

Research Article

Utility of Video-Assisted Learning for Improving Performance Skills in Anthropometry among Undergraduate Students Posted in the Pediatrics Department

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A B S T R A C T

Introduction: Medical education in the twenty-first century faces a variety of implementation obstacles. Information technology assists in overcoming these difficulties by providing several curriculum delivery modalities. Offering students different learning modes meets their specific needs while also providing medical schools with options for coping with difficulties related to medical education delivery. This study aims to assess the utility of video-assisted learning in learning anthropometry in undergraduate (UG) students.

Objective: To assess the utility of video-assisted learning in learning anthropometry in UG students.

Method: A total of 60 students in batches of 15 were included in this cross-sectional, analytical study. Batches were divided into two groups and two anthropometric measurements – head circumference and mid-arm circumference, were taught after a pre-test. Group I was taught in the traditional way of demonstration and Group II by video demonstration. The groups were crossed over to teach the other skill. Students then were subjected to post-test and OSCE separately for the anthropometric measurement skills. Structured feedback was obtained from the participants.

Results: The demonstration group and video group were comparable based on mean pre-test scores (0.95 and 0.82, respectively), though the pre-test and post-test scores of both the groups showed a high level of statistical significance ($p = 0.0001$). Their mean post-test scores showed no statistical significance (4.85 and 4.78; $p = 0.32$), but the demonstration group performed well in OSCE (4.47 and 4.12; $p = 0.01$).

Conclusion: Video demonstration did not have a better effect on performance as compared to direct demonstration. Participants felt that the video could be played again and could reinforce traditional demonstration, but it cannot substitute demonstration.

Keywords: Video-Assisted Learning, Demonstration, Anthropometry, Undergraduate Students

Introduction

The National Medical Commission of India states that an Indian Medical Graduate should acquire around 406 competencies¹ in pediatrics, but the time allotted and resources available including teaching facilities is limited in most medical schools. Information technology assists in overcoming these difficulties by providing several curriculum delivery modalities. Offering students with different learning modes helps to meet their specific learning needs while providing medical schools with options for coping with difficulties related to medical education delivery. The use of videos for teaching in undergraduate medical education has been shown to improve observational skills and clinical reasoning, making it one of the most chosen blended learning strategies.^{2,3} Rather than passively examining e-learning material, using videos to supplement traditional classroom learning is successful in this era of e-learning.⁴

The present study aims to assess the utility of video-assisted learning for improving performance skills in anthropometry among undergraduate students posted in the Pediatrics department.

Objectives

1. To teach anthropometry skills (measurement of head circumference and mid-arm circumference) to UG students by traditional and video-assisted teaching methods
2. To compare video-assisted teaching versus traditional demonstration using the Pre-test and post-test for knowledge assessment and Objective Structured Clinical Examination (OSCE) for skills assessment

Methodology

Setting

This cross-sectional, analytical study was conducted in the Department of Pediatrics, Dhanalakshmi Srinivasan Medical College and Hospital, Perambalur, South India from July to November 2019 as a part of the Education Innovation Project of ACME Course. The protocol was approved by the Institutional Ethics Committee. Phase II medical students posted in the pediatrics department were included in the study.

Selection of Participants

The participants were chosen using convenient sampling method. A total of 60 students of both genders (in 4 concurrent batches of 15 students each) were included. Based on their odd/ even roll numbers, each batch was divided into two groups "Group 1" and "Group 2", with 7–8 students in each group. Participants who were willing to give written informed consent were included in the study.

Intervention

Before participating in the study, the students were

informed about the expected outcome and ensured confidentiality. Written informed agreement was obtained. Two anthropometric measurements – head circumference and mid-arm circumference were chosen to be taught. Group 1 was taught head circumference measurement by traditional demonstration and Group 2 by video demonstration on measurement of head circumference with voice-over. A crossover of teaching methods was followed for teaching measurement of mid-arm circumference. Both types of instruction lasted for 10 minutes each. The students of both groups were subjected to the pre-test and post-test for each topic using the same set of topic-specific, validated 10 multiple choice type questions. The questions had an equal mix of recall and application-based items. They were further subjected to an Objective Structured Clinical Examination (OSCE) with a validated checklist for assessing their skills by a faculty who was blinded about the study. The students also filled out a specially designed feedback form. The content validation of the feedback and MCQs was done by the other faculty and medical education unit members. It was piloted on 12 students of the same term (7th) who were not a part of this study, and the internal consistency was found to be reliable (Cronbach's alpha – 0.74).

Statistical Analysis

Student paired and unpaired t test were used to analyze pre- and post-test and OSCE scores, respectively using SPSS version 21.0. Content analysis was done for the feedback.

Results

Among the 60 students, 32 were female and 28 were male students. Both groups showed no statistical significance ($p = 0.38$) in mean pre-test scores (0.95 and 0.82, respectively), ensuring that the study participants are comparable.

On comparing the pre-test and post-test scores of traditional demonstration and video groups, a high level of statistical significance ($p = 0.0001$) was observed. The mean post-test scores showed no statistical significance (4.77 and 4.85; $p = 0.35$) between the traditional demonstration and video-assisted demonstration group (Figure 1).

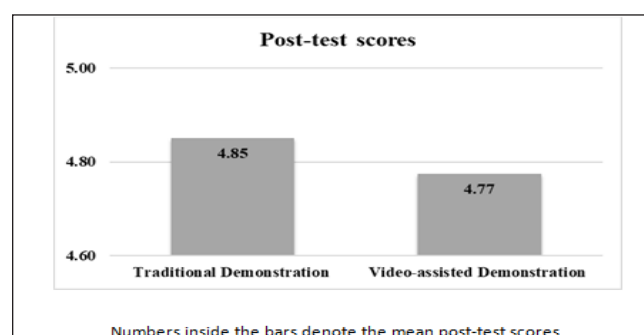


Figure 1. Comparison of Post-Test Scores between Traditional Demonstration and Video-Assisted Demonstration Groups

A comparison of OSCE scores between the two groups showed that the traditional demonstration group scored significantly better (4.47 and 4.12; $p = 0.01$) than the video-assisted demonstration group (Figure 2).

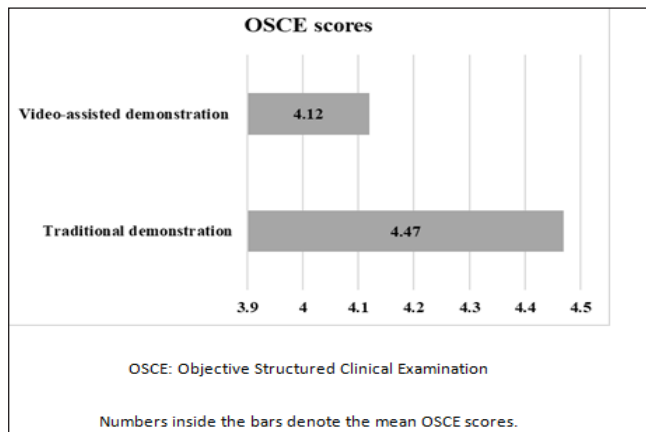


Figure 2. Comparison of OSCE Scores between Traditional Demonstration and Video-Assisted Demonstration Groups

Feedback analysis showed that students felt traditional demonstration was the better teaching method. The comments about the traditional teaching method were, “better than video”, “able to grasp better”, “live interactive with the patient”, and “better to have hands-on experience”. The comments about the video-assisted teaching were “Video can be repeated and paused in between”, “lack of interaction with the patient as well as with the teacher” “Could not ask doubts”.

Discussion

This study, conducted on 60 phase II MBBS students, evaluated the efficacy of two teaching-learning methodologies, viz. traditional demonstration, and video-assisted teaching, for effective teaching of clinical skills in anthropometry. On comparing the pre- and post-test scores, it was evident that there was a substantial improvement in the knowledge, in both modes of instruction. A comparison of the post-test scores showed no statistical significance between them, though the scores were slightly higher in the demonstration group. Mir et al., a long way back in 1984, had proposed, that videotaped demonstrations of clinical methods can be as effective as in-person instruction, and video should be developed as a first-line clinical teaching medium.⁵ In our study, we intended to evaluate the current scenario in clinical teaching. Nongmeikapam et al. concluded in their study that both didactic and video-assisted lectures were effective in terms of knowledge gained and students’ feedback and video assistance may be used as a complement to lectures and not to replace the traditional methods.⁶ A similar study in nursing students by Devi et al. showed that the post-test intervention scores

were higher in the traditional demonstration group and had more impact in improving the skills.⁷ A study by Pradhan et al. carried out in nursing students also supported this finding.⁸ Mehrpour et al., in their study of first-year medical students, showed that dissection videos did not improve performance on final examination scores, though students preferred the use of videos for learning.⁹

On the contrary, there are studies that showed improvement in performance when videos were used for demonstration. Mehrpour et al. showed in their study that supplemental instruction using videos enhanced the exam scores of musculoskeletal clinical skills in comparison with traditional didactic lectures.⁹ A few studies done on teaching knowledge domain using videos were better than lectures. A study by Benitto proved that video-assisted teaching modules were highly effective in conveying knowledge about substance abuse in adolescents.⁴ Nikopoulou-Smyrni and Nikopoulos in their study showed that teaching material based on video clips was at least as equally effective as standard teaching lectures and also recommended that videos be used for teaching important practical skills also.¹⁰ Another study by Friedman et al. stated that procedure-specific aseptic technique teaching using videos for both demonstration and assessment showed dramatic improvement in the practice of asepsis among novice students.¹¹ Our study was also done among novice students but resulted in a contrasting finding where the traditional demonstration group showed better performance. Another study among coronary artery disease patients by Reshma also found that video-assisted teaching was highly effective in improving the level of knowledge on heart-healthy diet.¹² Lalmuanpuii et al. showed that nursing students showed knowledge gain after attending a video-assisted teaching program about biomedical waste management.¹³

A few studies have obtained feedback from the students. Students preferred the use of videos stating that it gave better clarity, was informative, and gave more room for interaction.⁶ A few students also suggested that more audio-visual aids should be used to supplement traditional methods. Students from our study opined that though videos have the advantage of watching repeatedly at their own pace, the traditional method of demonstration was better wherein the direct observation helped them to understand and perform in a better way. Moreover, they could clarify their doubts with the instructor straight away. The physical presence of the teacher always makes the sessions more interactive and interesting and they could retain what they learnt in a better way as this will stimulate their episodic as well as procedural memory.

Conclusion

This study adds evidence to a few other previous studies showing that video demonstration did not lead to an

effective improvement in performance in anthropometric skills when compared to the traditional method of direct demonstration.

Most of the students felt that traditional demonstration was better than video as a mode of teaching though, most of the students who watched the video felt an advantage that it could be played again. Thus, video demonstration can reinforce traditional demonstration but cannot substitute it.

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