

# Is Video-Based Education an Effective Method in Surgical Education? A Systematic Review

Akgul Ahmet, MD,\* Kus Gamze, MSc, PT,<sup>†,‡</sup> Mustafaoglu Rustem, PhD, PT,<sup>§</sup> and Karaborklu Argut Sezen, MSc, PT<sup>||</sup>

\*Department of Gerontology, Faculty of Health Sciences, Istanbul University, Istanbul, Turkey; <sup>†</sup>Division of Physiotherapy and Rehabilitation, Institute of Health Science, Istanbul University, Istanbul, Turkey; <sup>‡</sup>Department of Physiotherapy and Rehabilitation, Mustafa Kemal University, Hatay, Turkey; <sup>§</sup>Department of Neurological Physiotherapy and Rehabilitation, Faculty of Health Sciences, Istanbul University, Istanbul, Turkey; and <sup>||</sup>Department of Physiotherapy and Rehabilitation, Faculty of Health Sciences, Istanbul University, Istanbul, Turkey

**OBJECTIVE:** Visual signs draw more attention during the learning process. Video is one of the most effective tool including a lot of visual cues. This systematic review set out to explore the influence of video in surgical education. We reviewed the current evidence for the video-based surgical education methods, discuss the advantages and disadvantages on the teaching of technical and nontechnical surgical skills.

**METHODS:** This systematic review was conducted according to the guidelines defined in the preferred reporting items for systematic reviews and meta-analyses statement. The electronic databases: the Cochrane Library, Medline (PubMed), and ProQuest were searched from their inception to the 30 January 2016. The Medical Subject Headings (MeSH) terms and keywords used were “video,” “education,” and “surgery.” We analyzed all full-texts, randomised and nonrandomised clinical trials and observational studies including video-based education methods about any surgery. “Education” means a medical resident’s or student’s training and teaching process; not patients’ education. We did not impose restrictions about language or publication date.

**RESULTS:** A total of nine articles which met inclusion criteria were included. These trials enrolled 507 participants and the total number of participants per trial ranged from 10 to 172. Nearly all of the studies reviewed report significant knowledge gain from video-based education

techniques. The findings of this systematic review provide fair to good quality studies to demonstrate significant gains in knowledge compared with traditional teaching. Additional video to simulator exercise or 3D animations has beneficial effects on training time, learning duration, acquisition of surgical skills, and trainee’s satisfaction.

**CONCLUSION:** Video-based education has potential for use in surgical education as trainees face significant barriers in their practice. This method is effective according to the recent literature. Video should be used in addition to standard techniques in the surgical education. (J Surg Ed ■■■■-■■■. © 2018 Association of Program Directors in Surgery. Published by Elsevier Inc. All rights reserved.)

**KEY WORDS:** surgery, medical education, resident, systematic review

**COMPETENCIES:** Medical Knowledge, Practice-Based Learning and Improvement

## INTRODUCTION

Knowledge and skills of surgeons are critical for surgical success and the safety of patients in that operations may cause several life threatening complications. Moreover, surgical education is a lifelong learning process. There are several problems that adversely affect the surgical learning process, such as restriction of surgical training hours through clinical work during training, increased information with development of technology, new skill requirements to implement new surgical technologies.<sup>1-3</sup> Both surgical educators and students/residents struggle with these problems.

*Correspondence:* Inquires to Argut Karaborklu Sezen, MSc, PT, Istanbul Universitesi, Saglik Bilimleri Fakultesi, Fizyoterapi ve Rehabilitasyon Bolumu, Demirkapi Cad. Karabal Sk. 34740, Bakirkoy, Istanbul, Turkey; e-mail: [sezen.karaborklu@istanbul.edu.tr](mailto:sezen.karaborklu@istanbul.edu.tr)

Visual signs draw more attention during the learning process.<sup>4</sup> Video is one of the most effective tools that provide numerous visual cues. In fact, there is a correlation between visual-spatial ability and surgical performance in novices.<sup>5-7</sup> In addition, improved visual appearance help medical students to better understand the progress of clinical procedures.<sup>8</sup>

In recent years, computer-based video instruction has become an indispensable complement to the teaching of basic surgical skills.<sup>9</sup> Therefore, this review aims to explore the effect of using videos on surgical education. In this article, we review the current evidence on the video-based surgical education methods and discuss its effectiveness on the teaching of surgical skills.

## METHODS

This systematic review was conducted following guidelines defined in the preferred reporting items for systematic reviews and meta-analyses statement.<sup>10</sup> Data were collected by searching electronic databases and scanning reference lists of articles manually. The electronic databases, the Cochrane Library, Medline (PubMed), and ProQuest were searched from their inception date to January 30, 2016. In addition, we handsearched the reference lists of included articles. The Medical Subject Headings (MeSH) terms and keywords that we used in our search were “video,” “education,” and “surgery” (Appendix).

We searched all full-texts, randomised and non-randomised clinical trials and case controlled studies including video-based education methods about any surgery in the database. In this paper, “education” is defined as the training and teaching process of a medical resident or a student. It does not mean the education of patients. In this review, we did not impose any restrictions on the language and publication date of studies. We aimed to hand-search for non-English publication bibliographies to extend the search results.

We included the studies involving video training for students or residents in any surgical specialty in the database. Non-English publications, editorials, reviews, cohort studies, technical reports, books, conference abstracts, and case reports as well as studies involving patient education were excluded. The eligibility determination was performed by a consensus, which consisted of 3 reviewers. One of the reviewers studied to extract the data from the included full texts; and the other one checked the extracted data. In the case of any disputes, the third author made the final decision. Our review is focused on the role of video-based education in surgery: therefore, the search strategy is limited to identifying articles that focus on surgical education.

The quality of included articles’ assessment follows National Institute of Health guidelines on systematic review

using standardized National Institute of Health Study Quality Assessment Tools. Based on the questions of the Quality Assessment Tools, two independent reviewers (R.M. and G.K.) judged the overall quality of the study as “good,” “fair,” or “poor.”<sup>11</sup>

## RESULTS

Our search provided 258 articles. Once the duplicates are excluded, a total of 207 articles were analyzed according to their titles and abstracts. Then, 30 full text articles were examined by the consensus, 29 fulltexts were analyzed, where 18 of them were excluded due to the fact that video-based method was not used directly in surgical education of medical students or residents ( $n = 16$ ) and 4 other studies were not clinical trials. Details of the eligibility process is demonstrated in the Figure. We extracted relevant data from 9 fulltexts included in our review.<sup>9,12-19</sup>

### Study Characteristics

We provide the details of all included trials in Table 1. Eight of the trials were randomized clinical trials<sup>9,12-16,18,19</sup>; one of the trials was a case controlled study<sup>17</sup>; 7 of the trials compared 2 methods,<sup>12-15,17-19</sup> and 2 of trials included 3 groups.<sup>9,16</sup>

### Participants

The 9 trials included a total of 507 participants, where the total number of participants per trial ranged from 10 to 172. Most of the participants were students ( $n = 402$ ) and the rest was residents or staff surgeons. Types of surgical procedures in the studies covered here were laparoscopic cholecystectomy,<sup>14,19</sup> cataract and glaucoma surgery,<sup>12</sup> dental surgery,<sup>16</sup> urology-obstetrics and gynecology,<sup>17,18</sup> and general surgery.<sup>15</sup> The procedures for 2 of the studies in the database were not clearly defined. Most of the studies especially focus on suturing and knot tying skills. Trials were undertaken across a range of geographical locations including the United States ( $n = 4$ ), UK, Canada, Australia, Netherland, and Brazil.

### Surgical Education Methods

Table 1 provides descriptions of the educational methods in the reviewed studies. In this review, there were 6 clinical trials that compared the video-based learning style to the traditional learning style in surgical education. Traditional education comprised verbal lectures, theoretical seminars, training in the skills laboratory, verbal feedback by supervisor surgeons, and text reading.<sup>13-17,19</sup> In 3 of the studies, the authors compared video settings to other surgical education methods. For example, the first of these studies compared 3D animations and video sequences to only video

Download English Version:

<https://daneshyari.com/en/article/10222751>

Download Persian Version:

<https://daneshyari.com/article/10222751>

[Daneshyari.com](https://daneshyari.com)