Extended reality

Extended reality is a catch-all to refer to augmented reality and virtual reality. Sometimes the abbreviation “XR” is used to refer to both. The technology is intended to combine or mirror the physical world with a “digital twin world” that is able to interact with each other.

Surgical simulation practices have witnessed a rapid expansion as an invaluable approach to a resident training in recent years. One emerging way of implementing simulation is the adoption of extended reality (XR) technologies, which enable trainees to hone their skills by allowing interaction with virtual 3D objects placed in either real-world imagery or virtual environments. The goal of a systematic review is to survey and broach the topic of XR in neurosurgery, with a focus on education. Five databases were investigated, leading to the inclusion of 31 studies after a thorough reviewing process. Focusing on user performance (UP) and user experience (UX), the body of evidence provided by these 31 studies showed that this technology has, in fact, the potential of enhancing neurosurgical education through the use of a wide array of both objective and subjective metrics. Recent research on the topic has so far produced solid results, particularly showing improvements in young residents, compared to other groups and over time. In conclusion, this review not only aids to a better understanding of the use of XR in neurosurgical education but also highlights the areas where further research is entailed while also providing valuable insight into future applications [1].

1)
Iop A, El-Hajj VG, Gharios M, de Giorgio A, Monetti FM, Edström E, Elmi-Terander A, Romero M. Extended Reality in Neurosurgical Education: A Systematic Review. Sensors (Basel). 2022 Aug 14;22(16):6067. doi: 10.3390/s22166067. PMID: 36015828; PMCID: PMC9414210.