LITERATURE REVIEW

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SIMULATION-BASED EDUCATION TO ENHANCE CLINICAL DECISION-MAKING AND CRITICAL THINKING: A SCOPING REVIEW

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Introduction: Simulation-based education (SBE) has become a cornerstone of healthcare training, providing hands-on learning experiences that develop technical proficiency while also promoting critical thinking and clinical judgement [1-3]. These cognitive skills are essential for delivering safe and effective patient care. This scoping review explores recent innovations in SBE and examines their impact on the development of critical thinking and decision-making among undergraduate and postgraduate healthcare learners.

Methods: A structured scoping review was conducted using peer-reviewed articles published between 2020 and 2025. A systematic search strategy, developed with support from an academic librarian, identified relevant studies across CINAHL, MEDLINE, and Embase databases. Inclusion criteria focused on studies reporting outcomes related to critical thinking or clinical decision-making within a simulation context. Both qualitative and quantitative studies were included. A thematic synthesis approach was applied to identify key patterns across different simulation modalities (e.g., high-fidelity simulation, virtual reality, blended learning) and learner groups.

Results: Thirty-three articles met the inclusion criteria. The findings consistently demonstrate that SBE enhances learners' critical thinking and clinical reasoning abilities. Effective educational strategies included the use of high-fidelity simulation environments, structured debriefing, psychological safety, and reflective learning models. Technological innovations, particularly screen-based simulation and virtual reality (VR), were noted to improve learner engagement and cognitive development. Interprofessional simulations were highlighted as valuable in supporting real-time decision-making under pressure. However, evidence regarding the long-term retention and clinical transferability of these skills was limited.

Discussion: Simulation-based education appears highly effective in promoting critical thinking and clinical decision-making skills within healthcare education. Successful outcomes depend on deliberate instructional design, appropriate use of fidelity, effective feedback processes, and learner-centred approaches. While technological advances offer promising new avenues for skill development, further longitudinal research is needed to determine the durability of these cognitive gains and their impact on clinical practice. These insights may inform the future design and optimisation of simulation-based curricula.

Ethics Statement: As the submitting author, I can confirm that all relevant ethical standards of research and dissemination have been met. Additionally, I can confirm that the necessary ethical approval has been obtained, where applicable.

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