

## Video Assisted Teaching Vs Direct Demonstration of Knee Joint Examination, On Medical Students – A Comparative Study

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### Abstract

**Aim:** To compare traditional method of demonstration of teaching knee joint examination with a video assisted method on medical students. **Methods:** The study was conducted on 120 medical students on Phase 2 of their curriculum at Travancore Medical College, Kollam. The students were divided into 6 subgroups of 20 each. Then 10 of each groups were taught knee joint examination in direct clinical demonstration way and the latter half by video assisted demonstration. Post evaluation OSCE was conducted. Then cross over done. Also student perceptions were collected using a validated feedback questionnaire. **Results:** The students were able to understand the examination of knee joint better when demonstrated along with visual aided method. The students identified video assisted method as the more interesting one for learning and recollecting, which helped them in applying the knowledge gained. **Conclusion:** The ideal method of teaching and learning would be incorporating newer multimedia techniques into traditional classes.

**Keywords:** knee joint examination, video assisted learning, teaching-learning technology

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### I. Introduction

India produce the largest number of doctors than anywhere else in the world.<sup>1</sup>The medical education system in India may be on the verge of collapse. An exploding number of medical colleges; a skewed distribution of all these round the country; devaluation of merit in admissions, particularly in privately institutions; increasing capitation fees; admission of suboptimal quality of students with poor motivation; an alarming shortage of teachers, with those who exist being untrained in modern teaching-learning technology; gross shortage of patients in many institutions; a less than desirable evaluation system; and poor internship supervision—all contribute to this gloomy picture.<sup>2</sup> Teaching methods have failed to keep up with the pace of the changing curriculum. Nowadays newer methods of learning like video assisted teaching has been introduced to compensate for the increasing class size, expanding curriculum, time pressure on students and shortage of trained faculties<sup>3</sup>. Though many commercial packages are available these are frequently not in a language or accent acceptable to the student and do not mostly cater to the learning objectives of the program. The application of new information technology has revolutionized the traditional methods of teaching clinical skills<sup>4</sup>. The new advances in the technology have helped to create teaching material which is more accessible and interactive. The traditional teaching in examination is when a teacher demonstrates the examination in a small group with the students having firsthand experience with a patient, not always. In video assisted demonstration there is a step by step demonstration of process, attracting and holding class attention<sup>5</sup>. The advantages of the use of video assisted demonstration are that it allows for more retention, repetition and facilitate long term learning. Thus, this study aims to compare the effects of video assisted teaching and direct demonstration of performing knee joint examination on medical student's perception and learning skills.

### II. Materials And Methods

- **Study Design-**Interventional study
- **Study setting-** Department of Orthopedics, Travancore Medical College, Kollam
- **Study Population-** Phase II medical students
- **Study period-** 3 months (June 20<sup>th</sup> to September 19<sup>th</sup> 2019)
- **Sample size-** 120 medical students from Phase II MBBS
- **Sampling method** – Convenient Sampling
- **Intervention-**120 students were divided into 6 groups. Each group was divided into two subgroups of 10 members each and each subgroups underwent separate sessions on video assisted teaching method and

direct demonstration method. Then they were evaluated on the same day with an OSCE checklist. After evaluation they were taught the comparative method also (cross over).Feedback Questionnaire responses were collected after the program. OSCE checklist and Feedback Questionnaire were validated by an expert institutional committee after pilot sampling.

- **Inclusion criteria-** Phase II MBBS students who were willing to participate after getting an informed consent.
  - **Exclusion criteria-**Those who were not willing and those who were absent for the study.
  - **Study tool-** OSCE Check list was provided for assessment. The perceptions were assessed using a Likert Scale based Feedback Questionnaire.
  - **Data collection** was done in the following methods
  - Perception – Feed back Questionnaire responses from students
  - Assessment – Objective Structured Clinical Examination checklist marks entered in an excel sheet.
  - **Statistical analysis:** The data collected was entered in Microsoft Excel and analyzed using SPSS version 16 software. Descriptive analysis was done by calculating frequencies and percentages in perception of student’s data. Independent samples t test was used to calculate statistical significance.
  - **Ethics committee** clearance done from our institution before starting the study.
- IEC.No:-056/19 dated 20/06/2019
- **Informed consent** taken from all students before conducting the study.

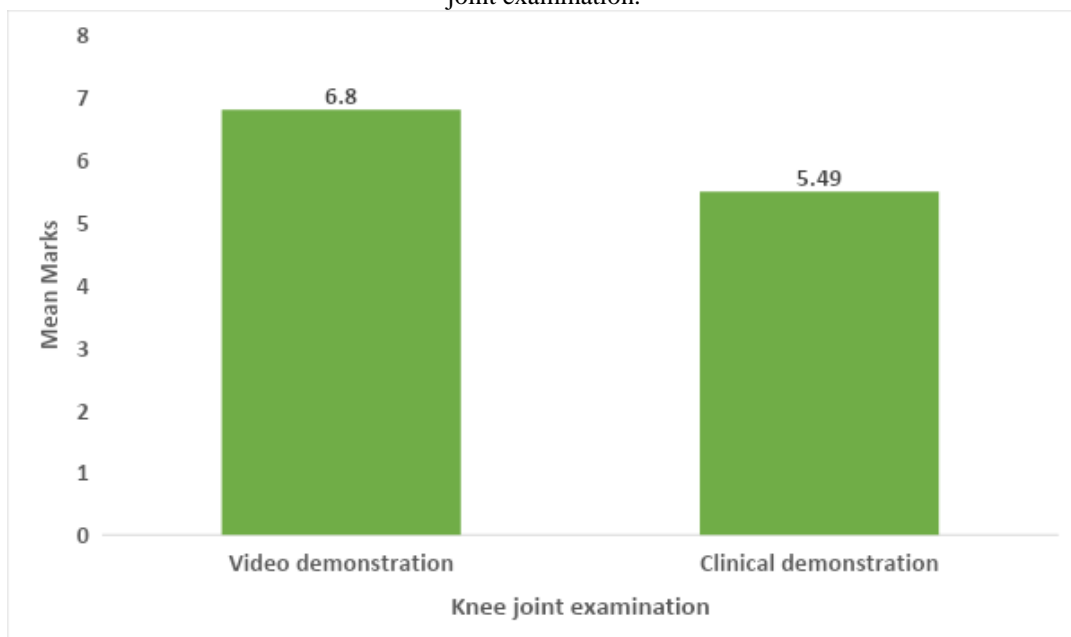
### III. Observations And Results

**Table 1** Comparison between the effectiveness of video assisted demonstration and clinical demonstration of knee joint examination.

Variable	Group	N	Mean	SD	t value	p value
Knee joint examination	Video assisted demonstration	60	6.800	0.902	6.885	0.001*
	Clinical demonstration	60	5.492	1.162		

p<0.05, statistically significant . p value was calculated by using Independent sample t test.

**Diagram 1** Diagram showing mean marks of video assisted demonstration and clinical demonstration of knee joint examination.



The mean marks of the students taught using video assisted demonstration was 6.8 while for the traditional clinical demonstration was 5.49. So the mean (6.8) exam scores regarding knee joint was high in video assisted demonstration group compared to clinical demonstration group and we got a significant ‘p’ value <0.05.

The next part of the study was the analysis of the feedback form. Each question in the feedback form was analyzed separately and also two methods also analyzed separately. The following chart shows the analysis results.

**Table 2** Perception of students to video assisted demonstration of knee joint examination.

Parameters	Strongly disagree	Disagree	Neutral	Agree	Strongly Agree
1. The session was interesting	0(0.0%)	0(0.0%)	4(3.3%)	69(57.5%)	47(39.2%)
2. The tests were well appreciated	0(0.0%)	0(0.0%)	18(15.0%)	98(81.7%)	4(3.3%)
3. Understanding and following the subject was better	0(0.0%)	0(0.0%)	5(4.2%)	110(91.7%)	5(4.2%)
4. Continuity in the learning maintained	0(0.0%)	0(0.0%)	9(7.5%)	105(87.5%)	6(5.0%)
5. Doubts were clarified	0(0.0%)	0(0.0%)	29(24.2%)	86(71.7%)	5(4.2%)
6. Helps to retain the memory	0(0.0%)	0(0.0%)	6(5.0%)	113(94.2%)	1(0.8%)
7. Helps to boost the performance	0(0.0%)	0(0.0%)	0(0.0%)	59(49.2%)	61(50.8%)
8. This method helps reproducibility	0(0.0%)	0(0.0%)	2(1.7%)	78(65.0%)	40(33.3%)
9. Can be adopted for teaching other subjects	0(0.0%)	0(0.0%)	6(5.0%)	73(60.8%)	41(34.2%)
10. Overall this method was effective and beneficial to me	0(0.0%)	0(0.0%)	1(0.8%)	98(81.7%)	21(17.5%)

**Table 3** Perception of students to clinical demonstration of knee joint examination.

Parameters	Strongly disagree	Disagree	Neutral	Agree	Strongly Agree
1. The session was interesting	0(0.0%)	0(0.0%)	1(0.8%)	93(77.5%)	26(21.7%)
2. The tests were well appreciated	0(0.0%)	0(0.0%)	6(5.0%)	114(95.0%)	0(0.0%)
3. Understanding and following the subject was better	0(0.0%)	0(0.0%)	4(3.3%)	115(95.8%)	1(0.8%)
4. Continuity in the learning maintained	0(0.0%)	0(0.0%)	2(1.7%)	117(97.5%)	1(0.8%)
5. Doubts were clarified	0(0.0%)	0(0.0%)	1(0.8%)	118(98.3%)	1(0.8%)
6. Helps to retain the memory	0(0.0%)	0(0.0%)	6(5.0%)	114(95.0%)	0(0.0%)
7. Helps to boost the performance	0(0.0%)	0(0.0%)	1(0.8%)	119(99.2%)	0(0.0%)
8. This method helps reproducibility	0(0.0%)	0(0.0%)	18(15.0%)	102(85.0%)	0(0.0%)
9. Can be adopted for teaching other subjects	0(0.0%)	0(0.0%)	0(0.0%)	120(100%)	0(0.0%)
10. Overall this method was effective and beneficial to me	0(0.0%)	0(0.0%)	3(2.5%)	116(96.7%)	1(0.8%)

In the analysis of perception also there is a higher acceptability towards video assisted method of demonstrating clinical examination.

#### IV. Discussion

Development of clinical skill is an essential part of medical education. I felt the subject orthopedics as an ideal subject with which the use of new teaching tools will be beneficial to both the students and the instructors. The study was planned to identify innovative teaching techniques in the clinical side. It has been observed that study of anatomy benefits from the incorporation of newer methodologies based on computer and information technology. So we thought of conducting a similar study in our department. The recent changes in staff pattern, the unavailability of trained faculties, limited number of co-operative patients with demonstrable clinical signs etc. requires newer methods of teaching and learning

In the present study the students have scored statistically significant (p value- 0.001) better marks in the video assisted demonstration than in direct clinical demonstration alone. There is a positive improvement in the marks of students using the advanced technology. Earlier studies have clearly shown the effectiveness of visual aided method in the academic performance with statistical significance. According to a similar study conducted in Delhi in context with a different topic, the mean test marks were in the line of 51.35% using traditional method and 57.23% using visual aided method and the difference was statistically significant.

Analysis of the feedback reveals that the students were able to understand the demonstration better with video assisted method and this is in clear agreement with most of the previous studies. The study also opined that the clinical classes were better when using multimedia methods. Analyzing the results from the student's point of view it can be understood that the students prefers the traditional demonstration reinforced with visual aids. From the instructors point of view the video assisted demonstration was less cumbersome and time was available for repetitive enforcement. Form the above discussion, it is clearly understood that, the video assisted demonstration was identified as the better method of teaching helped understanding the subject more precisely.

## **V. Conclusions**

From our research we conclude that video assisted demonstration is a better method of teaching compared to clinical demonstration alone. With implementation of new MCI/ NMC guidelines there will be shortage of both faculty and time for teaching. Innovative techniques, teaching learning methods and tools should be conceived to overcome the problems faced in the changing framework in medical education. Implementation of visual aided method with proper planning and training of faculty would be useful to overcome the pitfalls of shortage of time and faculty.

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