Original research article

The impact of Early Clinical Exposure on first year medical students in Physiology at Government Erode Medical College, Tamilnadu.

Subha K.C[1], Panneerselvam Periasamy[2*], G Seralathan[3], A Chandrabose[4], P Tamizhvanan[5]**

[1]Associate Professor, Department of Physiology, Government Erode Medical College, Perundurai, Erode, Tamilnadu, India.

[2]Assistant Professor, Department of Physiology, Government Erode Medical College, Perundurai, Erode, Tamilnadu, India.

[3]Assistant Professor, Department of Physiology, Government Erode Medical College, Perundurai, Erode, Tamilnadu, India.

[4]Professor & Head, Department of Physiology, Government Erode Medical College, Perundurai, Erode, Tamilnadu, India.

[5]Tutor, Department of Physiology, Government Erode Medical College, Perundurai, Erode, Tamilnadu, India.

Corresponding Author: Panneerselvam Periasamy

Abstract

Introduction: The first year of medical course is taught mainly by didactic lectures and tutorials with no exposure to patients. The Early Clinical Exposure helps medical students to create more interest in basic subjects, strengthen learning and make learning more real and relevant. Since our study was planned to evaluate the effectiveness of Early Clinical Exposure compared to conventional teaching methods.

Objectives: To assess and compare the acquired knowledge of students from didactic lecture and early clinical exposure

Materials and methods: 100 first MBBS students were divided into two groups of 50. Study group for anaemia served as control group for jaundice and vice versa. Study group students were taken to medicine ward for giving short description about anaemia followed by clinical examination. Control group students were taught by lecture. Both were assessed by pre-test and post- test questionnaire. Crossing over of groups was done with jaundice in next session. Test scores statistically analysed with SPSS.

Results: Mean pre-test and post-test scores of students learning improved significantly from 2.240 ± 0.771 to 8.140 ± 2.399, $(P < .00001)$ in the anemia study group 3.18 ± 1.804 to 9.2 ± 2.441 $(P < .00001)$ in jaundice study group. There was statistically significant improved performance in early clinical exposure sessions when compared to lectures.

Conclusion: The first year MBBS students' ability to understand clinically relevant concepts has been improved by Early Clinical Exposure. Students and faculties found ECE is a useful method if it is taken with traditional teaching learning methods.

Keywords: Physiology, Early Clinical Exposure, Jaundice, Anemia, Medical students

Introduction

National Medical Commission (NMC) is replaced the Medical Council of India on 25 September 2020 National Medical Commission supersession of Medical Council of India. Medical Council of India (MCI) in the Vision 2015 document has recommended curricular

reforms for undergraduate and postgraduate medical student. Early clinical exposure and integrated teaching learning are the two key curricular reforms recommended by the MCI for first year MBBS students.

Medical students have spent the preclinical years in classrooms and laboratories eagerly expecting the clinical years when they would see and learn from patients[1]. The first year of medial course is taught mainly by didactic lectures and tutorials with no exposure to patients. Nowadays the lack of cordial relationship between doctor and patient create lot of problems in society.

Motilal et al narrated in their study early clinical exposure and Integration of topics, needs coaching and attention in various levels: early practical experience could orient medical curriculums towards the social context of practice, strengthen the affective and cognitive learning of the students. This study also pointed out 82.67% faculties agreed early clinical exposure will be helpful if implemented in curriculum.[2]

Chinmay Shah et al documented the World Federation of Medical Education (WFME) recommended that "medical education must to the greatest possible extent integrate basic and clinical disciplines with a focus on key principles, students should meet patients early on" . It also imparted the previous positive learning's of around 50 medical schools from the Europe, Indonesia and Nepal in implements of Early clinical exposure and organ based curriculum'.[3]

Study in Maharashtra by M C Tayade et al[4], enlighten the student's acceptance of ECE teaching methodology, their interest in class room, grasping of the concepts, analysing the knowledge & skills gained in the class in a positive note. ECE is a prime example of "vertical integration" in medical education, with an enormous interdisciplinary involvement. A marvellous teamwork is required, and the same is refreshed for the success of this different however resourceful arrangement. It also documented the teachers as lighthouse to facilitate the students' learning's in class room and self-directed.

Surekaet etal[5] emphasized that ECE as important and motivating for the students learning's, inspiring factor for students to have best clinical knowledge, clinical skills, wider understanding about the medical profession. ECE in real work place might improve the socialization and strengthen students' cognitive and affective learning, lifts their confidence in their ability to prosper in medical career and their ability to handle the social, emotional, professional problems and enhance the satisfaction levels. They also reemphasized that early direct contact with patients in hospital settings or community settings or in any real life scenario might play a vital role in developing clinical reasoning skills, communication skills, professional attitudes and empathy. Many students mentioned that ECE made the learning more entertaining and "anything clinical" helpful them to understand the topic in depth, increased their interest for the subject and motivated them to read more.

Early Clinical Exposure[1-4] is a teaching learning methodology, which fosters exposure of the medical students to the patients as early as the first year of medical college. The goals of ECE are to provide social relevance and context to basic science teaching and learning, enhance medical knowledge, learn few basic clinical skills and acquire a wide range of attitudes. On the other hand early clinical exposure helps medical students socialize to their chosen profession. It helps them acquire a wide range of subject matter and makes their learning more real and relevant. It has potential benefits for other stakeholders, notably teachers and patients. It can influence career choices.

Process of implementation of Early Clinical Exposure, in a medical college, ECE can be introduced to the first year medical students, thus providing relevance and context to Physiology teaching and learning in all or any of the following three settings like class room setting, hospital setting and community setting.

The Early Clinical Exposure ECE helps medical students to create more interest in basic subjects, strengthen learning and make learning more real and relevant. The Early Clinical Exposure- ECE makes the students to understand the role of doctor and the significance of doctor-patient relationship.

Aim:

To evaluate the effectiveness of the Early Clinical Exposure compared to conventional teaching methods among first year medical students in Physiology subject at Government Erode Medical College, Tamilnadu.

Objectives:

1. To assess the acquired knowledge of students from routine didactic lecture in Physiology.
2. To assess the acquired knowledge of students from early clinical exposure in Physiology.
3. To compare the student's performance in didactic lecture and early clinical exposure in Physiology.

Materials and methods:

This study was conducted in IRT Perundurai Medical College, Perundurai now renamed as Government Erode Medical College, Perundurai. Ethical committee approval was obtained from our institution. Informed written consent of first MBBS students was sought. ECE for two topics were planned (Anaemia, Jaundice). 100 students were divided into two groups of 50. Study group for anaemia served as control group for jaundice and vice versa. A set of few standard questions of cognitive knowledge was developed for pre-test and post-test assessment of knowledge gain. The questions were normalised for a specific topic. The pre-test questionnaire was given to both groups. Study group students were taken to Government Erode Medical Hospital Medicine ward for giving short description about anaemia followed by clinical examination. Control group students were taught about the anaemia by routine lecture. Both the groups were assessed by the post-test questionnaire. The scores for pre-test and post-test for anemia were tabulated. Similarly crossing over of the groups was done with jaundice in next session.

Microsoft office Excel 2007 and SPSS (version 16) were used for data analysis. Scores were reported as means± SD. Pre and post test scores were analysed using students t-test. Statistical significance was assessed as p-value less than 0.001.

Results

100 out of 100 completed the complete sessions and gave both the pre-test and the post-test. The response rate was 100%. Our study reveals students learning improved significantly after ECE. In anaemia study group pre-test and post-test scores of Mean $\pm$ SD increased from 2.240±0.771 to 8.140±2.399 with P < .00001 (highly significant). Similar in jaundice study group the 3.18±1.804 to 9.2 ±2.441 (P < .00001). There was statistically significant improved performance in early clinical exposure sessions when compared to lectures.

Table 1 show there is no significant difference between pre test and post test in anemia control group, similar observation seen in jaundice control group (table 3). Table 2 and Figure 1 shows Anemia study group reveal marked significant improvement in learning by ECE. Pre test mean $\pm$ SD value is 2±0.771 with 0% in 5-10 marks category. Whereas post test anemia group after Early clinical exposure students learning shown mean $\pm$ SD value 8 ± 2.399 with 80% in 5-10 marks category. The pre test t-value is 3.75894 with post test the

t-value is-16.55607. The p-value is < .00001 (Table 5) this difference is considered to be extremely statistically significant.

Table 1: Scoring pattern – Pre-test and Post- test in Control group of Anaemia (Total marks 15)

Marks	Below 5	5-10	Above 10	Mean	Median	SD
Pre – test	50 (100%)	0	0	3.06	3	0.7398
Post – test	34 (68%)	16 (32%)	0	4.02	4	1.6474

Table 2: Scoring pattern – Pre-test and Post- test in Study group of Anaemia (Total marks 15)

Marks	Below 5	5-10	Above 10	Mean	Median	SD
Pre – test	50 (100%)	0	0	2.240	2	0.771
Post – test	07 (14%)	40 (80%)	03 (6%)	8.140	8	2.399

Table 3: Scoring pattern – Pre-test and Post- test in Control group of Jaundice (Total marks 15)

Marks	Below 5	5-10	Above 10	Mean	Median	SD
Pre – test	47 (94%)	3 (6%)	0	3.34	3	1.205
Post – test	35 (70%)	15 (30%)	0	4.24	3	1.992

The t-value is   2.80435. The p-value is .00304. The result is significant at p < .05.

Table 4: Scoring pattern – Pre-test and Post- test in Study group of Jaundice (Total marks 15)

Marks	Below 5	5-10	Above 10	Mean	Median	SD
Pre – test	42 (84%)	8 (16%)	0	3.18	3	1.804
Post – test	04 (8%)	40 (80%)	06 (12%)	9.2	10	2.441

The t-value is -14.02518. The p-value is < .00001. The result is significant at p < .05.

Table 4 and Figure 1 shows jaundice study group reveal marked significant improvement in learning by ECE. Pre test mean ± SD value is 3.18± 1.804   with 16 % in 5-10 marks category. Whereas post test jaundice group after Early clinical exposure students learning shown mean ± SD value 9.2 ± 2.441 with   80% in 5-10 marks category. The pre test t-value is   2.80435 with post test the t-value is-14.02518. The p-value is < .00001 (Table 5) this difference is considered to be extremely statistically significant.

Table 5: Comparison of Mean ± SD, *t, p* values between anemia & jaundice study group and its respective control groups.

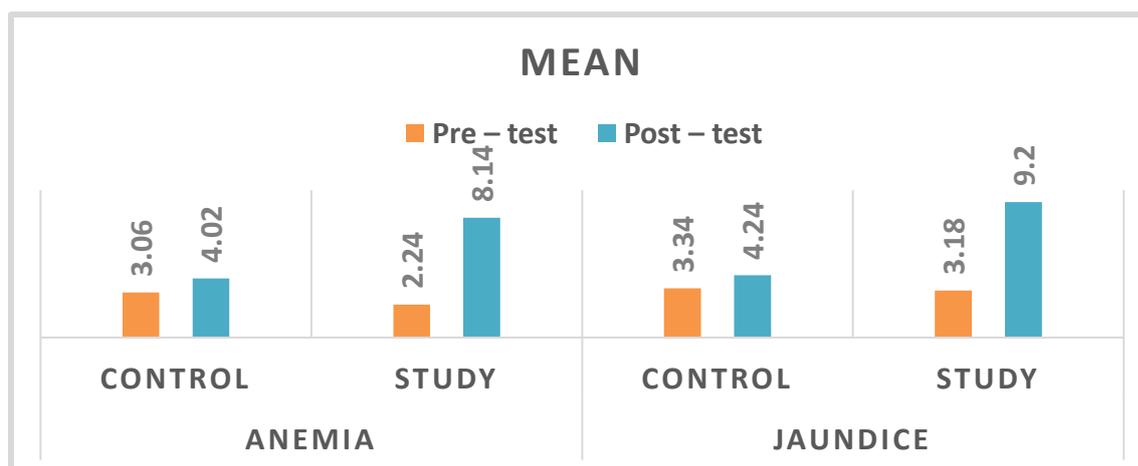|	Control Mean ±SD	ECE Mean ±SD	T value	P value
Anemia				
Pre test	3.06 ±-0.7398	2.240±0.771	3.75894	<.000145
Post test	4.02±1.6474	8.140±2.399	16.55607	< .00001
Jaundice				
Pre test	3.34±1.205	3.18±1.804	2.80435	<.00304
Post test	4.24±1.992	9.2 ±2.441	14.02518	< .00001

Figure 1: Comparison of Pre test & post test scores between both Study groups & its respective   Control group.

Discussion:

Our study results suggest that ECE is an interesting, interactive form of teaching. It helps to build concepts and helps to correlate physiology to clinical sciences, and it should be made a part of curriculum. Since the past century, the medical students have to learn theory for two to three years before getting it applied in actual clinical practice. Didactic lecture is teacher-cantered, unidirectional, less participative, and occasionally dull. Students get a significant quantity of information through passive transfer of knowledge in this technique of teaching, and they are not engaged in the learning process. Furthermore, students are unable to comprehend the importance of fundamental disciplines in clinical settings, making preclinical years difficult, tedious, and ineffective. This traditional T-L approach causes a significant time gap between preclinical and clinical years. As a result, the MCI, India's regulating organisation for medical education, has established a competency-based medical education curriculum, which demands clinical instruction from the very first year onward. Clinical teaching should begin with a foundation course concentrating on communication, fundamental clinical skills, and professionalism, according to the report, and ECE is one of the measures to improve medical education quality.

A number of studies have been undertaken to explore the efficacy of ECE. [6-7] their findings are corroborative with respect to students' satisfaction and acceptance of ECE. We also found a very positive response from students in our study toward ECE. ECE helps to develop clinical reasoning skills and promotes factual learning. In our study, there was direct patient contact, and case was discussed by medicine faculties. It was shown in one of previous study that direct patient demonstration of clinical facts enhances students' understanding and retention.

Students expressed enhanced attention in class, improved knowledge of the material, motivation to read, and greater memory, which are consistent with the findings of Rawekar et al., [8], who found that students gave positive feedback on ECE. Students in the current study also stated that ECE has aided them in correlating the applied aspects of physiology in a clinical setting, and that it should be used as a method of T-L in addition to regular lectures in physiology and other basic subjects in the first professional MBBS curriculum, a finding that is consistent with Kumar et al. [9]

Summary and Conclusion:

Two ECE sessions were introduced to 1st year MBBS students. Medical students received it positively. ECE is an effective method to supplement the traditional teaching. It is practically oriented and interactive and helps to build concepts. MCI is introducing ECE in the new curriculum to be implemented from admission batch 2019. ECE will help bridge the gap between preclinical and clinical subjects and make learning more interesting. The first year MBBS students' ability to understand clinically relevant concepts has been improved by Early Clinical Exposure. Students and faculties found ECE to be useful and interesting.

Limitation:

Because of time constrains, only two systems were chosen for ECE sessions. As suggested by students, ECE should be made part of other systems. This study has several limitations. The study was conducted at a single medical institute and therefore the findings may not be generalised to other medical institutions.

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Declaration of patient consent

Patient's consent not required as patients identity is not disclosed or compromised.

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Conflicts of interest
There are no conflicts of interest.

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