

Original research article

## **Skill Learning Through Early Clinical Exposure: An Experience of Indian Medical School**

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### **Abstract**

**Background:** A new module of “Early Clinical Exposure (E.C.E)” has been introduced into the curriculum of undergraduate medical education in accordance with the recently adopted “Competency Based Medical Education (C.B.M.E.)” approach of teaching that will motivate students to learn and ensure well integrated knowledge of the basic sciences.

**Methods:** This is a cross section observational study conducted over a period of six weeks on 99 first year medical students. An early clinical exposure session of three hours was taken on each day for 33 students as per the guidelines set by the Medical Council of India. Appropriate Ethics Committee approval was taken and all the participating students have given their prior consent.

**Results:** 50.51% students strongly agreed and 41.41% agreed that this module created interest in the topic while 43.43% students strongly agreed that the module led to a better understanding of the topic. 36.36% students strongly agreed that the activity would help them retain information better and 53.53% strongly agreed that it would help in the lifelong learning of the topic.

**Conclusion:** Early Clinical Exposure will be a very effective way of creating interest and motivating new medical students to study and understand important topics. They will get used to integrating vast amount of information across different subjects and look at the disease and

the patient as a whole which will enable them become good and confident clinical practitioners in the future.

**Keywords:** *Early clinical exposure; Pleural effusion; First MBBS students*

## **Introduction**

The pedagogic model for medical education is derived from the Flexner report which consisted of two years of pre-clinical exposure followed by two years of clinical patient exposure. This was the traditional curriculum followed earlier in Indian Medical Schools.[1] Over the last few years there has been a change in learning styles / approaches in India to keep up with the global standards. With the introduction of Competency based education in India there is mandatory introduction of patient-based education in first year of medical studies. As per the new curricula, the IMG (Indian Medical Graduate) should be competent and work as the first contact of the community with having requisite knowledge, skills, attitudes, values and responsiveness.[2]

Early clinical exposure (ECE) is a teaching learning methodology of vertical integration in which patients or case scenarios are introduced to medical students from first year of their medical curriculum. In ECE patients play an important role and early exposure has become synonymous with first year of medical studies. Clinical skills program involves problem-based / case-based learning, bedside teaching, early contact with patients which enhances student's preparedness for diagnosis and treating patients. [3,4] ECE as an educational model has been adopted by many medical schools throughout the world and is considered as an asset to medical education. [5,6]

The ECE approach helps to contextualize medical education to real life scenarios for the students. ECE programs motivate the students in numerous ways and helps to improve their performance in examination.[7]

Students are expected to gain some knowledge about how healthcare is delivered, basic physical diagnosis maneuvers and interviewing and counselling skills. ECE is known to improve the reasoning skills of the students, make them more confident with patient handling and also improve their communication skills and instills empathetic approach towards the patient.[8,9]

There is a need for evaluation of the modules introduced in the new competency based medical education. In addition to effective observation, it is essential to introduce ECE with pre-activities that will maximize learning through the module. With this objective we set out to investigate first year medical students' attitude towards early clinical exposure (ECE) module on pleural effusion which was integrated with theory and practical sessions on respiratory physiology.

## **Materials and Methods**

The study design was longitudinal, randomized interventional study and conducted in the first semester of first MBBS students. Approval of the study was obtained from Institutional ethics committee and written informed consent was obtained from the participants. The study was conducted in department of Physiology HBTMC and Dr RN Cooper Municipal General

Hospital, Mumbai. Study population included 99 students of first MBBS by using convenience sampling.

### **Intervention:**

The early clinical exposure (ECE) module was planned in three batches each of 33 students over a period of one and half month. Before the ECE module the following aspects of applied respiratory system were covered:

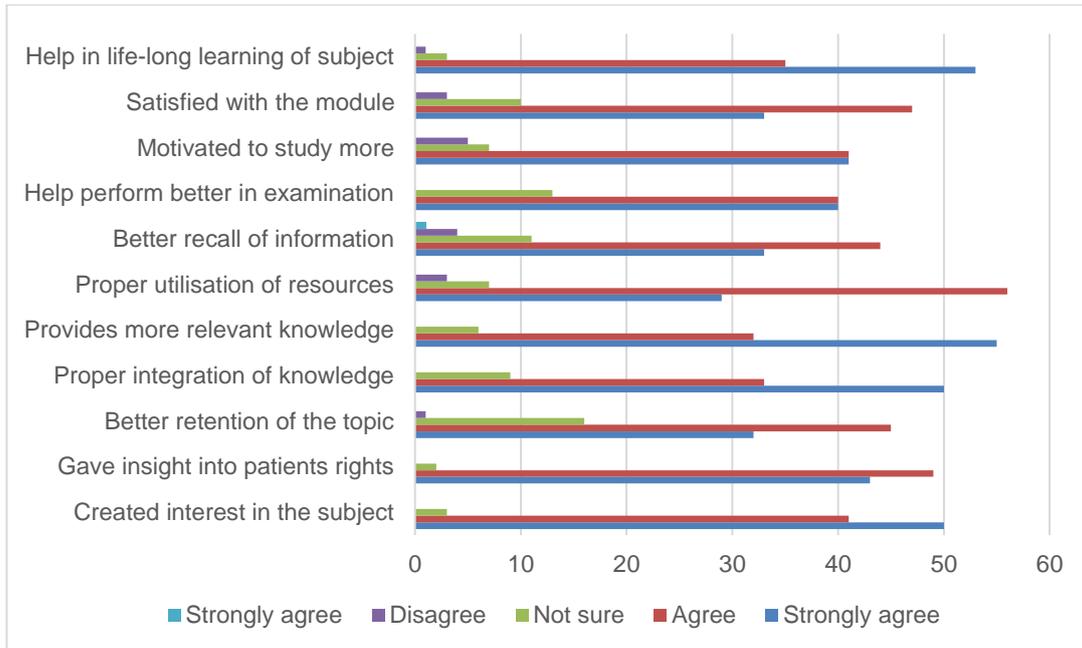
- Week 1: A didactic lecture on applied aspects of respiratory system was conducted by professor in physiology. The lecture was scheduled after the respiratory physiology topics were covered in the syllabus. This included applied topics in respiratory physiology on pleural effusion, pneumothorax, obstructive and restrictive lung disorders. They were briefed about the various pulmonary function tests.
- Week 2: Integrated session on pulmonary function tests was taken by chest physician. This included detailed description of pulmonary function tests and their relevance in diagnosis of pulmonary disorders was emphasized.
- Week 2 & 3: Pulmonary function tests, spirometry and peak expiratory flow rate practical session was conducted where students performed the practical as per guidelines in their syllabus. Recording of various lung volumes and capacities was demonstrated on Hutchison's spirometer and digital spirometer. Peak expiratory flow rate (PEFR) was recorded by peak expiratory flow meter and students were taught to interpret the PEFR readings.
- Week 4 & 5: Clinical examination of respiratory system was taught as practical session to all the batches. This covered history taking for respiratory case and clinical examination of respiratory system using inspection, palpation, percussion and auscultation methods of examination.
- Week 6: A didactic lecture by chest physician on pleural effusion was taken. Patient of pleural effusion was mobilized from the ward into demonstration room. This was followed by demonstration of clinical symptoms and signs in case of pleural effusion along with clinical co-relation with the X-ray findings.

Data was collected using a researcher-developed questionnaire, structured questions including three open-ended questions and rated on a five-point Likert scale (strongly agree, agree, neutral, disagree, and strongly disagree). The questionnaire items were generated based on a critical review of the literature and informal interviews with the pre-clinical, clinical faculty involved in teaching the medical students. The questionnaire was finalized with some minor changes and was piloted on a sample of 10 medical students to ensure its clarity. Three different batches of students were designated for this study. The data from the questionnaire was analyzed using Statistical package for Social Sciences (SPSS version 10).

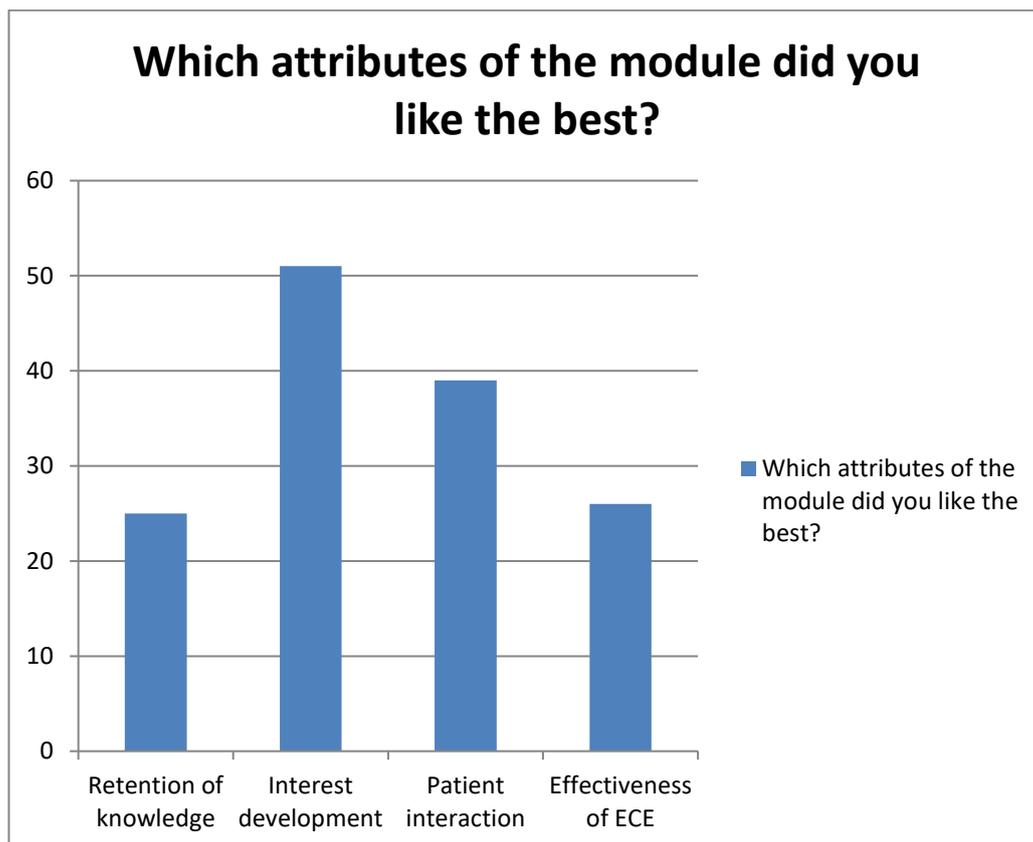
### **Results:**

Students perception of the ECE module on pleural effusion was collected using a 5 point Likert scale.

Fig. 1 shows the results for students' perception about the ECE module on pleural effusion. 50.51% students strongly agreed and 41.41% agreed that this module created interest in the topic while 43.43% students strongly agreed that the module led to a better understanding of the topic. 36.36% students strongly agreed that the activity would help them retain information better and 53.53% strongly agreed that it would help in the lifelong learning of the topic.



**Fig.1: Students Perception of ECE module.**



**Fig. 2: Attributes of module liked by the students**

Fig 2 shows the perception of students to open-ended questions. Suggestions for any changes in the module included more such sessions with different cases/ topics; more time to be allotted for patient interaction.

Overall, the module was positively appraised by the students and helped develop interest in the subject and also better retention of knowledge. Some responses noted were:

“It has developed more interest to study clinically oriented than just for exam so as to understand better in subsequent modules.”

“ECE would make us understand the clinical application of the knowledge we acquire.”

“Each topic was divided properly and explained. It was good that case studies were also presented.”

#### **Discussion:**

Respiratory physiology is an important topic in first MBBS. Students however sometimes find the intricate conceptual physiological details of the system difficult to understand. The respiratory system topics can be effectively integrated with clinical topics in the curriculum. The new competency based medical education curriculum now introduced in India provides scope to allow integration of different components of respiratory system physiology. Alignment and Integration of the different applied aspects of the topic and encounters with patients in real life scenario can help generate interest in the students. [10]

Early clinical exposure (ECE) is an innovative teaching-learning strategy for first MBBS students to participate in clinical experiences. The ECE provides relevance to learning by integrating some aspects of clinical and social contexts of patient care into the first year of teaching program.[11,15]

In this study we introduced cases of pleural effusion along with case discussions which was integrated with pulmonary function tests and clinical examination sessions. Shoemaker defined an integrated curriculum as “education that is organized in such a way that it cuts across subject matter lines, bringing together various aspects of the curriculum into meaningful association to focus upon broad areas of study.” [12] While horizontal integration has been done earlier in the current study, we have implemented vertical integration. We designed a 14-item questionnaire to test how the perception of students for the effectiveness of early clinical exposure module in applied aspect of respiratory physiology. Early clinical exposure (ECE) is an innovative teaching-learning strategy for first MBBS students to participate in clinical experiences.

ECE can be implemented in various ways either as a classroom setting where the patient is brought to the classroom/ case scenario discussion. It may also be implemented in hospital or community settings. We followed the classroom setting for our case discussion. Our qualitative study with student feedback supports ECE as beneficial to our students. Students could see and interact with the patient which generated interest in the students and helped in better understanding of the topic. Students were also exposed to ethical and professional dilemmas in managing patients.

In an earlier study by Rawekar A et al. concluded that in an Indian setting learning resource element i.e. patients are not a limiting factor. The students positive perception from their study reinforced the affirmative nature of ECE to provide holistic learning to them.[13]

Oppen JV et al. found that early clinical exposure in primary care reaffirmed students’ motivation to train as doctors. They also concluded that it was important to allot sufficient time and resources, protocol and ethical planning when undertaking qualitative enquiry in a study. [14]

Tang KP et al. investigated whether ECE experiences (external cause) or students’ learning attitudes (internal cause) more closely correlated with medical students’ academic

performance. They found a positive correlation between students' learning achievement in basic medicine and their clinical exposure environment. [5]

Mafinejad MK et al. collected data about ECE in 298 first- and second-year students enrolled in the undergraduate medical curriculum. The results demonstrated that the medical students had a positive attitude towards ECE. 80.1% students stated that ECE could familiarize them with the role of basic sciences knowledge in medicine while 84.5% students believed that ECE increased their interest in medicine.[9]

Our early clinical exposure module as compared to the ones done earlier has also integrated the session with didactic lectures, practical sessions and clinical examination. Overall the module helped in fulfilling the goal of ECE to gain knowledge as to how healthcare is delivered in the real world, basic clinical skills and how to approach a patient.

### Conclusion:

Early clinical exposure module for respiratory physiology which was integrated with didactic lectures and practical sessions was positively appraised by the students. With proper planning in the time-table at the beginning of the year and workforce management it can be implemented for first MBBS students. A more objective assessment with pre-test / post-test/ OSPE and follow-up study through second year would further validate the findings in our study.

With the new CBME curriculum there are other modules for which early clinical exposure has been introduced. An objective and subjective assessment for these will further validate the benefits of early clinical exposure modules in the curriculum.

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