Technological Challenges in Nursing Education: An Integrated Literature Review

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ABSTRACT

- Technological advancements in nursing education offer innovation opportunities but pose challenges such as cost, access, faculty training, and digital literacy.

- This integrative literature review synthesizes findings from 33 studies exploring the role of technology in enhancing nursing competencies and student readiness for healthcare systems.

- It emphasizes simulation-based training, online learning, and mobile technologies while addressing barriers to adoption.

- The study utilizes the Diffusion of Innovations Theory and the Technology Acceptance Model to highlight the importance of equal technology distribution, faculty development, and infrastructure improvements.

- These efforts are essential to prepare nursing students for the complexities of modern healthcare.

INTRODUCTION

Pros

- Prepares professionals for evolving healthcare needs.
- Moves beyond traditional lectures with interactive learning.
- Enhances outcomes through e-learning, simulations, and mobile apps.

Cons

- Unequal access due to high costs and infrastructure gaps.
- Insufficient faculty training hinders integration.
- Students struggle with digital literacy, limiting effectiveness.

PURPOSE

- This study explores these challenges, seeking solutions to integrate technology to foster student engagement, clinical competency, and readiness for the complexities of modern healthcare.

METHODOLOGY

- A systematic literature review was conducted to analyze technology integration in nursing education.
- Peer-reviewed articles published between 2018 and 2023 were sourced from databases such as PubMed, CINAHL, and Google Scholar using keywords like "simulation models," "digital concerns," and "nursing curriculum."
- Inclusion criteria focused on studies examining technological integration in undergraduate and postgraduate nursing education.
- Articles were excluded if they lacked empirical evidence or were unrelated to nursing education.
- Data were analyzed thematically, identifying recurring challenges such as cost, faculty training, and student digital literacy.
- A PRISMA flow diagram tracked the selection process, narrowing the 500 initial articles to 33 for final review.
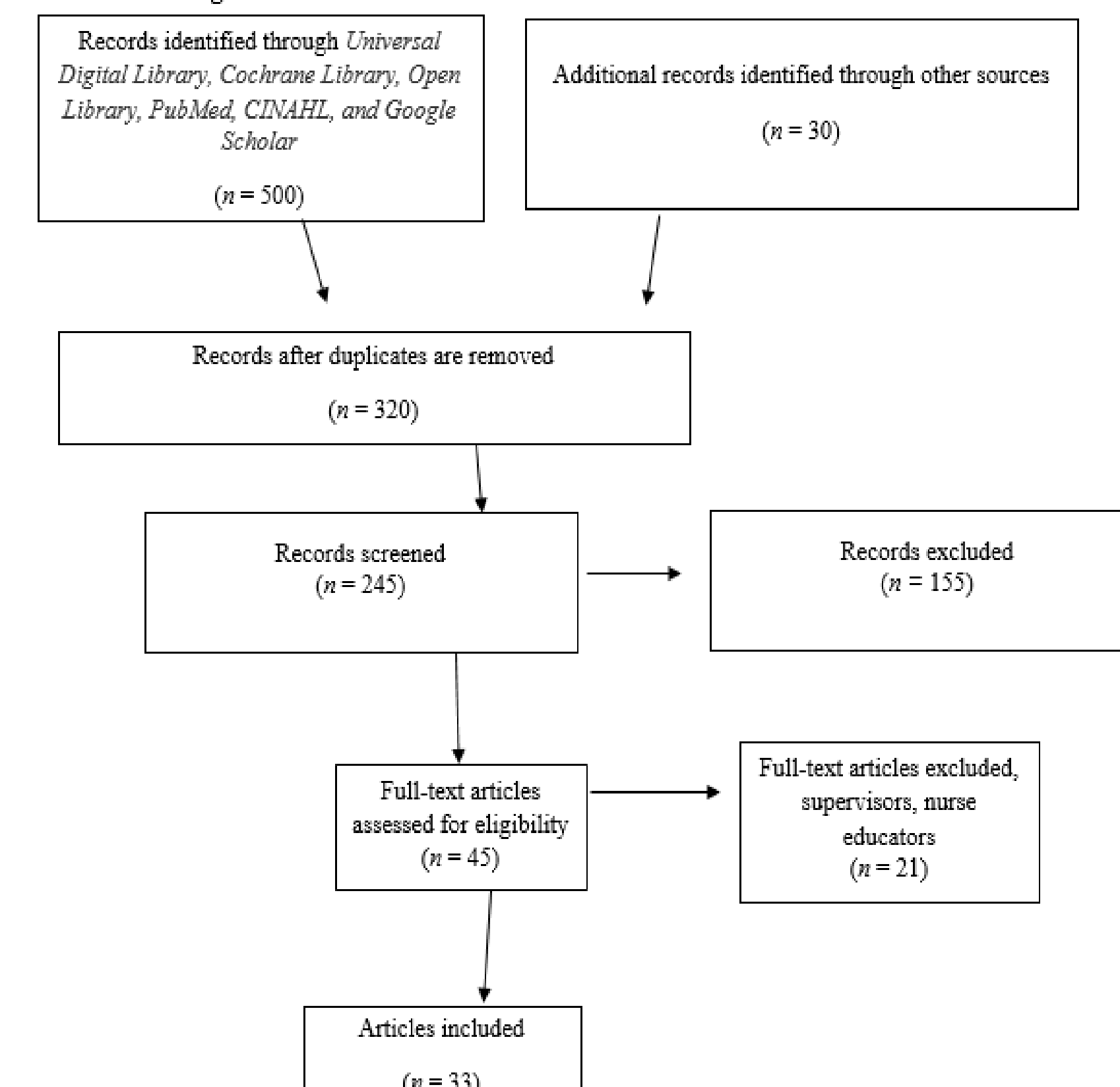
A PRISMA flow diagram. This illustrates how articles were reviewed, included, and excluded from the review.

THEORETICAL FRAMEWORK FINDINGS

This review identified key insights into the integration of technology in nursing education:

Technological Benefits:
- Simulation technologies enhance clinical skills, critical thinking, and decision-making in safe, repeatable environments.
- Online learning platforms improve access and flexibility, supporting remote and self-paced education.
- Mobile technologies provide real-time access to clinical resources, fostering collaboration and skill development.

Challenges:
- **Cost**: High expenses for acquiring and maintaining technology limit adoption, especially in low-resource settings.
- **Faculty Training**: Inadequate training reduces the effective integration of advanced tools into teaching.
- **Digital Access**: Unequal access to devices, the internet, and varied digital literacy hinders student participation.

Impact:
- Technology improves clinical competencies and engagement, with tools like simulation and mobile apps fostering readiness for real-world healthcare.

Addressing these challenges through training, funding, and equitable access is essential for successful integration.

RECOMMENDATIONS

- Technology in nursing education but requires strategic implementation
- Key investments: infrastructure , faculty training, and digital literacy for equitable access

- Adoption frameworks: Diffusion of Innovations Theories and TAM emphasize ease of use and effectiveness

- Priorities: Simulation based learning and mobile tech to improve clinical skills, decision making and real -world readiness

- Future Research: assess long term impact on competencies and patient outcomes

References

Al-Rahmi, W. M., Yahaya, N., Alamri, M. M., Alyoussef, I. Y., Al-Rahmi, A. M., & Kamin, Y. B. (2021). The article discusses the integration of innovation diffusion theory with the technology acceptance model. The article encourages students to embrace the use of massive open online courses (MOOCs). *Interactive Learning Environments*, *29*(8): 1380-1392. https://doi.org/10.1080/10494820.2019.1629599

Anderson, J. K., Howarth, E., Vainre, M., Humphrey, A., Jones, P. B., & Ford, T. J. (2020). Advancing methodology for scoping reviews: recommendations arising from a scoping literature review (SLR) to inform the transformation of Children and Adolescent Mental Health Services. *BMC Medical Research Methodology*, *20*, 1-14. Doi: 10.1186/s12874-020-01127-3

Brown, J., Pope, N., Bosco, A. M., Mason, J., & Morgan, A. (2020). Issues affecting nurses' capability to use digital technology at work: an integrative review. *Journal of Clinical Nursing*, *29*(15-16), 2801-2819. https://doi/abs/10.1111/jocn.15321

Additional references available upon request

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