A review of computer-generated simulation in the pedagogy of cataract surgery training and assessment

Abstract

Virtual reality simulation is no longer an unusual term due to its application in aviation, industry, medicine, and military. The limitation of animal model in wet-lab training has necessitated the discovery of new training tools. Criteria-based surgical training can be simulated in a protected environment virtually by using computer for medical assessment and evaluation. This article reviews the pedagogical value of various virtual reality cataract surgery simulators developed, in surgical skill education and evaluation. Literature searches were conducted in ACM, IEEE Xplore, PubMed, Taylor & Francis, SciVerse, and Springer Link, covering the period from 1990 to the present. The published literature that presents methodological approach in the creation of simulation and feasibility study on performance evaluation system were examined. Evidence from the study proves that high-fidelity simulation is capable of providing objective surgical training and distinguishing the level of competency between students, residents, and surgeons in cataract surgery. Standardization and classification of training module according to the proficiency of surgical skills are considered necessary in improving validity of simulators as part of curriculum in medical education.

Keywords — Computer-generated simulation, cataract surgery training