ORIGINAL ARTICLE

IMPACT OF MOVIE-BASED SIMULATION TRAINING, WITH OR WITHOUT CONVENTIONAL VERBAL DEMONSTRATION ON OBSERVED OSPE SCORES IN MEDICAL UNDERGRADUATES: A DOUBLE CONTROL STUDY

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Background: Movie-based simulation training may be useful in delivering the preclinical observed OSPE curriculum, minimising the need of subjects/patients; however, a double-control trial needs to be performed and optimal timing and duration of training is yet to be defined. Likewise, gender-based response and students' feedback has to be assessed. The objective of this study was to compare the movie-based and traditional verbal demonstration teaching methodologies. **Methods:** Second-year medical undergraduates (n=90) of Avicenna Medical College were randomised to movie-based simulation training (group B, n=30), traditional verbal training alone (group C, n=30), and a combination (group A, n=30). The scores were marked by observers using a standardised key and were compared for performance at 2 observed OSPE stations. **Results:** Group B and A performed significantly better than group C on station 1 and 2. Gender factor did not seem to influence the score. A total of 99% students reported that combination of the 2 teaching modes is the best option. They believed it offers more clear understanding with interest (61%), long term memory (21%), use of both senses; seeing & hearing (10%) & better focus of attention (3%). **Conclusion:** Even half an hour of movie-based simulation training with traditional instructor-based training may improve student performance significantly, and the students prefer a combination of the both.

Keywords: Movie-based simulation training, Conventional verbal demonstration, OSPE, Medical education, visual-learning

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INTRODUCTION

The practical curriculum of 2nd year medical undergraduates at University of Health Sciences, Lahore mainly includes Examination of Sensory & Motor System along with Special senses. The mode of assessment involves performance of a single practical along with Objectively Structured Practical Evaluation (OSPE) at 2 observed and 10 non-observed stations.[1] At the observed stations, students are required to perform the examination skill on a subject/simulator in presence of an observer. The observer marks the performance on the basis of a standardised performance key. The conventional method of teaching the examination skills is verbal demonstration followed by live performance on the subject or simulator. A recent innovation is use of movie-based simulation training, in which standardised performance-based movies are projected on multi-media.

Before conducting the routine practical classes of our 2nd year undergraduates, we planned to assess the 2 teaching methodologies on the basis of assessment score as well as feedback from students. Computer-assisted learning has previously been compared with lecture-based learning in teaching surgical skills.[2] Its role in medical education to pre-clinical students is yet to be determined. We have already shown in a previous study[3] that a combination of one subjective practical and objective OSPE called Semi-Objective Structured Practical Evaluation (SOSPE) remains a successful tool for teaching-learning evaluation. However, the lower scores of OSPE indicated the need for its practice in routine practical classes along with its incorporation in the practical journals.

METHODOLOGY

A total of 90 2nd year medical-undergraduates at Avicenna Medical College, Lahore were randomised into 3 equal sex-matched groups: groups A, B, C (n=30 each)) on receiving informed consent. The study design was a double-control cross-sectional trial. Sensory system examination related to sense of Graphesthesia and Stereognosis as a part of practical physiology curriculum for 2nd year medical undergraduates was taught to 3 different groups by using either conventional verbal demonstration, movie-based simulation training or a combination of the 2 teaching methodologies. Group A was subjected to combination training, Group B underwent movie-based simulation training alone, whereas, Group C was exposed only to verbal training. Each practical teaching methodology was followed by assessment on healthy subjects/simulators. Assessment was based on standard performance key marked by

trained observers. Feedback forms were obtained from the participants.

Mean scores of the 3 groups were recorded on assessment (Table-1). Comparison between groups showed highly significant difference by ANOVA (Table-2). Multiple comparison by post-hoc test indicates significant difference between the scores of A and C as well as A and B batches (combination group with others) (Table-3). The score showed a sharp rise on blending the 2 teaching methodologies.

Gender-based influence on score (max=10) was found to be insignificant on applying two-tail *t*-test. In Group A, the difference between the mean score of Males (5.60±2.56) vs females (6.08±2.05) was insignificant (p=0.549). In Group B, mean score of males (6.73±1.53) was insignificantly different (p=0.926) from that of females (6.65±2.15); and in Group C the mean score of males (4.54±2.48) was insignificantly different (p=0.750) from that of females (4.26±2.21). Students' feedback on best teaching methodology was measured on 5-point Likert-scale. Only 2% strongly agreed in favour of verbal teaching methodology alone. A total of 5% and 98% strongly agreed in favour of movie-based teaching alone and combination technique respectively. Regarding feedback of students about combination technique, it was commented that it offers more clear understanding (63%), learning with memory (22%), use of both senses (10%) and better attention span (5%).

Table-1: Descriptive analysis of scores of groups

Group	N	Mean Score	SD	SE	95% CI Mean		Min (10)	Max (10)
					L	U		
A (both)	30	6.08	2.05	0.37	5.31	6.85	2.50	10.00
B (movie)	30	6.68	1.92	0.35	5.96	7.40	3.00	9.50
C (verbal)	30	4.36	2.28	0.41	3.51	5.21	1.00	9.00
Total	90	5.71	2.29	0.24	5.23	6.19	1.00	10.00

Table-2: Comparison between groups by ANOVA

	Sum of Squares	df	Mean Square	*p*
Between groups	86.74	2	43.37	0.0001
Within groups	381.25	87	4.38	Within groups
Total	467.98	89		

Table-3: Comparison by post-hoc test

		Mean Difference	Std Error	*P*	95% CI
A both	**B**	0.60000	0.540	0.270	-1.674–0.474
	C	1.71667	0.540	0.002	0.642–2.791
B movie	**A**	0.60000	0.540	0.270	-0.474–1.674
	C	2.31667	0.540	0.000	1.242–3.391
C verbal	**A**	-1.71667	0.540	0.002	-2.791– -0.642
	B	-2.31667	0.540	0.000	-3.391– -1.242

DISCUSSION

Simulation technology has been used for health care professional skills training and assessment.[4] The current study was conducted to measure the effectiveness of movie-based simulation training by assessment. The impact of external feedback on computer-assisted learning for surgical technical skill training has been observed.[5] The present study estimated the consumer-feedback regarding the best teaching methodology for delivering practical physiology curriculum to pre-clinical medical undergraduates. Our previous study compared the lecture-based learning (LBL) with problem-based learning (PBL) in male Vs female medical students in small and large groups.[6] It indicated that overall attitude of students is relatively positive towards PBL in comparison with conventional LBL, regardless of gender in small as well as large groups.

CONCLUSION

Even half an hour of movie-based simulation training with traditional-instructor-based training can improve the student performance significantly. There were no gender influences in score or preference of teaching methodology. Students prefer combination of both verbal as well as movie-based simulation training techniques.

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