

A Quantitative Questionnaire Based Study to Assess the Effectiveness of Introduction to Early Clinical Exposure as Learning Tool

Bharat Kumar¹, Vijay Kumar Singh², Sheela Kumari³

¹Assistant Professor, Department of physiology, Darbhanga Medical College, Laheriasarai, Darbhanga, Bihar, India

²Associate Professor, Department of physiology, Darbhanga Medical College, Laheriasarai, Darbhanga, Bihar, India

³Professor and HOD, Department of physiology, Darbhanga Medical College, Laheriasarai, Darbhanga, Bihar, India

Received: 01-08-2021 / Revised: 04-09-2021 / Accepted: 23-09-2021

Corresponding author: Dr. Vijay Kumar Singh

Conflict of interest: Nil

Abstract

Aim: study of introduction to early clinical exposure as learning tool in physiology. **Methods:** A quantitative questionnaire-based study was conducted in the Department of physiology, Darbhanga Medical College, Laheriasarai, Darbhanga, Bihar, India from January 2021 to July 2021. The 1st year MBBS students were sensitized to ECE by taking a lecture. The meaning of ECE, the purpose, and the methods of conducting ECE were explained to the students. After the session, students feedback was taken by a questionnaire. The questionnaire consisted of student's perception and feedback on ECE sessions. **Results:** Analysis of the open feedback showed that the program had significant impact on the building concept (28%), retention of topic (38%), interactive (28%), and correlating physiology to clinical (50%). **Conclusion:** To conclude, ECE though challenging, is a way to motivate the students and help in better retention of the knowledge.

Keywords: ECE, students, retention

This is an Open Access article that uses a fund-ing model which does not charge readers or their institutions for access and distributed under the terms of the Creative Commons Attribution License (<http://creativecommons.org/licenses/by/4.0>) and the Budapest Open Access Initiative (<http://www.budapestopenaccessinitiative.org/read>), which permit unrestricted use, distribution, and reproduction in any medium, provided original work is properly credited.

Introduction

In the traditional curricula of medical education, students learn theoretical knowledge without contact with the patient in a clinical context. Moreover, when students are posted in clinical fields they cannot recall important basic scientific concepts; therefore, part of their academic education becomes impractical.[1,2] At the same time, students tend to feel slightly anxious and apprehensive when faced by real- life clinical situations for which they

are psychologically unprepared. Possible contributing factors include stress due to the tremendous amount of material to be learned, perceived lack of relevance of the basic science years. The medical education community has been greatly emphasising the value of early patient contact experiences for preclinical medical students. The prime objectives of which include, getting acquainted with patients; basic clinical-skills training, promoting

interest in primary care and encouraging active learning in preclinical settings. Data suggest that early clinical exposure (ECE) can make basic science curricula more relevant.[3]

ECE has been suggested to help medical fresh students overcome their stress and motivate them to develop better insight and awareness to the medical profession.[4] ECE involves active, experiential learning from patients along with practising clinicians, designed to be the 'beginning of a lifelong learning focused on the patient.[5] There seems to be no 'best' way to conduct ECE.[6] Implementing a short-term period of ECE program could influence medical students attitude toward medical education, boost their confidence in their ability to succeed in medical practice and gain social, emotional and professional satisfaction. Different teaching methods have been used to introduce an ECE program comprising mainly of a hospital round to learn about patients' needs and health-care system. This arouses student' interest and enhances their learning.[7]

Teaching endocrine physiology to the 1st-year medical students, in an effective manner has always been a challenge. Students are motivated and their performance improves when the instruction is adapted to their 'Learning preferences and styles.[8] Various methods are being used as alternative approaches to reinforce didactic instruction in endocrine physiology, such as case-stimulated learning, problem- based learning and patient-centred learning through ECE. There are studies on ECE in Indian context conducted in the previous 2 to 3 years only.[9-12] Most of the studies are based on students perception of ECE, one study has included faculty perception also.[13] The Medical Council of India in vision 2015 Document has recommended curricular reforms for undergraduate medical students and ECE is one of them for 1st-year medical students. Reviewing the literature for Indian studies on ECE reveals that ECE is

implemented recently in the competency-based curriculum but it is still in infancy. None of the studies has a quantitative measurement of ECE learning outcomes. A quantitative analysis such as individual students learning gain and overall program effectiveness can be useful to study the effectiveness of teaching-learning through ECE method.[14] As per literature, only one study has detailed how the ECE program was given but most of the studies have not clearly explained the designing and implementation of the ECE program in their study.[12] With this background knowledge, we wish to introduce a short-term ECE educational intervention to 1st-year medical students. This study is based on quantitative measurement of knowledge gain by individual student, the overall effectiveness of the program and students perception of ECE.

This study aims to assess the effectiveness of ECE as a teaching-learning tool for 1st-year medical students. The objectives are to calculate and compare the learning gain for an individual student and learning gain for the whole program by conventional teaching method and through ECE intervention and also to study the student's perception regarding ECE intervention.

Material and Methods

A comparative study was conducted in the Department of physiology, Darbhanga Medical College, Laheriasarai, Darbhanga, Bihar, India from January 2021 to July 2021. The 1st year MBBS students were sensitized to ECE by taking a lecture. The meaning of ECE, the purpose, and the methods of conducting ECE were explained to the students.

Methodology

A didactic lecture on renal system was scheduled. At the end of lectures, second session of ECE (2 h duration) was conducted as follows:

- A case of chronic kidney disease (CKD) (Stage V) with fluid overload and anemia was selected. After consulting

the clinicians in medicine department, case history, finding, and investigation reports of the patients were collected. (Pt. identity not revealed). Videos from YouTube were downloaded

- Video from YouTube was shown which contained patient's story
- The case history and findings of the patient collected from medicine department was presented to the students. Case history, including chief complaints, H/o present and past illness, and personal history was discussed
- New terms such as hematuria and pyuria were explained
- Findings from general examination and systematic examination were discussed
- Renal function test was discussed. Abnormal values with normal values were compared. Ultrasound diagnosis of CKD was conveyed
- Video showing pathophysiology of kidney disease was shown
- Video on stages of kidney disease was also shown
- Management involving lifestyle modification, dietary changes, drugs, and renal replacement therapy was explained.

After the session, students feedback was taken by a questionnaire. The questionnaire

consisted of students perception and feedback on ECE sessions.

Statistical Analysis

Student's perception of ECE was recorded by taking feedback on 10 closed-ended items on Likert scale and two open-ended questions. Closed-ended questions were analyzed by the options chosen and with percentages, whereas open-ended questions were analyzed by screwing and extracting themes.

Results

The feedback of participating students was taken by a questionnaire on 10 items on 5-point Likert scale after the ECE session. These 5 points were:

1. Strongly disagree
2. Disagree
3. Neither agree or disagree
4. Agree
5. Strongly agree.

The questionnaire consisted of 10 closed-ended questions and two open-ended questions.

Analysis of the open feedback [Table 1] showed that the program had significant impact on the building concept (28%), retention of topic (38%), interactive (28%), and correlating physiology to clinical (50%).

Table 1: Students feedback (on 5-Point Likert scale serial number 10) with statistical analysis

Items	Strongly disagree (%)	Disagree n (%)	Neither agree not disagree n (%)	Agree n (%)	Strongly agree n (%)
ECE is more interesting method of teaching-learning compared to traditional lecture	0	0	6 (12)	29(58)	15(30)
ECE has increased my attention in class	0	3 (6)	7(14)	25(50)	15(30)
ECE motivated me to read more about the topic	0	2 (4)	10 (20)	30(60)	8(16)
ECE helped me to understand the topic better	0	0	10 (20)	30 (60)	10 (20)
ECE has helped me in better retention of the topic	0	0	5(10)	29(58)	16 (32)
ECE helped me in correlating physiology with clinical case	0	0	4 (8)	28 (56)	18(36)
ECE made me understand the importance of learning physiology	0	0	2(4)	25(50)	23 (46)
ECE should be incorporated as a teaching-learning method along with regular lectures for other topics in physiology for undergraduates	0	0	3 (6)	27 (57)	20 (40)

ECE should be incorporated as a teaching-learning method along with regular lectures in other basic science subjects for undergraduates	0	0	5 (10)	25(50)	20 (40)
ECE should be made a part of curriculum in basic sciences for future batches of MBBS students.	0	0	5(10)	20 (40)	25(50)
Top points/suggestions					
Enlist three good points about ECE as method of teaching-learning Helps to correlate physiology to clinical Interesting Retention Build concept Interactive				27 (54%) 25(50%) 19(38%) 14 (28%) 14(28%)	
Please give three suggestions for improving ECE Hospital visits More sessions More videos				26(52%) 15 (30%) 5 (10%)	
Data shown as number of students (percentage). ECE: Early clinical exposure					

Discussion

In different studies, ECE has been suggested to motivate the medical freshmen to develop a better insight.[14-22] ECE enables medical students to obtain a better and deeper understanding of medicinal theory and practice through the application of their knowledge in real hospital situations.[17]

One previous study showed that early clinical experience called for more attention to the importance of basic sciences and increased the students' interest in studying basic sciences.[14]

Similar to the present study, other studies also concluded that ECE is a time-consuming method and cannot be applied to each topic of gross anatomy as tenure of first MBBS is only one year and three basic subjects have to be covered. Hence, although it is a very effective teaching-learning method, it cannot replace the lectures. To increase its efficacy, there should be a hybrid method, whereby the entire syllabus is not covered, but ECE is used only for a few important and common conditions.[23]

Another challenge that can be encountered during ECE implementation is identifying and coordinating with supportive clinical departments and cooperative patients.[24] Analysis of the open feedback [Table 1] showed that the program had significant impact on the building concept (28%), retention of topic

(38%), interactive (28%), and correlating physiology to clinical (50%).²⁵

In an Indian setting, as our patients are not a limiting factor for learning. For skill learning which is an integral part of clinical teaching-learning in medical education, we had an encouraging experience. The perception gathered from students reinforced the affirmative nature of ECE, which provide holistic learning to them.²⁶

Conclusion

To conclude, ECE though challenging, is a way to motivate the students and help in better retention of the knowledge.

Reference

1. Littlewood S, Ypinazar V, Margolis SA, Scherpbier A, Spencer J, Dornan T. Early practical experience and the social responsiveness of clinical education: A systematic review. *BMJ* 2005;331:387-91.
2. Dahle LD, Brynhildsen J, Berbohm FM, Rundquist I, Hammer M. Pros and cons of vertical integration between clinical medicine and basic science within a problem-based undergraduate medical curriculum: Examples and experiences from Linkoping, Sweden. *Med Teach* 2002;24:280-5.
3. Elnicki DM, Halbritter KA, Antonelli MA, Linger B. Educational and career outcomes of an internal medicine preceptorship for first-year medical

- students. *J Gen Intern Med* 1999;14:341-6.
4. Dornan T, Littlewood S, Margolis SA, Scherpbier A, Spencer J, Ypinazar V. How can experience in clinical and community settings contribute to early medical education? A BEME systematic review. *Med Teach* 2006;28:3-18.
 5. Wartman S, Davis A, Wilson M, Kahn N, Sherwood R, Norwalk A. Curricular change: Recommendations from a national perspective. *Acad Med* 2001;76:S140-5.
 6. Abramovitch H, Shenkman L, Schlank E, Shoham S, Borkan J. A tale of two exposures: A comparison of two approaches to early clinical exposure. *Educ Health (Abingdon)* 2002;15:386-90.
 7. Norman G. The American college of chest physician evidence-based educational guidelines for continuing medical education interventions: A critical review of evidence-based educational guidelines. *Chest* 2009;135:834-7.
 8. Armstrong E, Parsa-Parsi R. How can physicians' learning styles drive educational planning? *Acad Med* 2005;80:680-4.
 9. Govindarajan S, Vasanth G, Kumar PA, Priyadarshini C, Radhakrishnan SS, Kanagaraj V, *et al.* Impact of comprehensive early clinical exposure program for pre clinical year medical students. *Health Prof Educ* 2018;4:133-8.
 10. Kharkar A, Gulanikar S, Kulkarni S, Dase R, Shroff G. Effect of early clinical exposure on 1st MBBS student. *Int J Curr Med Appl Sci* 2015;8:56-8.
 11. Das P, Biswas S, Singh R, Mukherjee S, Ghoshal S, Pramanik D. Effectiveness of early clinical exposure in learning respiratory physiology among the newly entrant MBBS students. *J Adv Med Educ Prof* 2017;5:6-10.
 12. Vyas R, Sathishkumar S. Recent trends in teaching and learning in physiology education early clinical exposure and integration. *Int J Basic Appl Physiol* 2012;1:175-82.
 13. Tayade M, Bhimani N, Kulkarni NB, Dandekar K. The impact of early clinical exposure on first M.B.B.S. students. *Int J Healthc Biomed Res* 2014;2:176-81.
 14. Prithishkumar IJ, Holla SJ. Early clinical exposure as a teaching learning tool to teach neuroanatomy for first year occupational and physical therapy students – Our preliminary experience. *Indian J Physiother Occup Ther Int J* 2012;6:59-62.
 15. Dornan T, Bundy C. What can experience add to early medical education? Consensus survey. *BMJ* 2004;329:834.
 16. Littlewood S, Ypinazar V, Margolis SA, Scherpbier A, Spencer J, Dornan T, *et al.* Early practical experience and the social responsiveness of clinical education: Systematic review. *BMJ* 2005;331:387-91.
 17. Chisholm MA, William E. Using actual patients in the classroom to develop positive student attitudes toward pharmaceutical care. *Am J Pharm Educ* 1999;63:296-9.
 18. Abramovitch H, Shenkman L, Schlank E, Shoham S, Borkan J. A tale of two exposures: A comparison of two approaches to early clinical exposure. *Educ Health (Abingdon)* 2002;15:386-90.
 19. Wartman S, Davis A, Wilson M, Kahn N, Sherwood R, Nowalk A, *et al.* Curricular change: Recommendations from a national perspective. *Acad Med* 2001;76:S140-5.
 20. Verma M. Early clinical exposure: New paradigm in medical and dental education. *Contemp Clin Dent* 2016;7:287-8.
 21. Das P, Biswas S, Singh R, Mukherjee S, Ghoshal S, Pramanik D, *et al.* Effectiveness of early clinical exposure in learning respiratory physiology among the newly entrant MBBS

- students. *J Adv Med Educ Prof* 2017;5:6-10.
22. Johnson AK, Scott CS. Relationship between early clinical exposure and first-year students' attitudes toward medical education. *Acad Med* 1998;73:430-2.
23. Satheesha N, Komattil R, Nagabhooshana S, Kuvady LB. Teaching anatomy in a problem-based learning (PBL) curriculum. *Neuroanatomy* 2006;5:2-3.
24. Vernon DT. Attitudes and opinions of faculty tutors about problem-based learning. *Acad Med* 1995;70:216-23.
25. Govindrajan S, Vasanth G, Kumar PA, Priyadarshini C, Radhakrishnan SS, Kanagaraj V, *et al.* Impact of a comprehensive early clinical exposure program for preclinical medical students. 2018;4:133-8.
26. Rawekar A, Jagzape A, Srivastava T, Gotarkar S. Skill learning through early clinical exposure: An experience of Indian medical school. *J Clin Diagn Res* 2016;10:JC01-4