

A Comparative Analysis of Demonstrate Observe Assist Perform versus Structured Educational Video in Teaching Practical Skills to Undergraduate Medical Students

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Abstract

There has been a sudden drastic change in medical education with the introduction of the new Competency-based medical education (CBME). There is a demand for a shift in medical education from the traditional teaching method, where knowledge acquisition was paramount, to skill-based learning. Physiology is an important subject in the first phase of MBBS, where the students must acquire both knowledge and practical skills. The recent methods introduced as per CBME are Demonstrate Observe Assist Perform (DOAP) and structured educational videos (SEV) in teaching practical skills to undergraduate first-phase medical students. This study was a cross-sectional study done to compare two methods of teaching practical skills, DOAP and SEV. In this interventional study, 150 first phase was divided into three groups and taught by two different methods of teaching, i.e. DOAP and SEV-assisted teaching separately and then by the combination of both methods of teaching. The perception of the two methods was obtained using a feedback questionnaire, and the assessment was done using an objective structured practical examination (OSPE) to find out the better method of teaching. From our study, we found out that the student's perception was strongly in favour of DOAP. However, from the assessment marks, it was concluded that a combination method of teaching using DOAP and SEV is recommended to acquire practical skills for medical students.

Keywords: DOAP, SEV, CBME, Teaching method, practical skill

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Introduction

A paradigm change in medical education was brought about with the introduction of Competency-based medical education (CBME) in the medical curriculum of undergraduate students. It is one of the important landmarks in the history of medical education. It has been designed to empower the medical students of today to become competent doctors of tomorrow. CBME ensures that the medical student achieves education that matches international standards and also instill in the students the desired competencies needed to fulfil the requirements of patients in a community. In the Indian setup, five core competencies have been enumerated by the CBME, which are clinician, communicator, leader and member of the healthcare team, lifelong learner, and professionalism [1,2]. In contrast to the traditional method of medical education system that was teacher-centered, focusing on the COGNITIVE domain only, the CBME curriculum was implemented with a vision to transform medical students into competent doctors focusing on "COGNITIVE", "PSYCHOMOTOR" and "AFFECTIVE" domain

and to become the 'Doctors of first contact'. For the acquisition of skills, the DOAP (Demonstration, Observation, Assistance and Performance) mode of teaching and learning has been hugely recommended. On the other hand, for skills acquisition, the highest level of acceptability, viz. "Does", requires the ability to perform independently under supervision [3]. Wide variability in procedural skills has been observed among junior doctors even after the adoption of CBME raising questions about their readiness to undertake roles expected of them [4].

Physiology has been recognized as a challenging discipline for medical students to comprehend, integrate and apply in clinical sciences. The teachers have to adopt different teaching-learning methods (T-L methods) in Physiology, especially in the practical's to ensure the psychomotor development of the students and the acquisition of the requisite skills. One of the challenges for the teachers is to teach the students "Motor system examination". In the motor system examination, one of the important components is the testing of "Deep tendon reflexes", which is an important method and can also be reproducible, which in turn helps test the

integrity of ascending pathways and descending pathways to the brain and the way they are connected with the higher centers. It will be helpful to distinguish between upper motor neuron paralysis and lower motor neuron paralysis. So, it is necessary to be skilled in eliciting deep tendon jerks or reflexes both from an examination point of view and for future clinical diagnosis. The deep tendon reflex has to be taught innovative and interesting techniques so that the students learn to assess deep tendon reflexes systematically. Newer T-L methods have to be adopted by teachers, like DOAP and using audio-video aids that can help much in teaching medical students [5,6]. However, there is very little research to determine which is a better teaching-learning (T-L) method out of the two or both are equally useful.

Study Objective

- To obtain the perception of students regarding DOAP and the newer method of demonstration by Structured Educational Video (SEV) as T-L methods
- To determine which is a better T-L method out of the two in dissipating psychomotor skill training of deep tendon reflex in practical among first-phase medical students.

Materials and Methods

This study was quasi-experimental research conducted taking first-phase MBBS students.

Inclusion Criteria

Out of 250 first phase students, a total of 150 Phase I medical students who consented to participate in the study were included in the study.

Exclusion Criteria

Phase I undergraduate medical students who did not show a willingness to participate in the study and student who were absent during the study period were excluded from the study.

Sampling Method

The 150 students who agreed to participate in the study. The students were grouped into 3 groups consisting of 50 students each based on random selection and grouping by blinded chit pick-ups

Intervention

The students were taught DOAP and by SEV-assisted teaching. The structural educational video was prepared by a faculty member on simulated patient and was validated by 5 subject experts.

Study Tool

Two type of study tools were used in our study:

- 1) Objective structure practical examination (OSPE) Checklist was used to assess the skills of students taught by both methods.
- 2) A pre-validated Feedback Questionnaire based on the Likert Scale of assessment was used to obtain students' perceptions about both the T-L methods.

Data Collection

The data were collected over three weeks. The students were grouped into 3 groups consisting of 50 students each based on random selection and grouping by blinded chit pick-ups. The three groups were taught on separate days of the week. The first group

of students were taught 'deep tendon reflexes of lower limb' (Knee jerk and ankle jerk) by the DOAP method in small groups of 10 students each. The entire second group of students were taught on the same topic by using SEV. The third group of students were taught the same topic by a combination of both the DOAP and SEV method (DOAP was taught in small groups of 10 student each and SEV method to the entire group together). The second and the third group were given were given a copy of the video to refer to for the OSPE (objective structured practical examination). The student's skill was assessed in the following week by OSPE using an objective structured evaluation questionnaire by separate teachers who were not involved in the teaching process. OSPE checklist marks were entered in an excel sheet. In the third week, there was a crossover study wherein, the first group was taught by SEV and the second group was taught by DOAP. After all the students were exposed to both the T-L methods, feedback questionnaire was provided to the students to obtain their perception of both the T-L methods, i.e., DOAP and SEV-assisted learning.

Statistical Analysis

Data were obtained and fed into a Microsoft excel sheet and analyzed using SPSS software. Independent sample t-test will be used to find out the statistical significance, p value < 0.05 was considered statistically significant. The perception obtained through the feedback questionnaire was assessed using a Likert Scale. Descriptive analysis will be done by calculating frequencies and percentages in student's perception.

Results

150 students were taught about the practical skill on deep tendon reflexes. DOAP teaching and SEV method of teaching separately and then the combination of both methods (DOAP and SEV) was adopted in teaching the students. Analysis of the perception of students in our study, we found out that the majority of the students strongly agreed that DOAP is a better teaching method (Table 1). Majority of the students gave positive feedback regarding DOAP. The students found the session interesting with the DOAP teaching method and concluded that the overall session was more effective and beneficial than SEV assisted teaching method (Figure 1 and 2)

To find out the effectiveness of the T-L methods adopted, the students were assessed by OSPE. The students of the first group taught by DOAP, secured a mean mark of 13.9 ± 0.89 . The second group of students taught by SEV assisted teaching obtained a mean mark of 12.2 ± 0.88 . The mean mark of third-group students taught by both methods combined was 15.2 ± 0.87 . The students taught only by DOAP performed significantly (p value < 0.05) better than the students taught only by SEV assisted teaching method, as depicted in Table 2. We further found out that students taught by a combination of both DOAP and SEV-assisted learning performed significantly p value < 0.05 better than those taught by DOAP alone. (Table-3)

Discussion

One of the challenging subjects for medical students during the first phase MBBS is Physiology. So, the subject needs to be taught in an interesting manner so that the students develop the required skills and apply them in clinical sciences. With the changing time, critical thinking skill is given more importance over the systems-based didactic lectures [7]. For skill development, the students have to be thorough in the practicals. CBME has emphasized on DOAP method as well as newer methods like the use of educational

Table 1: Perception of students towards DOAP and SEV-assisted teaching

QUESTIONS	SEV	DOAP	SEV	DOAP	SEV	DOAP	SEV	DOAP	SEV	DOAP
	SA%	SA%	A%	A%	N%	N%	DA%	DA%	SD%	SD%
1. The session was interesting	18	43.5	41.5	44	24.5	8.5	10	1.5	6	2.5
2. The tests were well appreciated	18.5	38	42.5	49	26	9	6.5	1.5	6.5	2.5
3. Understanding and following the subject was better	18.5	43	36	42.5	22	10.5	15.5	2	8	2
4. Continuity in the learning maintained	18	39	38	44	19	11	15.5	3	9.5	3
5. Doubts were clarified	19.5	21.5	45.5	61.5	21.5	12	6.5	2	7	3
6. Helps to retain the memory	19.5	22	38	38.5	19.5	12.5	14.5	8	8.5	19
7. Helps to boost the performance	19.5	36	33	45	24	13.5	15	2	8.5	3.5
8. This method helps reproducibility	15.5	34	37.5	43	25	17	14.5	4	7.5	2
9. Can be adopted for teaching other subjects	19	39.5	30	42.5	20.5	12	16.5	1.5	14	4.5
10. Overall this method was effective and beneficial to me	19	43.5	37.5	39	18.5	12	15.5	2.5	9.5	3

*SA: strongly agree; A: agree; N: neutral; DA: disagree; SD: strongly disagree

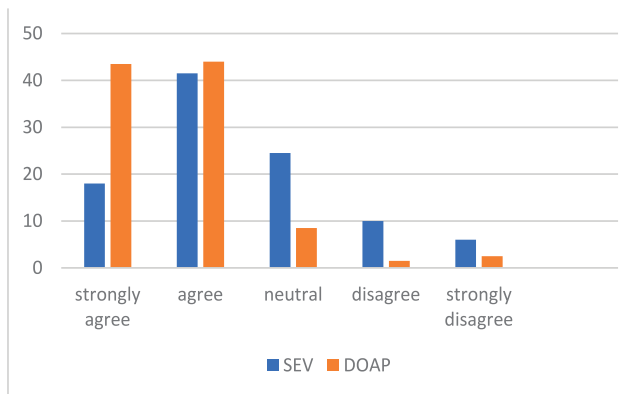


Figure 1: The session was interesting

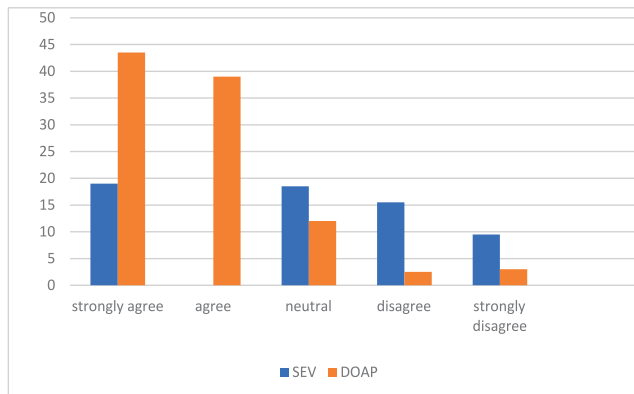


Figure 2: Overall this method was effective and beneficial

Table -2: DOAP vs SEV method of teaching learning method

Examination	DOAP	EDUCATIONAL VIDEO	P value
OSPE marks	13.9± 0.89	12.2 ± 0.88	< 0.05

Table-3: DOAP vs combination of DOAP and SEV teaching learning method

Examination	DOAP	DOAP COMBINED WITH EDUCATIONAL VIDEO	P value
OSPE marks	13.9± 0.89	15.2 ± 0.87	< 0.05

videos, 3D models, simulators, mannequins etc for skill development. Earlier researchers have shown using media could make a big difference in learning [8]. Further, the assessment of neurology practical should be an all-around assessment covering all learning domains [9]. So, in our study, we have tried to analyse students' perception regarding two recent and innovative methods of teaching i.e. the DOAP method and the use of structured educational videos (SEV) in teaching practical skills. The students found the session with DOAP to be more interesting, the tests were well appreciated, and understanding and following the subject was better with DOAP. With DOAP, students agreed that there is continuity in the learning, doubts were clarified, helped to retain memory, helped to boost performance, this method helps reproducibility, can be adopted for teaching other subjects and overall, this method was effective and beneficial. Our study is similar to the findings of Gülpinar M, Yeđen B who concluded that such interactive teaching and learning sessions not only motivate and actively engages the students but also increases their involvement in lectures and classrooms [10]. However, our result is in contrast to a previous study by Yoshii et al., who concluded that students have also shown greater satisfaction with the use of video-assisted learning compared to traditional methods of skill training through demonstrations [11]. Our study also disagrees with a study done by Alqahtani ND et al., who concluded students preferred video-assisted learning more for personal comfort, easy availability of media for later review and clarification and scope for personal visualization and reflection [12]. The OSPE results in our study, revealed that the performance of the students taught only by DOAP was significantly better than the students taught only by SEV assisted teaching method. Our finding is similar to the findings of Balakrishnan et al. who concluded that, personalized training through DOAP in small groups appears to be the ideal method of imparting training in common bedside clinical procedures [13]. The marks of student taught by a combination method was significantly better than those taught by DOAP alone, which is in agreement with previous study by Sahu S, John J who suggested that both video-based and conventional lectures have their own advantages and are effective teaching-learning methods [14]. Raijmakers found that teaching reflexes to medical students by SEV-assisted teaching are a more efficient tool [15]. Girimallesh et al. pointed out that electronic resources are very helpful for medical students [16]. So, we can conclude that though DOAP is a better method of teaching practical skills to the MBBS students than SEV-assisted learning alone. However, for effective and all-around improvement of MBBS undergraduates student's and practical skill development, a combination of both DOAP and SEV-assisted learning must be adopted.

The limitations of our study are that as only one topic, that is, testing of deep tendon reflexes, was used for comparison, this study cannot be generalized to all topics in the medical curriculum. Secondly, a multicentric study taking a larger sample size with a control group and use of more than one tool will be useful to draw a conclusion regarding the best T-L method to be adopted.

Conclusion

The combination of both DOAP and SEV-assisted teaching was found as the most effective in demonstrating deep tendon reflexes to the students. For easier reproducibility, DOAP was considered to be better, as obvious from the better mean scores in the OPSE. Introduction and implementation of SEV mode of teaching as a teaching method, with prior planning and training of faculty, can help to deal with the challenges like shortage of faculty members

and short time. Newer teaching methods, along with DOAP using audio-visual aids such as SEV mode of teaching, may be used in the practical skills demonstration to the first phase medical students as it simultaneously encourages both e-learning and self-directed learning. A combination of teaching methods can also be useful in better grasp over the subject in an interesting manner. So, it is recommended to integrate both the methods, i.e. DOAP and the use of SEV, for proper and effective teaching and learning practical skills.

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References

- Shah N, Desai C, Jorwekar G, et al. Competency-based medical education: an overview and application in pharmacology. *Indian J Pharmacol* 2016;48(Suppl 1):S5-9.
- Touchie C, ten Cate O. The promise, perils, problems and progress of competency-based medical education. *Med Educ* 2016;50:93-100.
- Competency-based undergraduate curriculum for the Indian Medical Graduate. Medical Council of India, 2018. Medical Council of India, Available at www.mciindia.org/CMS/information-desk/for-colleges/ug-curriculum, (accessed on 22 October 2018)
- Faculty of the National Medical Council nodal center, Kottayam, and my peers from the advanced course of Medical Education (ACME Batch 2019B)
- Ananthakrishnan N. Medical education in India: Is it still possible to reverse the downhill trend? *Natl Med J India*. 2010;23(3):156-60. 2.
- Sood R. Medical education in India. *Med Teach*. 2019 May 9;30(6):585-91.
- Huang GC, Lindell D, Jaffe LE, Sullivan AM. A multi-site study of strategies to teach critical thinking: 'why do you think that?' *Med Educ*. 2016;50(2):236-249.
- Botelho MG, Gao X and Jagannathan N. A qualitative analysis of students' perceptions of videos to support learning in a psychomotor skills course. *Eur J Dent Educ*. 2019;23(1):20-27.
- Brockfeld T, Müller B, de Laffolie J. Video versus live lecture courses: A comparative evaluation of lecture types and results. *Med Educ Online* 2018;23:1555434.
- Gülpinar M, Yeđen B. Interactive lecturing for meaningful learning in large groups. *Med Teach*. 2005;27(7):590-594.
- Yoshii F, Rinsho S. Advanced OSCE in neurology. *Clin Neurol*. 2007 01 Nov;47(11):897-9
- Alqahtani ND, Al-Jewair T, Al-Moammar K, Albarakati SF and Alkofide EA. Live demonstration versus procedural video: A comparison of two methods for teaching an orthodontic laboratory procedure. *BMC Med Educ*. 2015;15:199
- Santosh Balakrishnan, Lijo Paul, Minu N Rajan, Sherin A Arthungal. Demonstrate, Observe, Assist, and Perform versus structured educational video in imparting standard skill in male urinary bladder catheterization. *Asian Journal of Medical Sciences*. Feb 2022; Vol 13(2):48-53
- Sahu S, John J. To play or pause: Video-based or conventional lectures in medical classrooms. *Indian J Physiol Pharmacol* 2021;65(1):55-9.
- Raijmakers PG, Cabezas MC, Smal JA, Van Gijn J. Teaching the Plantar Reflex. *Clin Neurol Neurosurg*. 1991;93(3):201-4.
- Girimallesh HN. Use of Electronic resources by students of SDM College of Medical Sciences and Hospital, Dharwad: A case study. *IJRMPS*. 2019 Sep 8;7(5).

