Continuous professional education in midwifery: Addressing obstetric and neonatal emergencies in the era of advanced technologies

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Dear Editor,

A critical issue within midwifery practice is the need for continuous education and professional development in managing obstetric and neonatal emergencies[1,2]. Midwives play a pivotal role in safeguarding maternal and neonatal health[3]. However, the increasing complexity of childbirth and the unpredictability of emergencies underscore the necessity for ongoing education to ensure midwives can respond swiftly and effectively to life-threatening situations.

In 2020, the global maternal mortality ratio (MMR) stood at 223 per 100,000 live births[4]. Major causes of maternal death include postpartum hemorrhage, pregnancy-related hypertensive disorders, infections, unsafe abortions, and obstructed labour[5]. In addition, the global neonatal mortality rate (NMR) in 2019 was 17 deaths per 1000 live births, with nearly three-quarters of neonatal deaths occurring within the first week of life. Prematurity, birth asphyxia and neonatal sepsis remain the leading causes of neonatal death[5]. Governments and the international community are committed to improving maternal and neonatal health by 2030, aiming to reduce maternal mortality to fewer than 70 per 100,000 live births and neonatal mortality to 12 per 1000 live births or less. While these goals are ambitious, they are achievable with sustained efforts[5].

The World Health Organization (WHO) outlines a range of obstetric emergencies, including bleeding during pregnancy (due to abortion, placenta previa, or abruption), postpartum hemorrhage, placenta accreta, preeclampsia or pregnancy-induced high blood pressure, eclampsia, dystocia, abnormal labour, uterine rupture, uterine inversion, prolapsed umbilical cord, amniotic fluid embolism and infections[2,5]. Neonatal emergencies, such as perinatal asphyxia, prematurity, respiratory distress, disorders of temperature control, and neonatal infections also pose significant challenges[2,5]. In low-resource settings, obstetric emergencies contribute to a significant proportion of preventable maternal deaths[6]. Even in high-income countries, delays in recognizing or addressing complications can have devastating outcomes[7,8]. WHO estimates that 15% of pregnancies involve potentially life-threatening complications, emphasizing the need for preparedness and early intervention[9]. As first responders, midwives, must be well-versed in current best practices and emerging clinical guidelines to ensure optimal outcomes for mothers and newborns[3].

There is robust evidence supporting the benefits of continuous professional education. A recent meta-analysis showed that simulation-based training significantly improved the abilities of students, midwives and obstetric residents to manage emergencies such as dystocia, postpartum hemorrhage, pre-eclampsia and eclampsia[10]. Research by Ameh et al. (2019) demonstrated that training in emergency obstetric care enhanced clinical practice, improved adherence to protocols, and led to better neonatal outcomes, including fewer instances of birth trauma, hypothermia and hypoxia[11]. However, Fransen et al. (2020) found that while simulation-based team training improves performance and outcomes, high-certainty evidence is lacking due to bias and imprecision, making it difficult to generalize the findings. Future research should focus on comparing simulation-based obstetric training with other instructional designs, ensuring careful consideration of how and when outcomes are measured[12].

In some countries, however, opportunities for continuous professional development (CPD) are limited. A study by Gakwerere et al. (2024) in Rwanda found low-to-moderate uptake of capacity-building programs among nurses and midwives due to lack or limited access to opportunities[1]. This is concerning, especially since research shows that well-trained midwives can manage up to 87% of maternal healthcare needs, including obstetric emergencies[13]. There is an urgent need for healthcare systems to provide structured, continuous education programs that combine theoretical updates and practical, hands-on training. Additionally, retention of critical clinical skills diminishes over time without ongoing education[14].

The integration of didactic and clinical training in emergency management is crucial in midwifery education[15]. Didactic courses provide foundational knowledge on risk factors and management protocols, while clinical training focuses on hands-on practice in simulated settings. Simulation-based education is particularly effective, allowing midwives to practice managing critical scenarios in a controlled, risk-free environment. It improves knowledge retention, clinical skills, self-confidence and competence, team communication, and leadership abilities, ultimately enhancing care quality and maternal safety[16]. However, simulation should be paired with other assessment methods like mini-clinical examinations and case-based discussions to ensure skills translate into real-life situations[17].

Furthermore, continuous education should not only focus on emergency response but also on early detection of complications, interdisciplinary teamwork, and family communication during crises[18]. These areas align with WHO's maternal health recommendations, which call for skilled care at every birth[19]. Governments must ensure universal access to this care, with strategic focus on workforce development, improving referral systems, and fostering cross-sector collaboration[19]. While governments provide the framework, midwives must take the initiative to maintain their competencies through regular workshops, certifications updates, and active participation in multidisciplinary emergency drills. These efforts will ensure midwives remain aligned with evolving healthcare needs.

The growing integration of artificial intelligence (AI) and advanced technologies in obstetrics further underscores the need for ongoing midwifery training[20,21]. AI-driven tools for fetal monitoring, ultrasound interpretation, and predictive algorithms are transforming maternity care[22]. To fully leverage these technologies, midwives must receive continuous training to integrate AI into clinical practice effectively. Such training will improve clinical decision-making and enhance diagnostic accuracy, ultimately benefiting maternal and neonatal outcomes[23]. There is still significant work needed to fully harness AI and machine learning in obstetrics and midwifery. Transitioning from theory to practice can reveal issues that could undermine trust and raise ethical concerns. Experts must ensure the use of large, high-quality datasets to train AI models, as smaller or lower-quality ones may produce unreliable results. This accountability is crucial to ensure accuracy and build trust in AI-driven healthcare solutions[20].

In conclusion, continuous education in obstetric and neonatal emergencies is essential for improving maternal and neonatal health outcomes. Professional organizations, academic institutions, and healthcare policymakers should prioritize training initiatives that promote a culture of lifelong learning, ensuring midwives remain empowered to provide the highest standard of care, even in the most challenging circumstances.

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