

# Evaluating the Effectiveness of Early Clinical Exposure Program in Learning Clinical Anatomy among Medical Undergraduates

Vijisha Phalgunan<sup>1</sup>, S. Baskaran<sup>2</sup>

<sup>1</sup>Professor, Department of Anatomy, Sri Lakshmi Narayana Institute of Medical Sciences, Puducherry, India.

Email: drvijishabaski@gmail.com, ORCID ID: 0000-0002-0011-3035

<sup>2</sup>DNB, Department of Cardiology, Sri Venkateswara Medical College and Hospital, Puducherry, India.

Email: baski\_srinivas@yahoo.co.in, ORCID ID: 0000-0003-1380-7033.

## Abstract

**Introduction:** Early clinical exposure (ECE) is viewed as a way to provide contexts of basic science and highlight its relevance to medical practice. It is one of the measures taken by Medical Council of India to enact its vision 2015. ECE promotes self – directed learning and analytical skills in students when they are exposed to it at an earlier phase. **Subjects and Methods:** This study was conducted among volunteered participants of first year medical undergraduate during their regular ECE sessions in the department of Anatomy at Sri Lakshmi Narayana Institute of Medical Sciences, Puducherry after the approval of Institutional Ethical Committee. The ECE program was used as a supplement to the traditional lectures. Feedback questionnaire after getting validated by the faculty were filled by the students. **Results:** Statistical analysis was done by Students Paired T-Test. The Pre-Test score was (44.5+<sub>-</sub>16.1) and the Post -Test Score was (53.1+<sub>-</sub>14.54). The P- value obtained was 0.0009 which was extremely significant. The results demonstrated that the ECE program will definitely influence the analytical understanding aspects along with getting accustomed to the hospital environment for the students. On a longer run it will have major impact on the academic as well on the attitudinal aspect of students. **Conclusion:** Medical students found their first experience with clinical setting valuable. Providing clinical exposure in the initial years of medical curricula and teaching the application of basic sciences knowledge in clinical practice can enhance students' understanding of the role they will play in the future as a physician.

**Keywords:** Early clinical exposure, Clinical Anatomy, Undergraduates.

**Corresponding Author:** Dr. Vijisha Phalgunan, Professor, Department of Anatomy, Sri Lakshmi Narayana Institute of Medical Sciences, Puducherry, India.

Email: [drvijishabaski@gmail.com](mailto:drvijishabaski@gmail.com)

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## Introduction

Recently, the Medical Council of India (MCI) has developed the competency based curriculum with the aim to produce medical graduates of global standards through curricular reforms. The reforms in 'VISION 2015' of MCI (Medical Council of India) focus on enhancing integration, clinical competency, flexibility and improvement in quality of training.<sup>[1]</sup> "The roles of an Indian Medical graduate is recognized as clinician, communicator, life-long learner, team leader and professional".<sup>[2]</sup> The challenges in medical education include the methods that would enhance the clinical education quality; one such method been Early Clinical Exposure (ECE). ECE can help to instill the skill component of medical education in the first year students helping to minimize the line of demarcation.<sup>[3]</sup>

Out of all the components, Early clinical exposure is considered to be a reformery bridging program introduced in the professional year.<sup>[1]</sup> It has the potential to improve motivation for learning and promote deep learning, better

understanding and longer retention of the knowledge. It can facilitate the students to understand the application of basic sciences in clinical practice and aid in effective learning of clinical skills. It could also serve as a platform for students to improve their communication skills and get initiated into inculcating professionalism at a very early and impressionable stage of their medical education.<sup>[4]</sup>

The goals of ECE are to provide significance to basic sciences along with expansion of medical knowledge so as to establish the cognitive component of professional learning.<sup>[5]</sup> As students face eternally growing amount of information in the medical sciences, ECE will increase their exposure to clinical problems and thus prepare them to be up-to-date physicians throughout their career.<sup>[6]</sup> Several studies have been undertaken to explore the impact of ECE among the medical students, which indicate it an effective technique to supplement the traditional theoretical teaching.<sup>[7]</sup>

### ECE an Essential Component:

For generations, there was a partition between Preclinical and clinical years, to an extent that the preclinical year

departments were referred to as Non clinical, even though they formed the base of the foundation in medical curriculum. ECE program was initiated which will provide a bridge system between the pre & clinical years under the graduate medical regulations 2019.

**Aims & objectives:**

Introduce ECE program and evaluate the effectiveness of Early Clinical Exposure of first year MBBS medical students academic performance in Anatomy when exposed to a hospital visit and to assess their perception on the ECE program recently introduced under competency based new curriculum.

**Subjects and Methods**

This study was done in the department of Anatomy at Sri Lakshmi Narayana Institute of medical sciences. This cross sectional study was approved by Institutional Ethical Committee. Thirty-one students of Phase I volunteered to participate in the study and constituted the study group. The duration of the study was from November 2019- Jan 2020 during routine Anatomy ECE hours. An orientation session for the students was conducted by the program coordinator prior to starting, wherein the objectives of the program, clear directives regarding the conduct of the sessions and the expected goals of this innovative venture were highlighted.

A clinically important topic varicose veins was chosen for discussion which was already taught in conventional lecture. The same topic was taken as a case demonstration during their hospital visit under the guidance of a surgeon. Clinical department postings were coordinated by a faculty in each department. The designated faculty framed the learning objectives for the session based on the student's prior knowledge and availability of clinical materials.

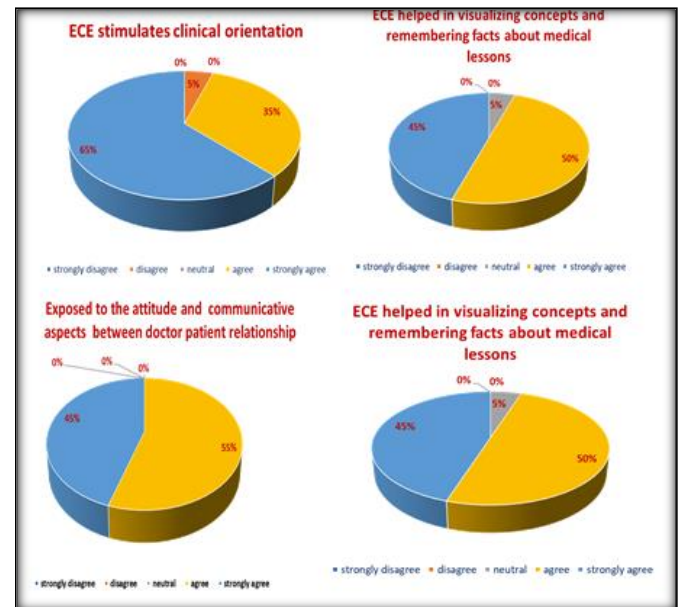
All the faculties involved in the study were sensitized on ECE. A detailed questionnaire based on the learning objectives of the topic was designed mainly to assess the cognitive and communicative domains of learning.

A pre-test was conducted for the study group. Clinical examinations of varicose veins were discussed with students in surgery department as hospital visit. The anatomy and management of varicose veins were discussed along with signs and symptoms. The students were allowed to clinically examine the patient. At the end of session post –test questionnaire a was done. Both Pre & Post Test Questionnaire were evaluated using an Online assessment tool (Google Form). A Self-designed Feedback Questionnaire was prepared using 5-point Likert scale to investigate students’

attitude towards Early Clinical Exposure. The feedback (purely optional) was obtained from the students after the completion of sessions.

**Results**

Statistical analysis was done by Student’s Paired T-Test. The Pre-Test score was (44.5+\_16.1) and the Post -Test Score was (53.1+\_14.54). The P- value obtained was 0.0009 which was extremely significant. Difference in Pre-test and Post- test scores of ECE among phase I students in Anatomy is depicted in [Table 2 & Figure 2]. Medical students found their first experience with clinical setting valuable. All the students were excited on introduction of ECE program. Almost 60% of students feel that Early clinical exposure is an essential inclusion in MBBS curriculum. Most (65%) appreciated that it effectively stimulated clinical orientation and allowed effective interaction with the faculties than regular lecture classes. 50% of the students consider ECE as an initial step to understand to the concept of dealing with patient [Figure 1]. Feedback on the session of early clinical exposure (ECE) were received which will help to evaluate the session and make further improvement. The feedback questionnaire consists of students’ perception and feedback on ECE sessions. Feedback given is purely optional in the given form [Table 1].



**Figure 1: student’s feedback on early clinical exposure program**

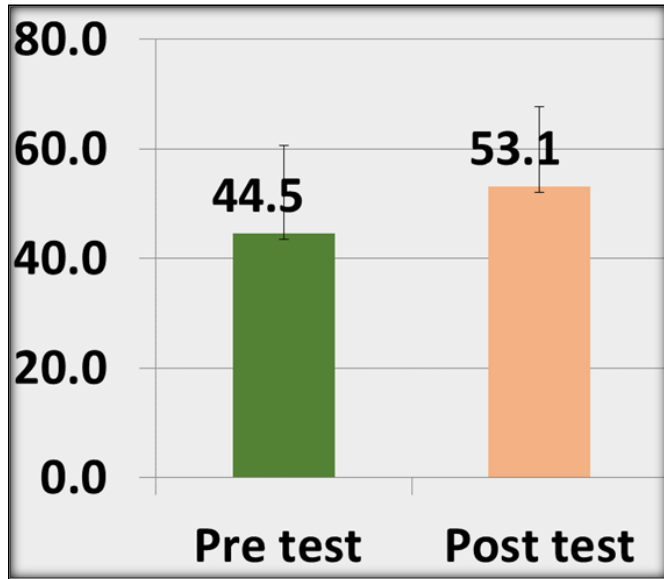
**Table 1: Feedback Responses**

SL.No	Content	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1	Do you feel ECE is an essential inclusion in I MBBS curriculum	0	1(5%)	1(5%)	9(45%)	12(60%)
2	ECE would not be much beneficial to my studies	6(30%)	9(45%)	1(5%)	3(15%)	2(10%)
3	Early clinical exposure effectively stimulate clinical orientation	0(0%)	1(5%)	0(0%)	7(35%)	13(65%)
4	ECE requires more of your concentration	0(0%)	0(0%)	4(20%)	13(65%)	4(20%)
5	Lecture classes provide more in-depth conception than ECE	0(0%)	6(30%)	5(25%)	8(40%)	1(5%)
6	ECE Should be reserved for selective topics in subjects	1(5%)	2(10%)	5(25%)	11(25%)	3(15%)
7	Visual perception of cases is better than listening to mere description	0(0%)	0(0%)	1(5%)	10(50%)	9(45%)
8	ECE is the first step to sensitise for what it is to be a doctor	0(0%)	0(0%)	0(0%)	11(55%)	9(45%)
9	ECE is the first step to sensitise for what it is to be a patient	0(0%)	0(0%)	1(5%)	9(45%)	10(50%)

10	ECE is very time and effort consuming	0(0%)	8(40%)	6(30%)	3(15%)	4(20%)
11	Does ECE allows more interaction with the faculties than regular lecture classes	0(0%)	2(10%)	3(15%)	13(65%)	3(15%)
12	ECE makes it easy to correlate with theory and remember	0(0%)	0(0%)	4(20%)	9(45%)	7(35%)

**Table 2: Pretest and Post Test scores of early clinical exposures among Phase I students in Anatomy**

	Pre test	Post test
ECE score (Mean±SD)	44.5±16	53.1±14.5
Paired t- test P value is 0.0009		



**Figure 2: Difference in Pre-test and Post- test scores of ECE among phase I students in Anatomy**

## Discussion

The Present study was done to evaluate the effectiveness of ECE among phase I medical students in Anatomy and found that ECE is very effective in imparting an in-depth knowledge about the clinical importance of the topic of interest. Chari S et al. and Baheti SN et al stated that ECE increased motivation and positive response among students.<sup>[8,9]</sup> Tayade et al,<sup>[8,10]</sup> reported statistically significant difference in the knowledge, skills and attitude of first year M.B.B.S students between ECE and Non-ECE group. Dorman T et al., and Littlewood S et al., concluded that early experience not only helped medical students learn, develop proper attitude towards their studies but also made their learning more relevant and influenced career options.<sup>[11,12]</sup> Rawekar et al,<sup>[13]</sup> also reported that the students has given good feedback on ECE similar to our study .exposure to the health care system, instilling the qualities of a patient centered approach and increasing motivation for classroom learning are few of the important benefits out of ECE. However, most of the students benefit from active learning strategies over the traditional lecture format.<sup>[14]</sup> ECE lets the initiation of students into medicine.<sup>[15]</sup> The students felt motivated to study as they felt the feeling of being “doctor” for the first time.<sup>[16]</sup>

## Outcomes:

The affirmative nature of ECE reinforced the perception of the students, which cretaed interest in learning the subject.

## Limitations:

The limitation of the study was about the time constraints in first year MBBS Anatomy

## Conclusion

ECE can be an important and efficient factor in improving the learning ability of students & also in the recall of knowledge in medical students. Providing clinical exposure in the initial years of medical curricula and teaching the application of basic sciences knowledge in clinical practice can enhance students’ understanding of the role they will play in the future as a physician. Early Clinical Exposure (ECE) is one of the essential measures taken by MCI to enact its vision 2015 of IMG.

**Scope for Research:** Most of the Indian studies of ECE topics chosen were supplements to traditional lectures. There is no study where the clinical scenario is introduced during the session without any prior exposure about the scenario to the students. Such retrospective approach can also have positive influence in students under guidance.

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