical judgment skills of nurses during a simulated activity. J Contin Educ Nurs 2013; 44(9):399-405.
58. Davis DA, Mazmanian PE, Fordis M, Van Harrison R, Thorpe KE, Perrier L. Accuracy of physician self-assessment compared with observed measures of competence: a systematic review. JAMA 2006; 296(9):1094-102.
59. Sadosty AT, Bellolio MF, Laack TA, Luke A, Weaver A, Goyal DG. Simulation-based emergency medicine resident self-assessment. J Emerg Med 2011; 41(6):679-85.
60. Brosco JP, Pulgaron E, Vanderbilt DL, Macias M, Mathew MS, Blum NJ. The Interprofessional/Family-Centered-Care Observation Rubric (I-FOR): Results of a Multicenter Study of a New Measure of Educational Outcomes. Matern Child Health J 2018; 22(10):1384-1392.
61. Innocenti F, Angeli E, Alesi A, Scorpiniti M, Pini R. Teamwork evaluation during emergency medicine residents' high-fidelity simulation. BMJ Simul Technol Enhanc Learn 2016; 2(1):12-18.

8. APPENDIX

APPENDIX 1

APPENDIX 2

“Golden Hour” Senaryo Akış

Katılımcılara Verilecek Bilgi:

- Anne: 29 yaşında, G1P1, gebelik haftası $24^{3/7}$. Preterm eylem nedeniyle hastaneye kabul edilmiş. Anneye antenatal steroidler uygulanmış.
- Doğum: Sezaryen planlanıyor. Doğum odasında prematüre bebeğin stabilizasyonu için ekip hazır bulunmalı.
- **Senaryonun Başlangıcı:** Anne ameliyathanede, bebeğin doğumu bekleniyor. Simülasyon, bebeğin doğumuyla başlar.

Paul Bebek: Doğar, spontan solunum yok, kalp hızı 70/dk, morarması mevcut,

Senaryo Akışı

1. Hazırlık Aşaması (2-3 Dakika):

- Ekip, doğum odasını hazırlar (radyan ısıtıcı, polietilen örtü, nabız oksimetresi, entübasyon seti, T-parça canlandırıcı, umblikal kateter seti vb.).
- Rollerin dağılımı yapılır (ekip lideri, ventilasyon sorumlusu, damar yolu açan kişi).

2. Bebeğin Doğumu (Simülasyon Başlangıcı):

- Bebek teslim alınır, kurulanmadan doğrudan polietilen örtüye sarılır ve radyan ısıtıcı altına yerleştirilir.
- Nabız oksimetresi ve EKG probları bağlanır.

3. İlk Müdahale

1. Doğar doğmaz, T-Parça Canlandırıcı ile Pozitif Basınçlı Ventilasyon uygulanır.
    - Oksijen: %21-30 başlangıç.
    - Basınç: PIP 20-25 cmH2O, PEEP 5 cmH2O.
2. İlk 30 saniyede kalp hızı ve solunum durumu değerlendirilir.

<u>30 Saniye Sonunda:</u>

- Kalp hızı: 40/dk.
- Durum: Spontan solunum yok, bebek hipoaktif.

Beklenen Müdahale:

1. Entübasyon kararı alınır ve ekip entübasyon hazırlığı yapar.

APPENDIX 2 continue

2. Entübasyon sonrasında T-parça canlandırıcı ile ventilasyon devam eder (%30 oksijenle).

<u>1 dakika Sonunda:</u>

- Kalp hızı: 40/dk.
- Durum: Spontan solunum yok, bebek hipoaktif.

Beklenen Müdahale:

- Göğüs kompresyonları başlatılır (3:1 oranında).

<u>1 dakika Sonunda:</u>

- Kalp hızı: 40/dk.
- Durum: Spontan solunum yok, bebek hipoaktif.

Beklenen Müdahale:

- PBV devam ve göğüs kompresyonu devam
- İnvaziv damar yolu (umblikal kateter) açılarak epinefrin uygulanır.

4. Stabilizasyon (5-7 Dakika):

- Kalp hızı 100/dk üzerine çıkar, ancak bebek hâlâ ventilatöre bağımlı.
- Nabız oksimetresi ve arteriyel kan gazı ile sürekli izleme sağlanır.

APPENDIX 3

“Golden Hour” Stabilizasyonu-Değerlendirme Formu

Bölüm 1: Hazırlık Aşaması

1. Doğum odası ekipmanlarının uygun şekilde hazırlanması:
   - ☐ Radyan ısıtıcı önceden açılmış.
   - ☐ Polietilen örtü hazır.
   - ☐ Nabız oksimetresi hazır.
   - ☐ T-parça canlandırıcı test edilmiş.
   - ☐ Entübasyon ekipmanı hazır.

2. Ekip rolleri açık şekilde tanımlandı:
   - ☐ Ekip lideri belirlendi.
   - ☐ Görev dağılımı (ventilasyon, damar yolu açma vb.) yapıldı.
   - ☐ Ekibe yüksek riskli doğum hakkında bilgi verildi.

Bölüm 2: İlk Müdahaleler

3. Bebeğin termal korunması:
   - ☐ Bebek polietilen örtüye sarıldı.
   - ☐ Bebek radyan ısıtıcı altına yerleştirildi.

4. Hava yolu ve solunum yönetimi:
   - ☐ T-parça canlandırıcı ile uygun pozitif basınçlı ventilasyon (PPV) başlatıldı.
     PIP 20-25 cmH2O, PEEP 5 cmH2O.
     %21 oksijen ile başlandı.
   - ☐ Kalp hızı ve solunum 30 saniyede değerlendirildi.
   - ☐ Gerekirse entübasyon kararı alındı ve başarıyla uygulandı.

5. Nabız oksimetresi ve monitörizasyon:
   - ☐ Sağ el veya sağ bileğe nabız oksimetresi yerleştirildi.
   - ☐ Kalp hızı ve oksijen satürasyonu sürekli takip edildi.

APPENDIX 3 continue

Bölüm 3: Kalp Hızı 40/dk Durumu

6. Kalp hızı <60/dk olduğunda:
   - ☐ Göğüs kompresyonları doğru oranda başlatıldı (3:1).
   - ☐ Kompresyon ve ventilasyon kombinasyonu doğru şekilde yapıldı.
   - ☐ Kalp hızı düzenli olarak kontrol edildi.

7. İlaç ve damar yolu yönetimi:
   - ☐ Umblikal kateter başarılı şekilde yerleştirildi.
   - ☐ İlk epinefrin dozu (0.01-0.03 mg/kg) uygun şekilde uygulandı.
   - ☐ Sıvı resüsitasyonu gerektiğinde 10 mL/kg olarak başlatıldı.

Bölüm 4: Ekip Çalışması ve İletişim

8. Kapalı döngü iletişim uygulandı:
   - ☐ Ekip lideri görevleri net bir şekilde verdi.
   - ☐ Ekip üyeleri görevleri tekrar ederek onayladı.
9. Ekip liderliği:
   - ☐ Ekip lideri net, sakin ve yönlendirici bir iletişim kurdu.
   - ☐ Müdahaleleri öncelik sırasına göre yönlendirdi.
10. Ekip iş birliği:
    - ☐ Tüm ekip üyeleri uyum içinde çalıştı.
    - ☐ Gerektiğinde diğer ekip üyelerine destek sağlandı.

Bölüm 5: Genel Değerlendirme

11. Zaman yönetimi:

    ☐ Müdahaleler zamanında gerçekleştirildi (örneğin, ventilasyon 30 saniye içinde başladı).

12. Teknik beceriler:

    ☐ Müdahaleler doğru teknikle uygulandı (örneğin, entübasyon ve göğüs kompresyonları).

13. Bebek durumu:

APPENDIX 3 continue

- [ ] Simülasyon sonunda kalp hızı >100/dk ve stabil.

Puanlama ve Değerlendirme

- Toplam Puan:
  Her bir madde 1 puan olarak değerlendirilir.
  - 0-15: Geliştirilmesi gereken önemli alanlar var.
  - 15-20: Tatmin edici performans, bazı iyileştirme alanları.
  - 20-25: İyi performans, küçük eksiklikler var.

25-30: Mükemmel performans

APPENDIX 4

Lasater Clinical Judgment Rubric (LCJR)

1 = Beginning (Başlangıç)   2 = Developing (Gelişmekte)   3 = Accomplished (Başarılı)   4 = Exemplary (Mükemmel)

Değerlendirilen Alan	Puan (1-4)
Odaklanılması gereken hasta belirtilerini tanıma (Noticing)	
Hastadan gelen verileri toplama (Noticing)	
Önemli klinik ipuçlarını ayırt etme (Noticing)	
Verileri analiz etme ve öncelikleri belirleme (Interpreting)	
Klinik anlamlandırma yapma (Interpreting)	
Klinik kararlar verme (Interpreting)	
Duruma uygun bakım planlama (Responding)	
Zamanında ve etkili müdahale yapma (Responding)	
Hasta sonuçlarını değerlendirme (Reflecting)	
Kendi uygulamalarını analiz etme (Reflecting)	
Hatalardan öğrenme ve gelişim sağlama (Reflecting)	

Toplam Puan: ___________ / 44

APPENDIX 5

Interprofessional Attitude Scale (IPAS):

Lütfen aşağıdaki ifadeleri dikkatlice okuyun ve her birine ne kadar katıldığınızı belirtin. Her bir ifadeyi 1 (Kesinlikle Katılmıyorum) ile 5 (Kesinlikle Katılıyorum) arasında puanlayın.

Bölüm 1: Takım Çalışması ve Roller

1. Farklı mesleklerden profesyonellerin bir ekip olarak çalışması, hasta bakımını iyileştirir.
   [ ] 1 [ ] 2 [ ] 3 [ ] 4 [ ] 5
2. Takım üyelerinin görevlerini ve sorumluluklarını anlaması, ekip çalışmasının başarısı için gereklidir.
   [ ] 1 [ ] 2 [ ] 3 [ ] 4 [ ] 5
3. Ekip çalışmasında, her meslek grubu eşit derecede önemlidir.
   [ ] 1 [ ] 2 [ ] 3 [ ] 4 [ ] 5
4. Ekip üyeleri arasındaki açık iletişim, ekip çalışmasını güçlendirir.
   [ ] 1 [ ] 2 [ ] 3 [ ] 4 [ ] 5
5. Farklı disiplinlerden gelen profesyonellerle çalışmak, daha iyi klinik kararlar alınmasını sağlar.
   [ ] 1 [ ] 2 [ ] 3 [ ] 4 [ ] 5

Bölüm 2: Hasta Odaklı Bakım

6. Ekip çalışması, hasta güvenliğini artırır.
   [ ] 1 [ ] 2 [ ] 3 [ ] 4 [ ] 5
7. Farklı disiplinlerin katkısı, hasta ihtiyaçlarını daha iyi karşılamaya yardımcı olur.
   [ ] 1 [ ] 2 [ ] 3 [ ] 4 [ ] 5
8. Hasta odaklı bakım, ekip çalışmasının birincil hedefidir.
   [ ] 1 [ ] 2 [ ] 3 [ ] 4 [ ] 5
9. Ekip üyelerinin bir arada çalışması, hastaların bakım sürecine olumlu katkıda bulunur.
   [ ] 1 [ ] 2 [ ] 3 [ ] 4 [ ] 5
10. Hasta bakımında farklı disiplinlerin perspektifleri birleştirilmelidir.
    [ ] 1 [ ] 2 [ ] 3 [ ] 4 [ ] 5

APPENDIX 5 continue

Bölüm 3: İletişim ve İş Birliği

11. Ekip içindeki iletişim, hasta memnuniyetini artırır.
    [ ] 1 [ ] 2 [ ] 3 [ ] 4 [ ] 5
12. Kapalı döngü iletişim, ekip içindeki yanlış anlamaları önler.
    [ ] 1 [ ] 2 [ ] 3 [ ] 4 [ ] 5
13. Etkili iletişim, ekip üyelerinin bir arada uyum içinde çalışmasını sağlar.
    [ ] 1 [ ] 2 [ ] 3 [ ] 4 [ ] 5
14. Ekip lideri, etkili iletişim ve iş birliğini desteklemelidir.
    [ ] 1 [ ] 2 [ ] 3 [ ] 4 [ ] 5
15. Farklı mesleklerden gelen ekip üyeleri arasında açık iletişim, hasta bakımını geliştirir.
    [ ] 1 [ ] 2 [ ] 3 [ ] 4 [ ] 5

Bölüm 4: Saygı ve Empati

16. Farklı mesleklerden gelen profesyonellerin bilgisine ve deneyimine saygı gösterilmelidir.
    [ ] 1 [ ] 2 [ ] 3 [ ] 4 [ ] 5
17. Ekip üyeleri arasındaki empati, ekip çalışmasını güçlendirir.
    [ ] 1 [ ] 2 [ ] 3 [ ] 4 [ ] 5
18. Her meslek grubu, hasta bakımına eşit derecede katkıda bulunur.
    [ ] 1 [ ] 2 [ ] 3 [ ] 4 [ ] 5
19. Ekip üyeleri, diğer meslek gruplarının perspektiflerine açık olmalıdır.
    [ ] 1 [ ] 2 [ ] 3 [ ] 4 [ ] 5
20. Karşılıklı saygı, interdisipliner ekiplerin başarısının temelidir.
    [ ] 1 [ ] 2 [ ] 3 [ ] 4 [ ] 5

APPENDIX 6

Ekip Çalışması Tutumları Ölçeği

Aşağıdaki ifadeleri dikkatlice okuyunuz. Kendi düşüncenize en uygun seçeneği işaretleyiniz.
1 = Kesinlikle Katılmıyorum   2 = Katılmıyorum   3 = Kararsızım   4 = Katılıyorum
5 = Kesinlikle Katılıyorum

Ekip Yapısı

Ekip üyelerinin rolleri açıkça tanımlanmalıdır.	[ ] 1 [ ] 2 [ ] 3 [ ] 4 [ ] 5
Ekip üyeleri görevlerini bilmelidir.	[ ] 1 [ ] 2 [ ] 3 [ ] 4 [ ] 5
Ekip içindeki herkesin görevi önemlidir.	[ ] 1 [ ] 2 [ ] 3 [ ] 4 [ ] 5
Ekip yapısının iyi tanımlanması hasta güvenliğini artırır.	[ ] 1 [ ] 2 [ ] 3 [ ] 4 [ ] 5
İyi yapılandırılmış ekiplerde iletişim daha etkilidir.	[ ] 1 [ ] 2 [ ] 3 [ ] 4 [ ] 5
Ekip üyeleri birbirlerinin rollerini bilmeli ve saygı göstermelidir.	[ ] 1 [ ] 2 [ ] 3 [ ] 4 [ ] 5

Liderlik

Ekip lideri ekip üyelerinin katılımını teşvik etmelidir.	[ ] 1 [ ] 2 [ ] 3 [ ] 4 [ ] 5
Ekip lideri müdahalelerde yön gösterici olmalıdır.	[ ] 1 [ ] 2 [ ] 3 [ ] 4 [ ] 5
Ekip lideri ekip üyeleri arasında iş birliğini desteklemelidir.	[ ] 1 [ ] 2 [ ] 3 [ ] 4 [ ] 5
Etkili bir lider ekip performansını artırır.	[ ] 1 [ ] 2 [ ] 3 [ ] 4 [ ] 5
Ekip liderinin karar verme sürecinde açık olması önemlidir.	[ ] 1 [ ] 2 [ ] 3 [ ] 4 [ ] 5
Ekip lideri kriz anlarında ekibe rehberlik etmelidir.	[ ] 1 [ ] 2 [ ] 3 [ ] 4 [ ] 5

APPENDIX 6 continue

Durum İzleme

Tüm ekip üyeleri hasta durumunu sürekli değerlendirmelidir.	[ ] 1 [ ] 2 [ ] 3 [ ] 4 [ ] 5
Klinik değişiklikleri fark etmek ekip performansını artırır.	[ ] 1 [ ] 2 [ ] 3 [ ] 4 [ ] 5
Durum izleme sadece liderin değil, tüm ekibin sorumluluğudur.	[ ] 1 [ ] 2 [ ] 3 [ ] 4 [ ] 5
Ekibin hastanın durumunu izlemesi erken müdahaleyi sağlar.	[ ] 1 [ ] 2 [ ] 3 [ ] 4 [ ] 5
Ekip üyeleri birbirlerinin iş yükünü izleyip destek olmalıdır.	[ ] 1 [ ] 2 [ ] 3 [ ] 4 [ ] 5
Ekip üyeleri kritik değişiklikleri hemen bildirmelidir.	[ ] 1 [ ] 2 [ ] 3 [ ] 4 [ ] 5

Karşılıklı Destek

Ekip üyeleri gerektiğinde birbirlerine yardım etmelidir.	[ ] 1 [ ] 2 [ ] 3 [ ] 4 [ ] 5
Ekip içinde yardım istemek zayıflık değildir.	[ ] 1 [ ] 2 [ ] 3 [ ] 4 [ ] 5
Ekip üyeleri iş yükü dengesini sağlamak için birlikte çalışmalıdır.	[ ] 1 [ ] 2 [ ] 3 [ ] 4 [ ] 5
Karşılıklı destek ekip başarısını artırır.	[ ] 1 [ ] 2 [ ] 3 [ ] 4 [ ] 5
Ekip içinde güven ortamı karşılıklı destekle güçlenir.	[ ] 1 [ ] 2 [ ] 3 [ ] 4 [ ] 5
Ekibin başarısı tüm üyelerin katkısıyla mümkündür.	[ ] 1 [ ] 2 [ ] 3 [ ] 4 [ ] 5

İletişim

Ekip içinde açık ve etkili iletişim kurulmalıdır.	[ ] 1 [ ] 2 [ ] 3 [ ] 4 [ ] 5
Bilgilerin zamanında ve doğru şekilde aktarılması hayati önemdedir.	[ ] 1 [ ] 2 [ ] 3 [ ] 4 [ ] 5
Kapalı döngü iletişim hasta güvenliğini artırır.	[ ] 1 [ ] 2 [ ] 3 [ ] 4 [ ] 5
Hataların önlenmesinde etkin iletişim kritik rol oynar.	[ ] 1 [ ] 2 [ ] 3 [ ] 4 [ ] 5
Ekip üyeleri iletişimde net ve anlaşılır olmalıdır.	[ ] 1 [ ] 2 [ ] 3 [ ] 4 [ ] 5
Tüm ekip üyeleri iletişime aktif olarak katılmalıdır.	[ ] 1 [ ] 2 [ ] 3 [ ] 4 [ ] 5

APPENDIX 7

Simülasyona Dayalı Meslekleraraası Takım Çalışmalarında Takım Üyesini Değerlendirme Aracı

Puanlayan:………………………………..

Puanlanan:……………………………….

İfade	**Gözlenmedi/ değerlendirilemedi**	**1 puan**	**2 puan**	**3 puan**	**4 puan**
1.Gerektiğinde yardım ihtiyacını bildirdi.	Gözlenmedi/ değerlendirilemedi	Yardım ihtiyacını ifade etmedi.	Yardım ihtiyacını bazen ifade etti.	Yardım ihtiyacını çoğu zaman ifade etti.	Yardım ihtiyacını her zaman ifade etti.
2.Sorumluluğu üzerine aldı.	Gözlenmedi/ değerlendirilemedi	İş birliği gerektiren hedeflerin başarısızlığından dolayı sorumluluğu üzerine almadı	İş birliği gerektiren hedeflerin başarısızlığından dolayı sorumluluğu bazen üzerine aldı	İş birliği gerektiren hedeflerin başarısızlığından dolayı sorumluluğu çoğu zaman üzerine aldı	İş birliği gerektiren hedeflerin başarısızlığından dolayı sorumluluğu her zaman üzerine aldı
3.Kendini gerçek veya rolüne uygun adıyla tanıttı	Gözlenmedi/ değerlendirilemedi	Kendini gerçek veya rolüne uygun adıyla tanıtmadı	Kendini gerçek veya rolüne uygun adıyla kısmen ve/veya anlaşılamayacak sesle tanıttı. Başlangıç yalnızca yönlendirmeyle gerçekleşti.	Kendini gerçek veya rolüne uygun adıyla eksiksiz ve anlaşılabilir sesle tanıttı. Başlangıç için yönlendirme gerekti.	Kendini gerçek veya rolüne uygun adıyla eksiksiz ve anlaşılabilir sesle tanıttı. Başlangıç yönlendirme olmadan gerçekleşti.
4. Takım rolleri tanımlanmıştı ve sürdürülmekteydi.	Gözlenmedi/ değerlendirilemedi	Takım rolleri baştan sona tanımsızdı.	Lider başlangıçta tanımlandı ancak sürdürülmedi. Bazı katılımcıların rolü tanımlanmamıştı. Rol değişiklikleri düzensiz ve belirsizdi.	Lider etkinliğin çoğu için tanımlandı ve sürdürüldü. Çoğu katılımcının rolü tanımlandı. Rol değişiklikleri düzensiz ve belirsizdi.	Lider ve katılımcı rolleri tanımlandı ve baştan sona sürdürüldü. Rol değişiklikleri organize ve netti.
5. Başlangıçta ve değişim meydana geldikçe zihinsel modeli takımla verimli ve özlü bir şekilde paylaştı.	Gözlenmedi/ değerlendirilemedi	İlk zihinsel modeli takımla paylaşmadı. Değişim meydana geldikçe modeli uyarlamadı.	İlk zihinsel modeli tam olarak paylaşmadı. Modeli değişiklik meydana geldikçe bazen uyarladı.	İlk zihinsel modeli kısaca paylaştı. Modeli değişiklik meydana geldikçe sıklıkla uyarladı.	İlk zihinsel modeli kısaca paylaştı. Değişim meydana geldikçe modeli tutarlı bir şekilde uyarladı.
6. Organize ve verimli bir problem çözme yaklaşımı gösterdi.	Gözlenmedi/ değerlendirilemedi	Problem çözme düzensiz ve verimsizdi.	Problem çözme yavaş ve parçalıydı.	Problem çözme organize ve eşzamanlıydı.	Problem çözme organizeydi, eşzamanlıydı ve alternatifleri dikkate aldı.
7. Hasta parametrelerini ve/veya klinik durumdaki değişiklikleri ifade etti.	Gözlenmedi/ değerlendirilemedi	Hasta parametrelerini ve/veya klinik değişikliği asla ifade etmedi.	Bazı hasta parametrelerini ve/veya klinik değişikliği ifade etti.	Bazı parametreleri ve klinik değişiklikleri sıklıkla iletti.	Çoğu parametreyi ve klinik değişikliği tutarlı bir şekilde iletti.
8. Başkalarından tavsiye ve uzmanlık bilgisi istedi.	Gözlenmedi/ değerlendirilemedi	Başkalarından tavsiye ve uzmanlık istemedi.	Başkalarından bazen katkı istedi.	Takım üyelerinden düzenli katkı istedi.	Birden fazla takım üyesinden proaktif

APPENDIX 7 continue

					olarak katkı istedi.
9. Takım üyeleri arasındaki tartışmaları etkili bir şekilde kolaylaştırdı.	Gözlenmedi/ değerlendirilemedi	Takım üyeleri arasında tartışmalara girmedi.	Takım üyeleri arasında tartışmalara bazen katıldı.	Takım üyeleri arasında tartışmalara düzenli katıldı.	Brifing, toplanma veya bilgi alma yoluyla takım üyeleri arasındaki tartışmaları proaktif olarak kolaylaştırdı.
10. Diğer takım üyeleriyle iş birliğine dayalı ilişki kurdu.	Gözlenmedi/ değerlendirilemedi	Diğer takım üyeleriyle iş birliğine dayalı ilişki kurmadı.	Diğer takım üyeleriyle bazen iş birliğine dayalı ilişki kurdu.	Diğer takım üyeleriyle sıklıkla iş birliğine dayalı ilişki kurdu.	Diğer takım üyeleriyle sürekli iş birliğine dayalı ilişki kurdu.
11. Emir tekrarı/ Kapalı döngü iletişimi ile aktif dinleme yapar*	Gözlenmedi/ değerlendirilemedi	Emir tekrarı/ kapalı döngü iletişimini kullanmadı	Emir tekrarı/ kapalı döngü iletişimini bazen kullandı.	Emir tekrarı/ kapalı döngü iletişimini sıklıkla kullandı.	Emir tekrarı/ kapalı döngü iletişimini sürekli kullandı.
12. Acil olaylarda uygun olduğunda rolleri değiştirmek için takım üyeleriyle birlikte çalıştı.	Gözlenmedi/ değerlendirilemedi	Takım üyeleriyle iş birliğine dayalı ilişkiler kurmadı.	Bazen takım üyeleriyle iş birliğine dayalı ilişkiler kurdu.	Sıklıkla takım üyeleriyle iş birliğine dayalı ilişkiler kurdu.	Sürekli takım üyeleriyle iş birliğine dayalı ilişkiler kurdu.
13. Bakım verirken hasta ve ailesi de dahil olmak üzere tüm takım üyelerinin ifade ettikleri ihtiyaçlarını saygıyla dinledi.	Gözlenmedi/ değerlendirilemedi	Hasta ve ailesi dahil takım üyelerinin ihtiyaçlarını dinlemedi	Hasta ve ailesi de dahil olmak üzere takım üyelerinin ifade edilen ihtiyaçlarını bazen dinledi.	Takım üyelerini sıklıkla aktif ve saygılı bir şekilde dinledi.	Takım üyelerini aktif ve saygılı bir şekilde sürekli olarak dinledi ve bakım kararlarının ortak bir şekilde anlaşılmasını sağladı.
14. Hasta ve ailesini düşünerek bakım sağladı.	Gözlenmedi/ değerlendirilemedi	Hasta/ailesi ile etkileşime girmedi.	İletişimin veya bakımın hasta/aile ihtiyaçlarına cevap vermediği birkaç örnek sergiledi	Tedavi planını hastaya/ailesine iletti ancak ihtiyaçlarına uygun şekilde yanıt veremedi.	Hasta ve ailesi için iletişim çoğunlukla uygundur.
15. Takım üyelerinin görüşlerine açıktı.	Gözlenmedi/ değerlendirilemedi	Takım üyelerinin görüşlerini kabul etmedi.	Takım üyelerinin bazılarının görüşlerini kabul etti ancak diğerlerini görmezden geldi.	Takım üyelerine saygıyla yanıt verdi ancak başkalarının görüşlerini istemedi.	Takım üyelerinin görüşlerini alır ve onlara saygıyla yanıt verdi.
16. Takım bilgilendirmesine katkıda bulundu.	Gözlenmedi/ değerlendirilemedi	Takımla bilgi paylaşmadı. Sorulduğunda katkı vermedi. Yönlendirmeye rağmen fikir vermekte gönüllü olmadı.	Takımla bilgileri tutarsız bir şekilde paylaştı. Sorulduğunda, ara sıra katkı verdi. Fikirleri istendiğinde bazen gönüllü olarak paylaştı.	Takımla sık sık bilgi paylaştı. Sorulduğunda katkı verdi. Katkı istendiğinde gönüllü olarak katkı verdi.	Takımla bilgileri tutarlı bir şekilde paylaştı. Sorulduğunda katkı verdi. Soru sorulmadan gönüllü olarak katkı verdi. İmkân verilirse geri bildirimde bulunabilecektir.
Puanlama:		**1 puan**	**2 puan**	**3 puan**	**4 puan**
Puan Hesaplama:	**Gözlenmeyen/değerlendirilemeyen önerme var ise;**	**Tümü gözlendi ise; Puan ortalaması: Toplam puan/16**			

APPENDIX 7 continue

	Puan Ortalaması=Toplam puan/16-Gözlenmeyen madde sayısı				
Değerlendirme		Acemi (Geliştirilmesi gereken)	Başlangıç düzeyi	Yetkin	Usta
		0-0,99	1-1,99	2-2,99	3-4

9. CURRICULUM VITAE