



EARLY CLINICAL EXPOSURE FOR FIRST-YEAR MBBS STUDENTS

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ABSTRACT

This comparative, before-and-after study (without controls) was conducted in a medical college in Western India to study the difference in scores after traditional didactic lectures (by a pre-test) and integrated teaching with early clinical exposure (by a post-test). The participants included all first-year MBBS students, aged 18 years and above, of either sex, who gave written informed consent. After clarifying the purpose of the study and obtaining written informed consent, traditional didactic lectures were delivered as per syllabus for the first-year MBBS course. Following this, the students took a pre-test that comprised ten questions (two marks per question; total 20 marks). After the pre-test, integrated teaching with early clinical exposure was conducted on the same topic. This was followed by a post-test that used a questionnaire that was identical to that of the pre-test. The differences in overall pre- and post-test scores were highly significant ($p < 0.0001$). The pre-test exhibited significant gender difference in scores ($p < 0.001$), but this was not significant ($p = 0.219$) in the post-test.

KEY WORDS: Early clinical exposure, First year MBBS.

INTRODUCTION

Early Clinical Exposure (ECE) refers to genuine human contact in a social or clinical context during the pre-clinical medical years.^[1-3] In terms of the preclinical medical years, ECE should occur before the official clerkship and internship training programs.^[4] The Medical Council of India's Vision-2015 document envisages coordinated inter-departmental efforts to provide early clinical exposure and to develop communication skills among students during the first year of Bachelor of Medicine, Bachelor of Surgery (MBBS) course.^[5] Besides providing relevance to teaching of basic medical sciences, early clinical exposure can help first-year MBBS students to develop communication skills and the desired attitudes, and also provides opportunities to inculcate professional behavior at an early stage.^[6,7]

Classroom teaching often makes the first-year medical students feel that they are endlessly accumulating facts in anatomy without knowing the purpose. Introducing ECE during the first year can alleviate this problem. By integrating basic science knowledge with clinical science, ECE can contribute to better understanding of the relevance of basic science and hence, better contentment among medical students.^[8,9] By providing an opportunity to actively interact and learn from

patients and the clinicians, it can enrich their learning experience. By introducing the students to basic clinical skills, professionalism and student-patient relation, it can facilitate smooth transition into clinical training at the end of the year.^[10]

ECE is viewed as the beginning of the process of professional socialization and the development of mentoring relationships, and is also seen as a way to provide contexts for basic science and its relevance to medical practice.^[11] Many studies have revealed that ECE programs encourage medical students in several ways.^[12,13] The ECE experience provides positive motivation toward medical education and in turn improves students' performance in examinations.^[14-16]

A Europe-based survey^[4] reported that observation, small group teaching, clinical bedside teaching, supervision and feedback, reflective journal writing, self-learning, case-based learning, lectures, and shadowing were common teaching and learning activities in ECE programmes. Such programmes should maintain students' learning cycle based on Kolb's experiential learning, emphasize the active role of students and provide timely supervision and feedback.^[3]

ECE training can be conducted in primary care settings, outpatient clinics, hospital wards and in the community.^[4] Besides experiential learning, medical students also engage in situational learning during ECE, while keeping the community aspects in perspective.^[17] The learning process during ECE is therefore social and collaborative, so that outcomes of ECE experiences should be affected by the environment.

MATERIALS AND METHODS

This comparative, before-and-after study (without controls) was conducted at Rajiv Gandhi Medical College, with an annual intake capacity of 60 students, located about 30 kms from Mumbai city in Western India. The participants included all first-year MBBS students, aged 18 years and above, of either sex, who gave written informed consent. Those students who did not give written informed consent or those who were absent during the traditional didactic lectures (TDLs) or integrated teaching (IT) with early clinical exposure (ECE) or pre-test or post-test were excluded.

The purpose of the study was clarified to first-year MBBS students and written informed consent was obtained from those willing to participate in the study. TDLs were delivered on anatomy and physiology of the human ear, as per syllabus for the first-year MBBS course, and a pre-test was conducted after TDLs. The pre-test comprised ten questions (two marks per

question; total 20 marks). After the pre-test, IT with ECE was conducted. Using a questionnaire that was identical to that of the pre-test, the post-test was conducted after IT plus ECE. The outcome studied was the difference in scores after TDLs (by a pre-test) and IT plus ECE (by a post-test).

The data were presented as mean and standard deviation (SD). 95% confidence interval (CI) was calculated using the formula: [Mean-(1.96)*Standard Error] - [Mean+(1.96)*Standard Error]. EpiInfo Version 7.0 (public domain software package from the Centers for Disease Control and Prevention, Atlanta, GA, USA) was used for statistical analyses. Statistical significance was determined at $p < 0.05$.

RESULTS AND DISCUSSION

A total of 60 students (31 females; 51.67% and 29 males; 48.33%) participated in the study. Their mean score (out of 20) in the pre-test was 13.63 +/- 2.82 (95% CI: 12.92 - 14.35) and that in the post-test was 17.33 +/- 2.87 (95% CI: 16.61 - 18.06). The differences between the pre- and post-test scores were highly significant (Paired 't' value=5.035; $p < 0.0001$).

Differences in pre- and post-test mean scores

The difference in pre- and post-test mean scores was highly significant among female ($p = 0.0041$) and male ($p < 0.0001$) students.

Table 1: Difference in pre- and post-test mean scores (out of 20).

Parameter	Females (n=31)		Males (n=29)	
	Pre-test	Post-test	Pre-test	Post-test
Mean	14.71	16.90	12.48	17.79
SD	2.10	3.50	3.05	1.95
95% CI	13.97 - 15.45	15.67 - 18.13	11.37 - 13.59	17.08 - 18.50
Paired 't' value	2.987		7.899	
'p' value	0.0041 *		<0.0001 *	

SD = Standard deviation; CI = Confidence interval; * Highly significant

Table 2: Gender differences in mean scores (out of 20).

Parameter	Pre-test		Post-test	
	Females (n=31)	Males (n=29)	Females (n=31)	Males (n=29)
Mean	14.71	12.48	16.90	17.79
SD	2.10	3.05	3.50	1.95
95% CI	13.97 - 15.45	11.37 - 13.59	15.67 - 18.13	17.08 - 18.50
Z value	3.277		1.226	
'p' value	0.001 *		0.219	

SD = Standard deviation; CI = Confidence interval; Z = Standard error of difference between two means; * Highly significant

Gender differences in mean scores

In the pre-test, the gender difference in mean scores was highly significant ($p < 0.001$). However, the same was not significant ($p = 0.219$) in the post-test (Table-2). Another study^[18] has also found no significant gender-based difference in scores of medical students. However, in contrast, a study^[19] reported that the study habits and study methods of medical students differ by gender and

have significant impact on performance outcomes of learners.

In the pre-test, the minimum, first quartile, median, third quartile and maximum scores (out of 20) were much higher for female students, compared with the scores of their male counterparts. In the post-test, the first quartile, median and third quartile scores were identical and the maximum score had merged with third quartile score for

students of either gender. However, the minimum score was much lower for male students. (Figure 1).

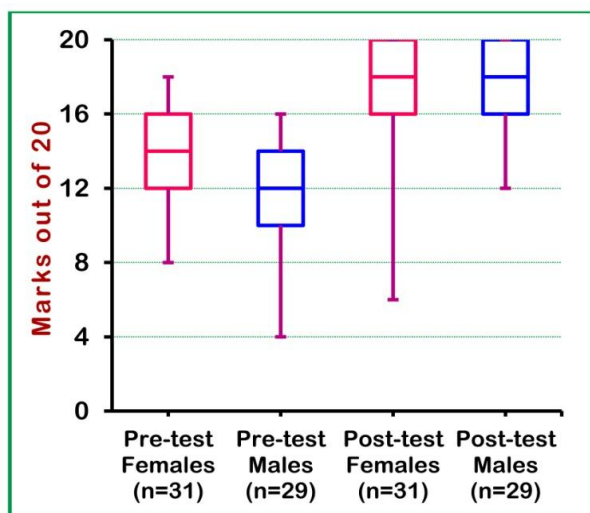


Fig. 1: Box plot depicting scores.

CONCLUSION

Integrated teaching with early clinical exposure significantly increases students' scores. The differences in overall pre- and post-test scores were highly significant. The pre-test exhibited significant gender difference in scores, but this was not revealed in the post-test. Despite time constraints in the teaching schedule for first-year medical students, it is possible to conduct integrated teaching. Students with low scores in the post-test may need remedial teaching.

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