

## EFFECTIVENESS OF VIDEO ASSISTED DEMONSTRATION VERSUS CONVENTIONAL DEMONSTRATION IN TEACHING HEMATOLOGY PRACTICAL EXERCISES TO PHASE II MBBS STUDENTS

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### Abstract

**Background:** Conventional demonstrations of practical exercises gives a live experience for the students but the crowding often makes it difficult to watch the procedures properly. In this era of e-learning using videos to complement teaching is considered more effective than traditional teaching methods and the advances in technology made video demonstrations easier. This study was done to find the effectiveness of the use of video demonstrations in teaching hematology practical exercises. The primary objective was to compare the effectiveness of Video assisted demonstrations over conventional demonstrations for teaching hematology practical exercises to Phase II MBBS students as assessed by post test scores and the secondary objective was to find out the perception of the students regarding the use of Video assisted demonstrations in teaching hematology practical exercises. **Materials and Methods:** This is a quasi-experimental study done among Phase II MBBS students of Travancore Medical College, Kollam. A total of 70 students were selected and divided into 2 groups of 35 students each. One group was taught Hematology practical exercises using conventional methods and the other group was taught the same using Video assisted demonstrations. 4 interventions with 8 exposures were conducted for both the groups over a period of one month. At the completion of the interventions, Objective structured practical exams (OSPE) were conducted for both the groups followed by which there was a cross-over for both the batches. The feedback from the students regarding the two instructional methods were also assessed. **Results:** The data collected comprised of the spotter exam scores and feedback by Likert's scale were analysed using SPSS software. The mean scores of the OSPE exam showed that the students taught by video assisted demonstrations performed the exercises slightly better than the students that were taught by conventional demonstration methods. This improvement was statistically significant with p value <0.05. The feedback from students reflected that most students preferred video demonstrations as a teaching method for hematology practical exercises. **Conclusion:** Video assisted demonstrations are effective teaching learning methods for teaching hematology practical exercises to Phase II MBBS students.

## INTRODUCTION

Learning different practical skills is one of the main targets in higher education especially in medical education.<sup>[1]</sup> Teaching different subjects and skills require different methods and techniques and the instructor's way of teaching is a major factor that affects the learning process of the student.<sup>[2]</sup> In the MBBS curriculum the Phase II medical students

have to acquire knowledge as well as master the skill of demonstrating the hematology exercises. Conventional teaching of hematology exercises include brief theory presentation followed by demonstration of the exercise. Demonstration refers to visual presentation of the activities aiming to facilitate learning since the students directly watch the procedure being performed and can ask questions during the procedure. It provides live

experiences to the students. They can enhance their clinical skills and put that into their practice. However, the live demonstration method has some drawbacks as well, especially as the crowding makes it difficult for all students to fully watch the procedures performed.<sup>[3]</sup> In the event of pandemic situations like COVID, crowding of the students in practical classes are not allowed, so video assisted demonstrations will be more appropriate. In this era of e-learning, using videos to complement teaching is considered more effective than traditional teaching methods.<sup>[4]</sup>

In the new as well as in the old curriculum, hematology exercises are an important part of Phase II MBBS practical examinations. As we know students in the current era are bound to use the modern materials such as the video tutorials for learning purpose.<sup>[5,6]</sup> Using videos in undergraduate medical teaching has been known to promote observational skills and clinical reasoning. Videos not only impart knowledge but also prove to be a tool for self-study also.<sup>[7,8]</sup> So apart from the conventional demonstration methods teaching learning methods like Video assisted demonstrations can be used to teach the practical exercises to the students. With this background we conducted this study to compare the effectiveness of video assisted demonstration over conventional demonstration methods in teaching hematology practical exercises.

## MATERIALS AND METHODS

**Study Design:** Quasi-Experimental study.

**Study Setting:** Department of Pathology, Travancore Medical college. Kollam

**Study Period:** 1 year (November 2021-October 2022)

**Study Population:** Phase II MBBS students

**Sample Size:** 70 students (In two groups of 35 students each)

**Sampling Technique:** Convenience sampling.

### Inclusion Criteria

Phase II MBBS students who were willing to participate after getting an informed consent.

### Exclusion Criteria

Those who were absent for the study.

**Study Method:** The study was started after obtaining IRB and Ethics committee approval. Before beginning the study, the Phase II MBBS students were oriented to the study method. 70 voluntary participants were selected and were divided into 2 groups, Group A and B. An informed consent was obtained from the students. The confidentiality of the study participants were maintained.

4 hematology exercises including blood grouping, Hemoglobin estimation, Peripheral smear staining and Peripheral smear preparation were demonstrated in 4 separate practical sessions.

All these 4 hematology exercises were taught to Group A using the conventional direct

demonstration and the B group were taught using only a video assisted demonstration of the exercise where the teacher shows a video demonstration on how to do the particular exercise with a brief description.

Week	Exercises	Group A	Group B	Assessment
1	Blood grouping	Conventional demonstration	Video assisted demonstration	OSPE
2	Hemoglobin estimation	Conventional demonstration	Video assisted demonstration	OSPE
3	Peripheral smear preparation	Conventional demonstration	Video assisted demonstration	OSPE
4	Peripheral smear staining	Conventional demonstration	Video assisted demonstration	OSPE

So there were four interventions and eight exposures in this study.

Immediately after the teaching sessions the students in both groups were given a Objective structured practical examination (OSPE) using a prevalidated OSPE checklist for skill assessment.

A feedback form using Likert scale were obtained from the students after the sessions to assess the level of perception of these teaching methods. Test scores was documented in the OSPE checklist and feedback scores were documented in the feedback questionnaire. The data collected was entered into an excel sheet and analyzed using the SPSS software. The statistical significance of the difference in mean scores were compared using unpaired t-test. P value of less than 0.05 is taken as significant.

Feedback scores were expressed with descriptive statistics

After evaluation cross over was done for ethical reasons.

## RESULTS

Out of the 70 students, 30 (42.8%) were males and 40 (57.2%) students were females [Table 1]. The mean scores of the OSPE showed that the students taught by Video assisted demonstrations performed slightly better than the students who were taught by conventional demonstration methods. This improvement was statistically significant as p value was <0.05 (as shown in Table 2).

On analyzing the feedback form of students, it was found that most students preferred Video assisted demonstrations as teaching method for learning hematology practical exercises. 91.4% of the students taught using video assisted demonstrations as well as 74.2% of students who were taught using the conventional methods strongly agree that the exercises were made easy to understand using the video assisted demonstration methods. Majority of the students (80%) taught with video assisted demonstrations as well as 72.0% of students taught with conventional methods strongly agree that they prefer video assisted demonstration over conventional demonstration in learning hematology practical exercises (as shown in figure 1 and 2)].

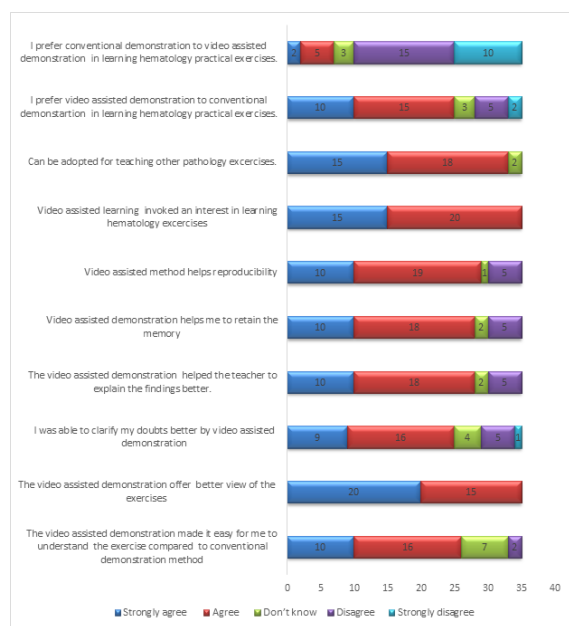
**Table 1: Gender distribution**

Gender	Group		Total
	Conventional Demonstration group	Video assisted demonstration group	
Male	15(42.8%)	15(42.8%)	30(42.8%)
Female	20(57.2%)	20(57.2%)	40(57.2%)
Total	35(100%)	35(100%)	70(100%)

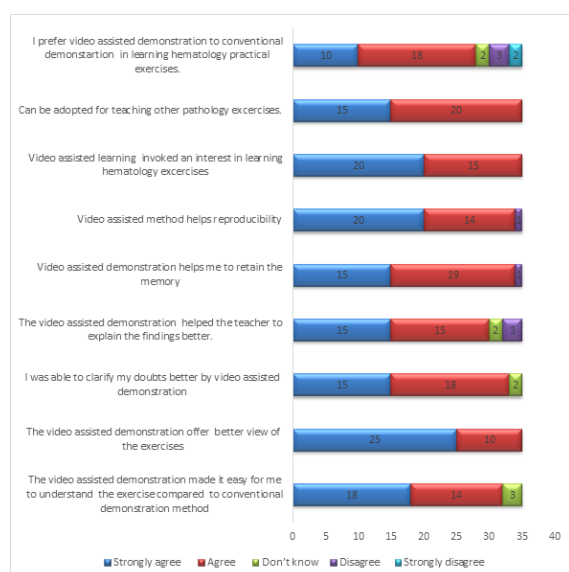
**Table 2: Mean scores of Objective structured practical examinations**

	Group	N	Mean	SD	Independent sample t test	p value
Exercise-1 Haemoglobin estimation	Conventional Demonstration group	34	9.35	0.734	3.843	0.001
	Video assisted demonstration group	34	9.88	0.410		
Exercise-2 Blood grouping	Conventional Demonstration group	34	9.53	0.563	2.215	0.030
	Video assisted demonstration group	34	9.79	0.462		
Exercise-3 Peripheral smear preparation	Conventional Demonstration group	34	9.56	0.561	2.574	0.012
	Video assisted demonstration group	34	9.85	0.410		
Exercise-4 Peripheral smear staining	Conventional Demonstration group	34	9.53	0.563	2.510	0.015
	Video assisted demonstration group	34	9.82	0.431		

p value was calculated by independent sample t test, p<0.05 considered as statistically significant



**Figure 1: Likert scale- Conventional group**



**Figure 2: Likert scale- Video demonstration group**

## DISCUSSION

In addition to the theory knowledge, practical exercises are also equally important in MBBS curriculum, so the medical council has clearly defined the objectives of laboratory work in pathology and this has been endorsed by the respective state universities across India. Introducing practical work will help the students to improve skills so that, at the end of the course, the student can conduct experiments, interpret data, and distinguish between normal and abnormal data derived from tests that he/she has performed and observed in the laboratory.<sup>[9]</sup> As we all know this is the era of e learning and the advancement in technology made changes in medical education fields also. The use of social media platforms, learning applications, video demonstrations and online discussions are now becoming an inevitable part of education. These advance teaching methods make teaching more interesting, interactive and accessible.

Our study has demonstrated that students taught with video assisted demonstrations have shown a slight but statistically significant improvement in the objective structured practical examinations (OSPE) compared to the students taught using conventional demonstration. This result is in conformity with the study conducted by Nishi et al,<sup>[1]</sup> where the knowledge, attitude and practice of the students improved by video assisted teaching. Video demonstrations are considered very effective method in teaching basic clinical skills as well as practical exercises as proved by Devi et al,<sup>[2]</sup> and Padmavati et al,<sup>[10]</sup> in their study where they concluded that both video assisted and conventional demonstration methods are equally effective teaching methods in undergraduate teaching. A combination of teaching learning methods can be adapted where we can combine the conventional teaching learning methods with new and interesting modes of teaching and learning, which will help to evoke an interest in students and helps to develop their skills and knowledge. Kaur et al,<sup>[3]</sup> in their study also recommended a combination of the live

and video assisted teaching and found that both techniques were equally effective in enhancing skill development in students. Alqahtani et al,<sup>[11]</sup> in his study concluded that procedural video is as effective as live demonstration and both methods should be considered as teaching methods in order to improve learning experience and to match different learning preference of students. Analysis of the feedback of study showed that most of the students participated in our study preferred the use of video assisted demonstrations over conventional demonstrations. The major limitation of this study is that it is based on a small sample population and hence the results may not be generalizable to all the medical students. The traditional way of conventional demonstrations combined with video demonstrations will be more beneficial to the students and can be incorporated for better teaching and learning outcomes.

## CONCLUSION

Our study findings showed that video assisted demonstrations are effective instructional methods in teaching hematology exercises.

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