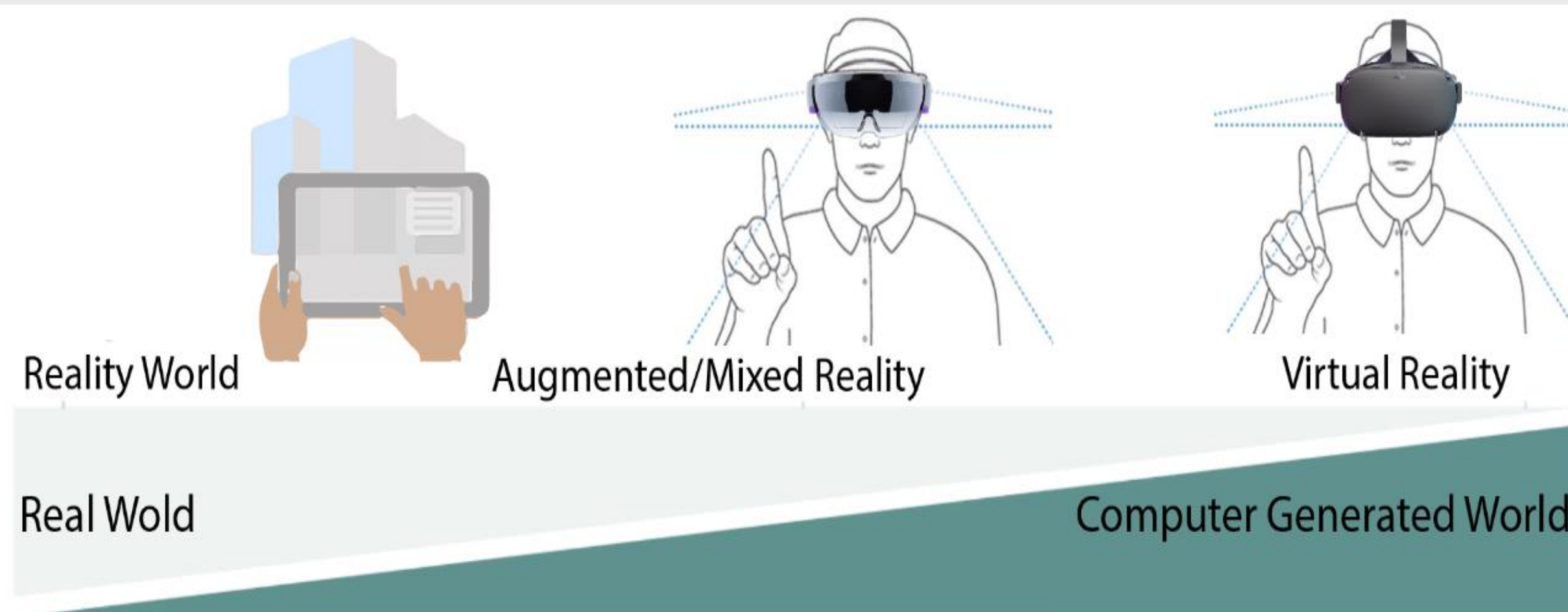


Abstract

In recent years, immersive technology, a computer system or device that allows users to completely immerse themselves in a virtual or augmented environment, has revolutionized medical education by changing how students learn and practice. With the advent of education simulators and augmented reality, medical students can now experience realistic scenarios, and enhance their skills in a safe and controlled environment. The purpose of this article is to explore the different aspects of immersive technology in audiology and otolaryngology education. The majority of studies have focused on utilizing VR as a surgical simulator, with only a limited number exploring its use in training audiology clinical skills.

Introduction

- Immersive technology in medical education has transformed students' learning and practice.
- The main courses of interest for audiology students and otolaryngology residents require clinical experience and continuous practice.

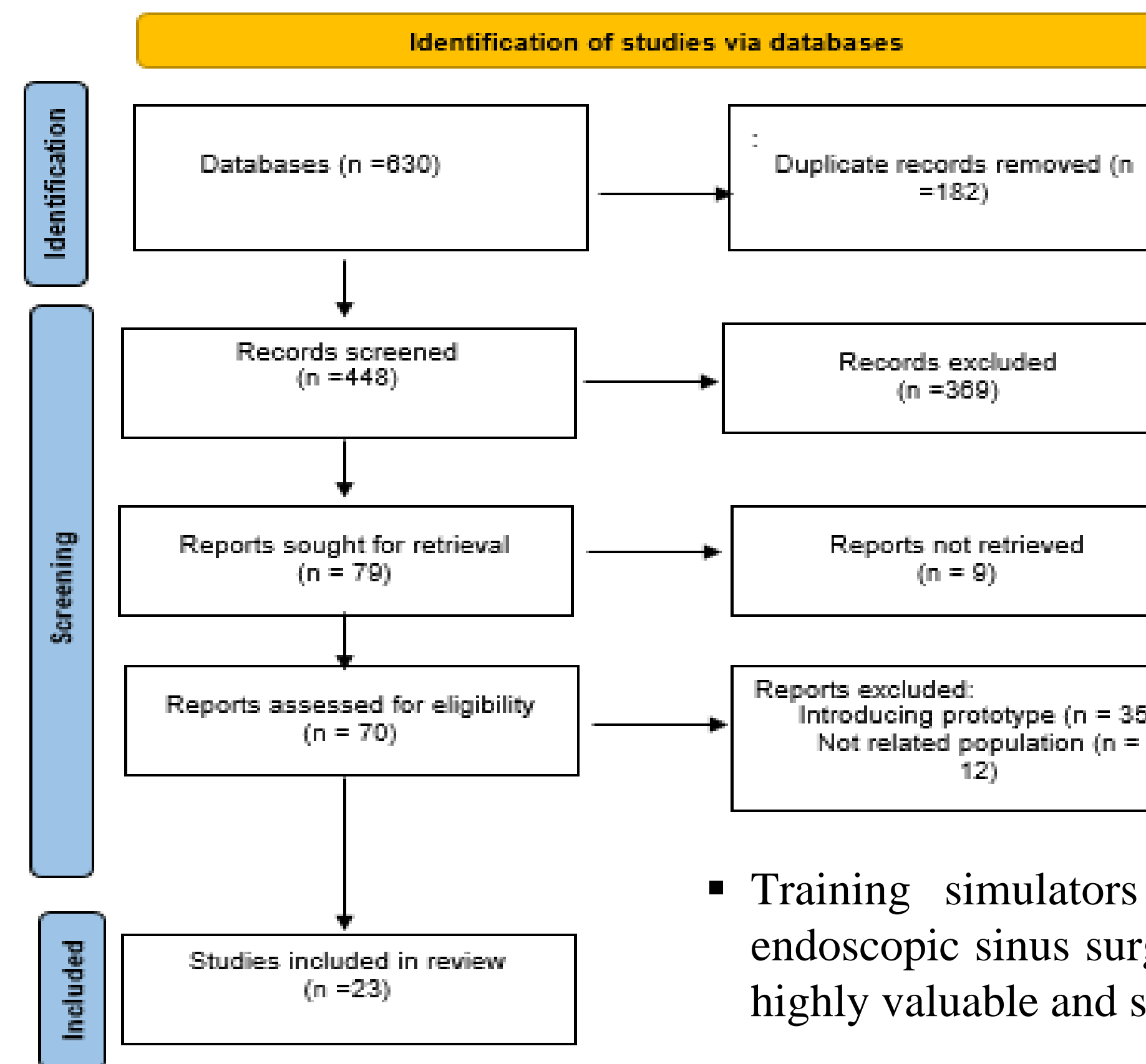


- Clinical simulators enable individualized learning experiences, addressing the unique needs and pace of each student with Immediate feedback.
- This scoping review aims to investigate the diverse applications of immersive technology in audiology and otolaryngology education.

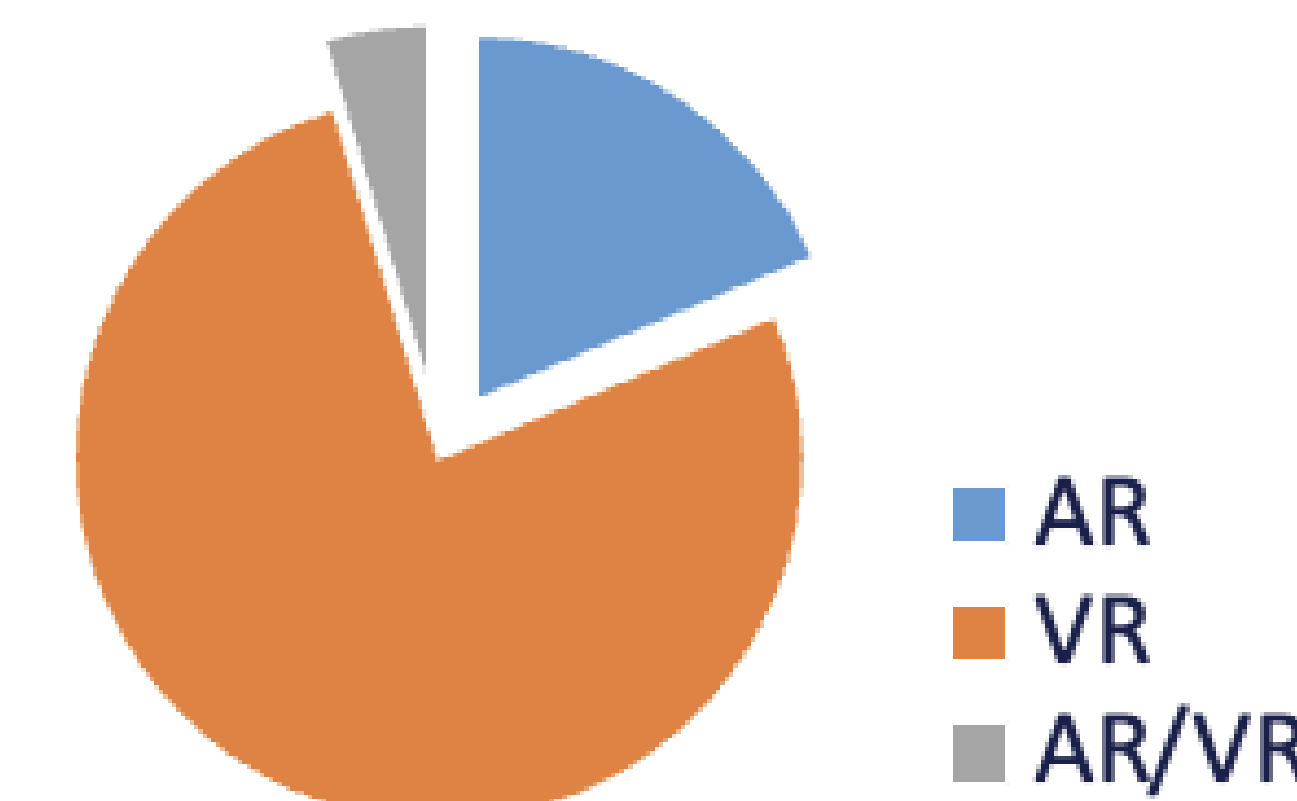
Method

- This scoping review was performed based on PRISMA for scoping review checklist.
- Three electronic databases, IEEE, EMBASE, and PubMed were searched using the following key terms, *Audiology*, *Otology*, *Otolaryngology*, and *ENT* in combination with *immersive technology*, *virtual reality*, *augmented reality*, and *extended reality*.
- The study encompasses English articles conducted between 2000 and 2024 that center on using immersive technology to enhance education or the satisfaction of audiology and otolaryngology students.

Results



- 23 articles were included from 630 primary articles
- The majority of the articles utilized VR instead of AR to create an immersive educational environment.



- Training simulators for procedures with a higher risk, such as endoscopic sinus surgery and temporal bone dissection, are considered highly valuable and satisfying.

Conclusion

- AR/VR simulators have the potential to mitigate risks, enhance the surgical skills of residents, and increase trainer satisfaction.
- Immersive technology has transformed Audiology and otolaryngology education, offering a range of benefits and applications.
- To exploit the potential of immersive technology in revolutionizing clinical practices, it is essential to address the existing research gaps, particularly in potential errors.

References

Borna A, Mosavi Z, Fatollahzade F, Nazeri A, Harari R. Applications of Augmented and Virtual Reality in Enhancing Communication for Individuals with Hearing Impairment: A Systematic Review. *AJA* 2024

Bakhos, D., Galvin, J., Aoustin, J. M., Robier, M., Kerneis, S., Bechet, G., ... & Aussedat, C. (2020). Training outcomes for audiology students using virtual reality or traditional training methods. *Plos one*, 15(12), e0243380.

Sanderson, E. A. (2013). Evaluating the Use Of A Virtual Reality Patient Simulator an An Educational Tool In An Audiological Setting.

Chen, P. G., Chang, D. R., Weitzel, E. K., Peel, J., Chandra, R. K., & McMains, K. C. (2016). The role of simulation in teaching sinus surgery in otolaryngology residency: a survey of rhinologists. *Allergy & Rhinology*, 7(4), ar-2016.

