Clinical simulation training for the adequate management of obstetrics emergencies: A narrative review

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Abstract

Obstetric emergencies are critical situations that jeopardize the health of both the mother and the baby during pregnancy or childbirth. This study aimed to validate the effectiveness of clinical simulation training in managing these situations. We conducted a narrative review of studies published between 2008 and 2022, collected from databases including Scopus, Sciencedirect, PubMed, Spinger, Scielo, and Google Scholar. Data from studies that met our inclusion criteria were meticulously gathered and summarized. Our findings strongly emphasize that clinical simulation emerges as a highly effective tool in the training of healthcare professionals. This training translates into substantial improvements in various aspects, including performance, knowledge, confidence, satisfaction, attitudes, self-efficacy, teamwork abilities, and the skills necessary to confront critical obstetric situations such as postpartum hemorrhage, eclampsia, shoulder dystocia, maternal cardiac arrest, umbilical cord prolapse, and cesarean sections. Importantly, this training reduces the inherent risks associated with learning on real patients and aligns with the highest ethical standards. Additionally, our results underscore that interdisciplinary collaboration in the management of obstetric emergencies proves to be an effective strategy for providing comprehensive patient care. However, it is crucial to highlight that, in order to ensure patient safety and promote a teamwork approach, it is imperative for healthcare professionals to receive adequate training and be duly qualified. Although we acknowledge that implementing clinical simulation training can entail significant costs and require substantial resources, we firmly believe that this strategy continues to hold immeasurable value in the education of professionals in this field. Ultimately, we anticipate that future high-quality research will further fortify the evidence base regarding best practices in clinical simulation training for obstetric emergencies, thus contributing to enhanced patient outcomes and the overall quality of healthcare in this critical domain.

Main messages

- Obstetric emergencies can be life-threatening for both mother and newborn and need appropriate care.
- This work can guide educators and researchers who plan, develop, test, and/or implement clinical simulation training in managing obstetric emergencies and other settings.
- As a limitation, experimental studies may provide more relevant results for this study.

Introduction

According to the World Health Organization (WHO), in 2020, the annual maternal mortality rate was 287 000 patients, and the neonatal mortality rate was 2.4 million [1]. Therefore, improving maternal, fetal, and neonatal care during childbirth is a significant development goal for WHO [2]. Access to skilled delivery attendance and quality emergency obstetric care are key factors in improving maternal and perinatal mortality [3]. One of the WHO recommendations is to improve the management of obstetric emergencies through clinical simulation training [4]. This method constitutes a training technique for healthcare professionals aimed at achieving substantial understanding, improving, and spreading healthcare professionals' knowledge, skills, and attitudes [5].

Obstetrics constitutes a field of considerable risk in which emergencies can threaten the mother's and newborn's life [6]. Obstetric emergencies often involve sudden changes, and the professional team faces situations requiring high-pressure decision-making. Numerous studies have shown the effectiveness of simulation training in obstetrics to improve safety during delivery for both mothers and newborns [7].

According to the study by Michelet et al. (2019), simulation has been implemented to develop both technical and non-technical skills in specific obstetric emergencies, such as shoulder dystocia, postpartum hemorrhage, eclampsia, and umbilical cord prolapse [8]. Adequate management of these situations requires the collaboration of different disciplines and agile team coordination. Knowledge and skills in teamwork allow adapting to changes and learning from experiences [9]. Obstetric emergencies are often effectively managed by competent and timely multidisciplinary teams [6]. Strengthening collaboration and communication is crucial for quality care. However, despite professionals from different disciplines working together, they sometimes struggle to communicate effectively [10].

The safety of patients, professionals, and healthcare beneficiaries is fundamental. Consequently, fast-changing situations require highly competent professional teamwork. Poor management of obstetric emergencies is often linked to team competence, and their incompetence can result catastrophic [9,11].

Conventional clinical training in real-life situations has progressed to simulation training. Due to rapid advances in medical technology, applying newly acquired knowledge to real patients is unacceptable for ethical and legal reasons [12]. The idea of learning with real patients along with the possibility of making mistakes, is becoming less and less accepted [13].

Obstetric simulation is considered a novel field, although its use dates back to prehistoric times. Archaeological records reveal that the ancestors of the Mansai people in Siberia created birthing models with real measurements of women in leather, using them to facilitate the birth process [7]. In the 18th century, Madame du Coudray served as a royal midwife in France, using a life-size leather mannequin to instruct women, decreasing maternal and infant mortality [14].

Clinical simulation training in managing obstetric emergencies has significant benefits over conventional clinical training. This methodology allows healthcare professionals to practice real-life situations in controlled environments, reinforcing decision-making and technical skills [14].

Recent research supports that simulation training results in higher knowledge retention and confidence in obstetric emergencies than conventional clinical training. In addition, it provides a safe environment to make and learn from mistakes, which contributes to a steady improvement in clinical competence [15]. The combination of technical and non-technical aspects in simulation training can be crucial for effective and safe patient care [16]. Using clinical simulation as a tool for learning to manage obstetric emergencies represents an innovation that seeks to elevate the safety of patients, fetuses, and newborns [17]. Sarfati et al. [18] conducted a systematic review in MEDLINE/PubMed from 2000 to 2015, merging terms such as Patient Simulation, Medication Errors, and Simulation Healthcare; they concluded that clinical simulation is effective for training staff, both in standard procedures and in exceptional situations, by integrating human aspects and the iatrogenic risk of medical errors [18].

The clinical performance of obstetric care teams is linked to the quality of their teamwork skills rather than individual performance. Teams with satisfactory clinical performance detect emergencies early and maintain effective internal communication [19]. In the context of obstetric emergency management, interdisciplinary simulation training is effective in enhancing team development [6]. Interprofessional training seeks to engage diverse professionals in a learning exchange, fostering collaborative practice and improved healthcare [20]. Simulation training is valuable as it provides continuous and focused

practice opportunities, allowing healthcare professionals to acquire knowledge and skills while minimizing patient risk [19].

The present review aims to determine the effectiveness of clinical simulation training aimed at healthcare professionals in adequately managing obstetric emergencies. For this purpose, clinical simulation training is assumed to be effective for adequately managing obstetric emergencies.

Methods

This narrative literature review analyzes articles retrieved from the bibliographic databases Scopus, ScienceDirect, MEDLINE/PubMed, Springer, SciELO, and Google Scholar between 2008 and 2022. The search strategy included the following keywords "emergencies, obstetric", "clinical simulation training", "teamwork", and "efficacy". The following inclusion criteria selected studies:

1) Studies of observational, qualitative, quasi-experimental design, clinical trials.
2) Studies on training with clinical simulation for the management of obstetric emergencies.
3) Studies published in English or Spanish.
4) Healthcare professionals and students as the studied population.

Results and discussion

Clinical simulation has become a common component of healthcare professional training in many healthcare institutions. This study aimed to validate the efficacy of clinical simulation training to train healthcare professionals in the appropriate management of obstetric emergencies.

In this review, we define outcomes as any measurement reported to validate the effectiveness of healthcare professional simulation training for the appropriate management of obstetric emergencies (e.g., knowledge, confidence, and performance). Details on the methods used to measure outcomes and specific results for each of the included studies can be found in Table 1.

The clinical simulation training carried out in the selected articles reproduces some of the main obstetric emergencies [3,7,21,22,35,37]. They specifically address postpartum hemorrhage [3,8,23–25,29,36], eclampsia [3,26,27], shoulder dystocia [3,24,27–29,36], maternal cardiac arrest [30,31], umbilical cord prolapse [32] and cesarean section [33] in controlled environments, using high, medium and low-fidelity simulators.

Some authors who evaluated the outcomes of simulation training highlighted that the intervention improved performance [8,23,25–32,37], knowledge [3,7,21,22,25,30,33], confidence [21,24,30], satisfaction [22,33,34], attitudes [36] and self-efficacy [3]. In addition, simulation training had a positive impact on skills (both practical and communication) [7,33,35], self-competence, awareness [10], and teamwork [3,26].

Sami et al. [21], in a quasi-experimental study, demonstrated that simulation training enhances knowledge acquisition, retention, and confidence [21]. Also, in another quasi-experimental study, Osman et al. [22] demonstrated that this training method increases participants' knowledge, confidence, and satisfaction [22].

In this context, simulation is established as an essential element in the training of obstetric teams, improving their competence and ability to respond to emergencies. The fundamental relevance of these findings becomes evident when considering the complexity and inherent severity of the obstetric scenarios addressed in the studies. These range from the management of postpartum hemorrhage, eclampsia, shoulder dystocia, maternal cardiac arrest, umbilical cord prolapse, and cesarean section.

Below, we will present the results and analysis for all obstetric emergencies addressed in this study.

Postpartum hemorrhage

Postpartum hemorrhage is an obstetric emergency and a leading cause of maternal morbidity and mortality worldwide. It accounts for 27.1% of maternal deaths globally [38]. In a quasi-experimental study, Pansuwan et al. (2012) examined how using simulated scenarios in a laboratory setting affected nursing performance in managing early postpartum hemorrhage. The results showed improvements in the care of women with this condition [23]. Another quasi-experimental study by Andrighetti et al. [24] showed that simulation-based training increases midwifery students' confidence in managing postpartum hemorrhage [24]. Also, in a randomized clinical trial aimed at examining the effect of simulation training programs on midwives' knowledge and performance, both variables related to postpartum hemorrhage care were significantly improved after training. However, to adequately assess the effectiveness of simulation training, the long-term effects on performance, knowledge, and clinical outcomes in the care of obstetric complications should be studied [25]. Research findings indicate that simulation training is critical for healthcare professionals in managing postpartum hemorrhage.

Eclampsia

Eclampsia refers to the occurrence of at least one generalized seizure among patients who have criteria for preeclampsia and who do not have other neurological diseases [39]. It is a rare and potentially life-threatening obstetric emergency, occurring in 2 to 3% of women with severe preeclampsia who do not receive prophylaxis [26]. Training healthcare professionals who provide obstetric care is vital for the care of eclampsia, which is a major cause of maternal and perinatal morbidity and mortality. Deering et al. [39] demonstrated that simulation training was more effective than traditional learning in the management of eclampsia [39]. Ellis et al. [26] published a randomized clinical trial examining the effects of simulation training on the clinical

Table 1. Characteristics overview of the included studies.

First author (Year)	Country	Study design	Objectives	Participants	Simulation application(s)	Intervention	Validation/ Evaluation	Main outcomes
Walker *et al.* (2014) [3]	Mexico	RCT	Evaluate the impact of PRONTO on knowledge, self-efficacy, and teamwork.	HP (obstetrics and neonatology) (n = 450) from 24 hospitals	High realism/low technology and cost simulation (NeoNatalie® manikin, PartoPants™)	IG: SBT (SOON) CG: no training (n = 12)	Pre-test and post-test	Knowledge (+) Self-efficacy (+) Teamwork (+)
Monod *et al.* (2013) [7]	Switzerland	OS	To investigate the influence of SBT on four specific skills: self-confidence, management of emergencies, knowledge of algorithms, and team communication.	Midwives and obstetricians (n = 168)	HF simulation Noelle® (Gaumard, Miami, FL, USA) Ambu® Man (Ambu, Ballerup, Denmark) SimMan® Classic and 3G (Laerdal Medical, Stavanger, Norway)	Clinical course and training on the mannequin	Post-test	Self-confidence (+) Ability to handle emergencies (+) Knowledge (+) Team communication (-)
Michelet *et al.* (2019) [8]	France	RCT	Assessing the impact of midwifery SBT on NTC through a PPH virtual simulation	Midwives (n = 24)	Virtual simulation on PerinatSims screen	IG: scenarios with CNT training CG: scenarios without CNT training	Post-test	Performance (+) in IG
Yu et al. 2020) [10]	South Korea	DS	Confirming the effectiveness of interprofessional education by comparing students' attitudes toward interprofessional learning before and after SBT	Medical and nursing students (n = 75)	RP mannequins	• Pre-briefing • Pre-staging activities • Task training • Simulation • - Debriefing	Pre-test and post-test	Awareness (+) Self-competence (+)
Sami et al. (2019) [21]	Saudi Arabia	QES (without CG)	To evaluate the effectiveness of a SBT program on nurses' knowledge and confidence in managing obstetric emergencies and retention of acquired competencies.	Nurses and midwives (n = 30)	AF Noel birth simulator in a simulated labor and delivery patient room.	• Pre-briefing • Simulation • Debriefing	Post-test	Knowledge acquisition and retention (+) Confidence (+)

(Cont.)

Table 1. Cont.

First author (Year)	Country	Study design	Objectives	Participants	Simulation application(s)	Intervention	Validation/ Evaluation	Main outcomes
Osman et al. (2021) [22]	Egypt	QES (without CG)	Evaluating the effect of HF simulation on nursing students' knowledge of obstetric emergencies, confidence, and satisfaction	Nursing students (n = 30)	HF mannequin and other medical equipment	• Pre-briefing • Simulation • Debriefing	Pre-test and post-test	Knowledge (+) Confidence (+) Satisfaction (+)
Pansuwan et al. (2012) [23]	Thailand	QES (without CG)	Examining the effect of SBT on performance in nursing care in early PPH	Nursing students (n = 30)	SimMom	• Prebriefing • Role-playing • Debriefing • Reflective feedback	Pre-test and post-test	Performance (+)
Andrighetti et al. (2012) [24]	United States	QES (with CG)	To determine whether the use of HF simulation for the obstetric emergencies of SD and PPH increases students' confidence in managing these complications	Midwifery students (n = 28)	SP Static mannequin	IG: SBT CG: class discussion and video	Pre-test and post-test	Confidence (+), in the IG
Kato et al. (2017) [25]	Japan	RCT	Exploring the effectiveness of SBT for midwives on performance and knowledge for the management of PPH	Midwives (n = 81)	Mannequins with patient-actors	GI: prior e-learning and SBT (n = 40) CG: no training (n = 41)	Pre-test and post-test	Performance (+) Knowledge (+), in the IG
Ellis et al. (2008) [26]	United Kingdom	RCT	To compare the effectiveness of eclampsia training in local hospitals and a regional simulation center, with and without teamwork theory.	Midwives and obstetricians (n = 140).	Advanced Human Patient Simulator (SimMan; Laerdal Medical Corporation, Orpington, Kent, UK)	Standardized video-recorded eclampsia scenario IG: with teamwork theory CG: without teamwork theory	Pre-test and post-test	Rendimiento (+) Teoría del trabajo en equipo (-)
Daniels et al. (2010) [27]	United States	RCT	To determine whether SBT was more effective than conventional didactic teaching in training delivery teams on crisis management.	Nurse and obstetric residents (< 5 years of experience), (n = 32)	Programmable fetal monitor Pelvic model Simulated patient mannequin Video recording system	IG: SBT CG: lectures/ video and hands-on demonstration	Pre-test and post-test	Performance (+), in the IG

(Cont.)

Table 1. Cont.

First author (Year)	Country	Study design	Objectives	Participants	Simulation application(s)	Intervention	Validation/ Evaluation	Main outcomes
Kordi et al. (2017) [28]	Iran	QES (with CG)	To compare the impact of SBT and oral technique on midwifery skills in the management of SD	Midwives (n = 51)	SP molded with a fetus	IG: FBS CG: reading	Pre-test and post-test	Performance (+), in the IG
Fransen et al. (2015) [29]	Netherlands	RCT	To investigate whether obstetric team SBT in a simulation center improves patient outcomes.	Interdisciplinary obstetrical teams (n = 471)	HF simulators [Noelle TM (Gaumard Miami, FL, USA) and Emergency Care Simulator ECSTM (Medical Education Technologies, Inc., Sarasota, FL, USA)].	IG: SBT on obstetrics equipment CG: no training or traditional training	Pre-test and post-test	Performance (+) Reduction of SD trauma (+) PPH management (+), in IG
Fisher et al. (2011) [30]	United States	QES (without CG)	To determine the impact of maternal cardiac arrest SBT on maternal-fetal healthcare professionals' performance, knowledge, and confidence.	Maternal-fetal healthcare professionals (n=19)	HF Simulator (NOELLE®; Guamard Scientific, Coral Gables, FL)	Basic life support course, lecture on modification of advanced CPR in pregnancy, and simulation practice	Post-test	Performance (+) Knowledge (+) Confidence (+)
Lipman et al. (2010) [31]	United States	OS	To assess the quality of obstetric CPR performed during the management of simulated cardiac arrest in a pregnant patient at term.	Labor and delivery nurses, anesthesiology residents, obstetrics residents, or attending physicians (n = 69).	Fetal Monitors (FetalSim Advanced Medical Simulations, Inc., Binghamton, NY) Pelvic model (Simulaids Inc, Saugerties, NY) patient simulator (SimMan; Laerdal Medical, Wappinger Falls, NY)	Videotaped simulated scenarios	Post-test	CPR Practice Performance (-)

(Cont.)

Table 1. Cont.

First author (Year)	Country	Study design	Objectives	Participants	Simulation application(s)	Intervention	Validation/ Evaluation	Main outcomes
Siassakos et al. (2009) [32]	United Kingdom	OS	To determine whether the introduction of interdisciplinary SBT was associated with improvements in the management of cord prolapse, in particular, the diagnostic-delivery interval	Maternity HP (n = not specified)	Patient-actor. Cushion to mimic a pregnant woman's abdomen. Model of a baby with its umbilical cord. Simulated perineum.	Application of simulated umbilical cord prolapse management protocol	Pre-test and post-test	Performance (+)
Vellanki el al. (2010) [33]	India	QES (with CG)	To determine the effectiveness of cesarean section training with obstetric simulators for medical students during their internship.	Medical students (n = 25)	MF or HF surgical simulator	IG: SBT supervised by a teacher CG: no training	Post-test	Conocimientos (+) Habilidades (+) Satisfacción (+) en GI
Gum et al. (2010) [34]	Australia	QS	To determine how interprofessional SBT improved maternity emergency care and team performance.	Maternity HP (n = 17)	Human Simulation	• Clinical Simulation Workshops • Videotaped Simulation • Debriefing	Post-test	Team performance (+)
Hernández et al. (2021) [35]	Spain	QES (without CG)	To analyze the impact and evaluate the effects of HF SBT on obstetric emergencies in an interdisciplinary group.	Gynecologists, midwives, and auxiliary nurses (n = 30)	Lucina® by computer-assisted engineering Fidelis	• Case selection • Simulation • Assessment	Pre-test and post-test	Skills (+) Satisfaction (+)
Edwards et al. (2015) [36]	United Kingdom	OS	To assess interprofessional attitudes and clinical knowledge.	Medical and midwifery students (n=72)	HF and LF simulators (SimMom, PROMPT, Birthing Simulator, MamaNatalie, ResusciAnne, and patient actors)	Lectures, teamwork exercises, and SBT for SD, sepsis, hemorrhage, collapse	Post-test	Interprofessional attitudes in all areas (+) Knowledge (+)

HF: high fidelity; LF: low fidelity; NTS: non-technical skills; SD: shoulder dystocia; QS: qualitative study; RCT: randomized clinical trial; QES: quasi-experimental study; SBT: simulation-based training; MF: medium fidelity; DS: descriptive study; OS: observational study; RP: role play; CG: control group; IG: intervention group; PPH: postpartum hemorrhage; CPR: cardiopulmonary resuscitation; HP: healthcare professionals; PRONTO: obstetric and neonatal rescue program: optimal and timely treatment; SP: standardized patient; (+): confirmed relevance; (-): not relevant.
A summary of research that examined the efficacy of simulation training in obstetric emergencies among several countries.
Source: Prepared by the authors.

effectiveness of teams. In the study, simulation demonstrated that teams completed basic tasks in preeclampsia intervention at a higher rate, magnesium sulfate administration was completed in a shorter time, and better teamwork and higher performance [26]. The study results show that simulation training is necessary for healthcare professionals in preeclampsia management.

Shoulder dystocia

Cases of shoulder dystocia are rare and difficult to predict. However, there are evidence-based guidelines on the management of this emergency, which carries major long-term complications, such as hypoxic-ischemic encephalopathy and brachial plexus injuries [40]. In a randomized clinical trial, Daniels et al. [27] showed that simulation training was more effective than traditional training in managing shoulder dystocia [27]. The use of simulation to address the effects of shoulder dystocia is probably one of the best-studied areas of obstetric simulation. In a quasi-experimental study, Kordi et al. [28] compared the impact of simulation-based training and oral technique on midwives' skills in managing shoulder dystocia. The results showed improvements in midwife performance [28]. In a randomized clinical study, Fransen et al. (2015) reported increased performance of multidisciplinary obstetric teams and reduced shoulder dystocia trauma [29]. These results showed that simulation training could be used effectively in managing shoulder dystocia.

Maternal cardiac arrest

Cardiac arrest is defined as a sudden and unexpected event, with loss of consciousness following impaired blood flow through the coronary artery, which is diverted to the brain [41]. Studies of cardiac arrest in the general adult population show that it may be possible to improve patient outcomes in the event of cardiac arrest [42]. The care of a pregnant patient experiencing cardiac arrest is different from that of a general adult, as the team must take into account the specific physiology of pregnancy and the status of the fetus during resuscitation [43]. Studies on the management of maternal cardiac arrest demonstrate that simulation has a beneficial effect on improving the skills of healthcare professionals. Fisher et al. [30] conducted a study to determine the effects of simulation training in managing maternal cardiac arrest on the performance, knowledge, and confidence of 19 maternal-fetal healthcare professional participants. According to the study results, participants showed statistically significant improvement in the timely establishment of cardiopulmonary resuscitation and delivery by perimortem cesarean section [30]. Lipman et al. [31] evaluated 18 simulation case videos involving maternal amniotic fluid embolism and subsequent cardiac arrest. Although all participants were certified according to American Heart Association recommendations for advanced resuscitation care, inadequacies were found in the practice of cardiopulmonary resuscitation during simulated arrests. In the study, the teams performed 56% of adequate compressions and 50% of ventilations in a timely manner [31]. Since maternal cardiac arrest and perimortem cesarean section are rare, appropriate interventions for the mother and newborn are directly related to the preparedness and familiarity of the healthcare team. With simulation training, the obstetric team will be able to practice and evaluate outcomes.

Umbilical cord prolapse

Umbilical cord prolapse can be occult or overt. It occurs when a fragment of the umbilical cord advances along or in front of the fetal presentation. This makes it susceptible to compression by the presenting part, which can lead to fetal asphyxia. This event occurs in 0.18% of live births [44]. A study carried out in a large maternity hospital in the United Kingdom showed that the application of a simulated umbilical cord prolapse management protocol was effective. This was associated with significantly reducing the mean time from diagnosis to delivery [32]. The results of the study showed that simulation training can be effective and reliable in preventing maternal-fetal mortality and morbidity associated with umbilical cord prolapse.

Cesarean section

Cesarean section is a very common procedure that can lead to serious complications, especially when an abdominal incision is involved or when it is performed under emergency circumstances [45]. Therefore, training with cesarean section simulation may be useful for healthcare professionals. Vellanki et al. [33] compared a simulated cesarean section model and usual training in the training of new interns in a randomized clinical trial. According to the result of the study, it was shown that medical students trained with the simulation were better able to identify the cesarean section act phases. In addition, the students had greater well-being during the act [33]. Simulation training can be used to eliminate the identified barriers and reduce the intervention time in emergency cesarean section, as well as allow the team to hone their skills.

Interdisciplinary clinical simulation in obstetrical emergencies

Numerous efforts to improve outcomes in obstetrics have focused on techniques and increasing medical knowledge. However, it has been recognized that many complications and morbidity arise from ineffective team interventions, not individual failures. The lack of teamwork dynamics is a crucial factor contributing to about 75% of preventable medical errors [37]. Gum et al. [34] conducted a qualitative study to investigate how simulation training improves maternal emergency care and team development. The study's results reported that participants highlighted how simulation facilitated reflection and evaluation of team leadership skills, in addition to reviewing the role of leadership in emergency settings. The study noted that the training allowed participants to have a common goal (patient

safety), which fostered mutual respect, increased trust among team members, and allowed them to learn from each other [34]. Similarly, Hernandez et al. (2021) conducted a study to analyze the impact and the effects of multidisciplinary group obstetric emergency simulation training. The study results showed that the participants' skill levels and satisfaction improved [35]. Reeves et al. [20] reported that standardized simulations for obstetric emergency management and patient safety training were beneficial in improving the reactivity and skills of team members, as well as patient outcomes [20]. In a study involving midwives, nurses, and obstetricians, we investigated whether simulation training was related to perceived changes in self-efficacy and collective efficacy in managing postpartum hemorrhage. The results revealed a significant increase in the participant group's self-efficacy and collective efficacy levels after training [25]. In another study involving medical and midwifery students, which assessed interprofessional attitudes and clinical knowledge after simulation training, the results evidenced an improvement in interprofessional attitudes [36].

In research conducted by Walker et al. [3], which covered obstetric hemorrhage, shoulder dystocia, preeclampsia/eclampsia, and neonatal resuscitation scenarios, 450 healthcare professionals were trained in interdisciplinary teams, with a significant increase in knowledge and self-efficacy of both physicians and nurses in each area [3]. Inadequate management of obstetric emergencies can result in severe trauma and death of the mother, fetus, and newborn. The interdisciplinary approach in simulation training improves team performance and ensures quality care by increasing patient safety.

Strengths and limitations

One of the strengths of this study lies in the diversity of data sources collected, including different types of research and the participation of various countries. However, it is important to note that we did not carry out a quality assessment of the included studies. This decision was congruent with our objectives but simultaneously limited our results' applicability. In addition, the methods used to synthesize the data did not take into consideration the possible differences among the study samples nor the quality of the methodology used in the studies. It is also relevant to note that our inclusion criteria were specific and may have excluded the incorporation of articles that could have been relevant to the research topic. This includes the possibility of not having considered studies conducted with other healthcare professionals who provide emergency care in contexts different from those addressed in this study.

Clinical applicability

The findings of this review have the potential to offer guidance to educators and researchers who are planning, developing, evaluating, or implementing clinical simulation-based training programs, whether in the context of obstetric emergencies or in other fields of application.

Future research

It is essential to continue research into this essential aspect of simulation training. Future high-quality research will strengthen the evidence on best practices in clinical simulation training in obstetric emergencies.

Conclusions

The results of this study provided conclusive evidence that clinical simulation training in the management of obstetric emergencies was effective in developing the skills of healthcare professionals and preparing teams to respond to emergencies adequately. Its applications correlated with improved performance. Therefore, implementing simulation training for managing obstetric emergencies should be considered a promising strategy to improve maternal and neonatal health care delivery.

However, simulation interventions can be time-consuming and resource-intensive. Educators and researchers should be aware of these challenges when approaching simulation training strategies. Despite the eventual limitations associated with simulation, this training strategy was considered positive for healthcare professionals' learning process in managing obstetric emergencies.

Notes

Contributor roles

All authors have contributed jointly and equally to all phases of the article's preparation. All authors agree with the final version of the manuscript.

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Conflictos de intereses

The authors declare that there are no conflicts of interest.

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Data sharing statement

The authors state their willingness to provide research data upon request.

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Formación con simulación clínica para manejo adecuado de emergencias obstétricas: revisión narrativa

Resumen

Las emergencias obstétricas son situaciones críticas que amenazan la salud de la madre y del bebé durante el embarazo o el parto. Este estudio se enfocó en validar la efectividad de la formación con simulación clínica en el manejo de estas situaciones. Realizamos una revisión narrativa de estudios publicados entre 2008 y 2022, recopilados de las bases de datos Scopus, ScienceDirect, MEDLINE/PubMed, Spinger, SciELO y Google Scholar. Se recogieron y resumieron los datos de los estudios que cumplían con nuestros criterios de inclusión. Nuestros resultados subrayan que la simulación clínica se posiciona como una herramienta altamente eficaz en la formación de profesionales de la salud. Esta capacitación se traduce en mejoras significativas en diversos aspectos, incluyendo el rendimiento, los conocimientos, la confianza, la satisfacción, las actitudes, la autoeficacia, la capacidad para trabajar en equipo y las habilidades necesarias para enfrentar situaciones obstétricas críticas. Dentro de estas últimas destacan hemorragias posparto, eclampsia, distocia de hombros, paro cardíaco materno, prolapso del cordón umbilical y cesáreas. Esta formación disminuye los riesgos asociados con el aprendizaje en pacientes reales y cumple con los estándares éticos. La colaboración interdisciplinaria en el manejo de emergencias obstétricas se revela efectiva para brindar atención integral a los pacientes. Sin embargo, es fundamental enfatizar que para asegurar la seguridad del paciente y promover un enfoque de trabajo en equipo, es esencial que los profesionales de la salud reciban una formación adecuada y estén debidamente cualificados. A pesar de que la formación en simulación clínica es eficaz, su implementación puede resultar costosa y requerir recursos considerables. No obstante, consideramos que esta estrategia sigue siendo de un valor incalculable para la formación de profesionales en este campo. Investigaciones futuras de alta calidad contribuirán a fortalecer la evidencia sobre las mejores prácticas en la formación con simulación clínica en emergencias obstétricas.