**Introduction**

- The adoption of electronic learning (e-learning) has shown to be an effective method of improving knowledge and skills for trainees in general surgery and surgical subspecialties.
- However, the field of neurosurgery has largely yet to develop and utilize e-learning as a part of surgical education.

**Aim**

- This review aims to evaluate the use of e-learning, such as virtual reality (VR) and computer modules, for surgical trainees in and outside of neurosurgery, and elaborate on the potential utility of e-learning in neurosurgery.

**Methods**

- We performed a literature review by using 36 [Mesh] and [tiab] terms.
- Inclusion criteria were original, peer-reviewed publications that utilized quantitative data to evaluate the effects of e-learning.
- We limited our search to PubMed articles published in the English language within the last 5 years.
- Studies were excluded if they did not include an e-learning intervention, or measure skill acquisition against a set of metrics.

**Results**

- Our search produced 1250 citations in PubMed. After reading the abstracts, 69 studies (3 neurosurgery) were included.
- Most studies did not include a control group (n=39). 16 studies compared e-learning to standard teaching, and 14 studies to another form of teaching.
- Most studies involved VR (n=37), with the remainder incorporating computer modules.
- Published studies demonstrated the efficacy of computer modules as nearly all studies reported a significant gain in knowledge using this modality.
- A majority of the VR studies suggest that VR does improve performance, but it may be more dependent upon existing surgical experience.

**Conclusion**

- E-learning is a flexible training modality that can supplement education outside the operating room.
- However, not all e-learning modalities are equally effective at improving trainee education.
- Furthermore, there are relatively few studies that focus on neurosurgical e-learning, suggesting that neurosurgery is currently behind other surgical disciplines in utilizing and investigating e-learning in trainee education.

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