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Original Article

The comparison of the efficiency of traditional lectures to video-supported lectures within the training of the Emergency Medicine residents

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ABSTRACT

Objectives: Recent developments in computer and video technology, multimedia resources enter quickest way possible into medical education and have started to gain popularity. The aim of this study is to evaluate the impact of video-supported lectures on learning, with comparison to traditional lectures. **Methods:** According to lecture techniques, two separate groups; one is the traditional lectures group (TLG) and the other is video-supported lectures group (VSLG), are formed. While the TLG is offered a traditional lecture the VSLG is offered a video-supported lecture with imbedded videos which are related to the topics in the traditional lecture. Both study groups take pretest and posttest with MCQs (multiple choice questions) and OSCEs (objective structured clinical examination).

Results: The study includes 30 volunteer residents in Dokuz Eylul University School of Medicine Department of Emergency Medicine. No difference is observed between TGL and VSLG in pretest and posttest scores ($p = 0.949$, $p = 0.580$). And additionally, comparing the scores of both groups, we cannot observe any difference between the pretest OSCE scores of each group ($p = 0.300$), however posttest OSCE scores shows a dramatic odd in-between ($p = 0.010$). When pretest MCQs and posttest MCQs mean scores are compared, both tests (TLG, VSLG) has not any significant difference ($p=0.949$, $p = 0.580$). Nevertheless, after comparing OSCEs pretest and posttest mean scores, we can see significant difference in mean scores of both (TLG, VSLG), ($p = 0.011$, $p = 0.001$).

Conclusions: Taken into consideration, the findings of this study shows possibility of improving educational techniques to acquire clinical skills by using local resources and low-cost technology.

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1. Introduction

With the advances in technology and global connectedness, medical knowledge is developing itself with utmost speed because of this reason, the efficiency, quality and updatability of lectures are of great importance in medical education. With recent

improvements in computer and video technology, multimedia resources are entering rapidly into medical education and gaining popularity.^{1–5} Within technical education, which is generally used in anatomic lecture slides,⁶ clinical scenarios⁷ and videoconference are commonly used.⁸ It is debated in this study that video assisted teaching makes learning easier for students.⁸

Thanks to the computer softwares that allow multimedia files which play on portable media players or on the internet via computers, access to educational sources has become more reachable. The most important advantage of this learning method is being able to access knowledge without any limitation of time or place.⁹ However, in studies where all lectures are presented with videos over the Internet, student video usage rates seem to be lower than expected.¹⁰

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Traditional lectures and video supported lectures differ the advantages and limitations. The advantages of traditional lectures are common usage on all medical educational levels, increased motivation of student to participate in question and answer dialog, less time required for preparation, and the practical usage of the new information into presentations by educators with ease. Video lectures offer the following advantages; the provision of rich educational materials, the superior demonstration of subtle details during procedures, the ability of repetition, and the ending with standardization in medical education.^{9–11}

Traditional lectures have the limitations depending on the lecturers' skills, inability of repetition of the lecture, and limited educational material usage. On the other hand, the disadvantages of video supported lectures varies from the time it takes to setup the necessary equipment to low listener motivation and to participation of students which can be lower than expected.^{10–12} In this study, "traditional lecture" and "video-supported lecture" by combining superior aspects of traditional lectures and video tutorials will be shown on the basis of student learning efficiency.

2. Materials and methods

Dokuz Eylül University, Ethics Committee has approved this study of comparison. The research is done in compliance with the Helsinki Declaration. Learning objectives are derived from the first two subjects of ATLS (Advantage Trauma Life Support); "General Approach to Multiple Trauma Patients" (GAMTP) and "Airway and Breathing Management in Trauma Patients" (ABMTP). The lectures are prepared using the same content but delivered as traditional lectures and as video-supported lectures. In traditional lectures, we use PowerPoint slides without any video content, and in the video-supported lectures we use video involved PowerPoint slides. The video supported lectures take 60 min, twenty minutes of which is composed of video content, the remaining 40 min are used as traditional lecture.

The study includes 30 volunteers from Emergency Medicine residents (EMR) in Dokuz Eylül University, School of Medicine Department of Emergency Medicine. The volunteers are randomly separated into two groups, equally distributed in terms of their class of residency which is 1–5 years of residency program. The first group is assigned as the traditional lecture group (TLG) and the second group is assigned as the video-supported lecture group (VSLG). First of all, each group take a multiple choice questions (MCQs) pretest. Afterwards, all volunteers take an objective structured clinical examination (OSCEs) in three stations. OSCEs are graded by using evaluation table guidelines, which are based on standard steps, and three-point scale (Failed = 0, partially done = 1 and done = 2). Evaluation of all stations are performed for 3–5 min. OSCEs are blindly evaluated by three Emergency Medicine Attending Physicians. Moreover, during the study, they take part in the same step. Afterwards both group attend their lectures. In order to avoid interaction between the groups, presentations and reviews are conducted in two different classrooms. Furthermore, to mitigate the difference in instructor teaching styles, the same presentation is given by the same instructor to the both groups using TLG and VSLG. After the lectures, both MCQs and OSCEs exams are performed. At the end of the study feedback on lectures is given by the participants (Fig. 1).

2.1. Material preparation

2.1.1. Presentation material

The presentations are prepared with the relation to "Advanced Trauma Life Support Program for Doctors, 8th Edition" and other evidence-based trauma management sources. PowerPoint

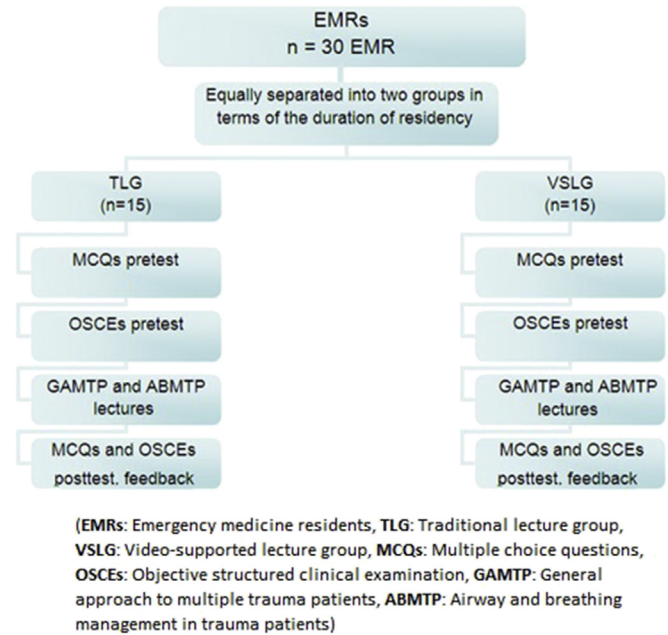


Fig. 1. Group and randomization chart.

(Microsoft Office PowerPoint 2010, Microsoft® Corporation, Redmond, Washington) is the program of choice as the presentation tool.

2.1.2. Video material preparation

The subjects of the video clips are chosen from examination and interventional procedures. These video clips are made without any professional help and in the videos simulated patients participated, who are volunteers (Fig. 2A and B). Educational models and cadavers are used for the video clips of interventional procedures and surgical airway techniques. The Ulead® MediaStudio® Pro Video Editor 8.0 is chosen as video-editing software.

2.1.3. Preparing the evaluation questions

MCQs and OSCEs questions are prepared in accordance with presentation goals. 30 questions are written for MCQs and then separated randomly into pretest and posttest groups which are based on the content items. For OSCEs stations, three skill subjects are chosen and patient scenarios are installed. At the first and second stations, standardized simulation patients are used, whereas in the third station training manikins are used. Participants are asked the same questions before and after the lectures. Scoring is assessed by using the checklist which is prepared for evaluation. Scores are converted to 100-point scale and analyzed.

2.1.4. Statistical analysis

The data obtained is analyzed in the program; called, "Statistical Package for the Social Sciences (SPSS) 16.0 for Windows". For the statistical analysis, Mann Whitney U and Fisher X² tests are used to compare the groups and mean values. The repetitive value comparisons are performed using Wilcoxon test. The score 'p < 0.05', is considered to be statistically significant.

3. Results

3.1. Comparison of pretest and posttest results of TLG and VSLG groups

There is not any statistically significant difference between TLG and VSLG in pretest and posttest MCQ scores. Additionally, with the

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