

## Basic life support through early clinical exposure: Students' perspective

Varshini Athipathy, Pananghat A Kumar, Rajangam Tolstoy, Parthasarathy Jeyakrishnan, Prakash Mohanasundaram, and Amareswar Reddy

PSG Institute of Medical Sciences and Research, Coimbatore 641004, India

---

### BRIEF REPORT

---

Please cite this paper as: Athipathy V, Kumar PA, Tolstoy R, Jeyakrishnan P, Mohanasundaram P, Reddy A. Basic life support through early clinical exposure: Students' perspective. AMJ 2016;9(9):319-323.

<http://doi.org/10.21767/AMJ.2016.2690>

---

#### Corresponding Author:

Dr Pananghat Kumar  
PSG Institute of Medical Sciences and Research  
Coimbatore 641004 - India  
Email: [drpakumar@yahoo.com](mailto:drpakumar@yahoo.com)

---

### ABSTRACT

---

#### Background

Preclinical students in Indian medical colleges, who are fresh from their secondary schooling, are required to accumulate facts in basic sciences without any practical reference. Growing awareness of the significance of early clinical exposure (ECE) has prompted many institutions worldwide to start programs to introduce preclinical students to clinical medicine early. Following the Medical Council of India (MCI), PSG Institute of Medical Sciences and Research (PSG IMSR), Coimbatore has introduced this program for first-year students.

#### Aims

In this study, an attempt is made to analyse the students' perspective on ECE. The effectiveness of this program and the extent to which the students are benefitted is being evaluated.

#### Methods

This study focuses on the experience of the students who rotated through Clinical Simulation Laboratory, where they had training in Basic Life Support (BLS) under the program of ECE. The pre-post survey conducted through a

questionnaire was analysed.

#### Results

The survey showed improvement in students' knowledge and attitudes regarding BLS. Students recorded positive attributes regarding the session and found it "interesting" and "interactive." They felt that the session motivated them to learn in an analytical way as opposed to the traditional learning style. The sessions were extremely rewarding.

#### Conclusion

The BLS program was successful as many students felt that it instilled confidence in them and they were prepared for their future profession. ECE should be continued in the following years and other institutions should consider starting a similar program.

#### Key Words

Early Clinical Exposure (ECE), Basic Life Support (BLS), pre-post survey, students' knowledge and attitude, motivation, analytical.

---

#### Implications for Practice:

##### 1. What is known about this subject?

ECE is a new program mandated by MCI. Though the significance of BLS is known, its effective implementation and instructional strategy are less stressed upon.

##### 2. What new information is offered in this report?

PSG IMSR is one of the few medical colleges in the country to effectively introduce ECE. This particular study analyses the effectiveness of ECE.

##### 3. What are the implications for research, policy, or practice?

This study provides guidance to implement BLS program within the framework of ECE. It has provided insight into the effect of ECE on the affective domain.

## Background

Undergraduate medical education in India is spread over a period of four and half years, followed by one year of Compulsory Rotatory Resident Internship (CRRI), leading to the award of MBBS degree. Students take up the undergraduate medical career soon after completing their secondary school, at 17 to 18 years. The first year of the curriculum is entirely devoted to learning basic medical sciences viz. Anatomy, Physiology, and Biochemistry. These subjects do not involve exposure to clinical experience. It has been observed that by the time they progress to the clinical years, quite often the students lose track of details on basic sciences.<sup>1</sup> This situation is similar in many other countries as well. Recognizing this lacuna in the medical education system, many regulatory authorities have recommended clinical exposure right from the first year of the undergraduate program. One of the first recommendations to emphasise the need for integrating basic medical science knowledge with clinical experience came from the World Federation of Medical Education.<sup>2</sup> It is crucial for every medical student to meet patients early in their medical education, ideally during the first year. Following this, in 1999, the Health Professions Council of South Africa also advocated for early clinical exposure and emphasised its importance.<sup>3</sup> In the succeeding years, many organisations worldwide have acknowledged this problem and are promoting the need for early clinical exposure amongst young medical students.

A study done recently in Iran brought out the fact that the perspective of medical education for the young medical students has changed for the better after exposure to clinical experience.<sup>4</sup> It is a general observation that students tend to be nervous about their future profession during the first year, as they have no idea what awaits them in their career. A program on Early Clinical Exposure (ECE) at Sabzevar University has brought out the fact that such a program during the first year of the undergraduate medical career can tremendously reduce stress and anxiety in students and in turn motivate them for their future clinical endeavour.<sup>5</sup> Another unique study employed a new approach to learning biochemistry by bringing the first year students to the hospital to learn biochemistry of carbohydrate metabolism and Diabetes Mellitus. They were instructed to observe and interact with patients, record the patients' histories and laboratory investigations. These students who went to the patients' bedside to learn, scored better and thus, retained much more than the students who passively attended the traditional lectures, thereby proving that retention rate during learning is best when the

students are completely involved in their learning process.<sup>6</sup> Interactive learning is clearly the best method to learn and this must be done during the first year of their career. For medical students, interactive learning is visiting the hospital and seeing first-hand correlation between the basic medical sciences and clinical scenarios. This makes the medical educational experience even more exciting.

Following the global trend set in medical education, Medical Council of India (MCI) has mandated early clinical exposure for all first-year students.<sup>7</sup> Since a syllabus and course content for ECE is yet to be developed, MCI has permitted the individual institutions to design and execute this program and respecting MCI's goals, many medical colleges are trying, but are finding it challenging to find the ways and means of implementing such a program. In addition to working out the logistics of infrastructural facilities, finding the required time to accommodate a satisfactory ECE program during the already crowded schedules of the first year MBBS curriculum seems to be a great concern for the faculty of basic medical sciences and the administrators. PSG Institute of Medical Sciences and Research (PSG IMSR) in Coimbatore, Tamilnadu, India, had in fact initiated a program of 'Clinical Observership' where the preclinical students were given the opportunity of visiting some chosen clinical departments to observe the activities therein.<sup>8</sup> Thus, they had the chance to visit the hospital where they had the opportunity to observe certain selected clinical procedures. Cardiac catheterisation, renal dialysis, blood donation and subsequent fractionation of the blood, were some of the clinical scenarios they witnessed. Feedback from the students showed that the students truly benefitted and appreciated the program. In response to directives from MCI, presently, PSG IMSR has taken a sincere initiative to effectively incorporate the ECE program for the first year students. The program strives to instil professionalism, to further students' inspiration and interest for the medical career, to teach valuable skills, and to develop practical knowledge by facilitating the application of the basic sciences.<sup>7</sup> ECE program allows first-year students to visit and learn about the various departments at the hospital. As part of this particular program, students visited the Clinical Simulation Laboratory and learned how to administer cardiopulmonary resuscitation, as part of Basic Life Support (BLS) training protocol.

Basic Life Support can be an integral part of the Early Clinical Exposure experience as it is a basic duty of a medical professional to respond and care for a person in an emergency. Technically, if a physician doesn't fulfil his or her "duty to act" legal action can be taken.<sup>9</sup> Accordingly, it is

essential for a medical student to learn the fundamentals of Basic Life Support. He or she should learn the simple but very crucial protocol to be followed during an emergency. It is common knowledge that during these serious episodes of cardiac arrest if prescribed care is administered on time, it is possible to save the life. Thus, these easy and vital skills need to be mastered by the medical students and ideally, it should be taught early during their career.

The usefulness of any program is to be evaluated quite rightly by the impact it has created in the target population. Since the students are the ones undergoing the training in this session, their experiences and suggestions are of utmost importance in order to evaluate this program. This study, hence, has been designed to focus on the students' views to gauge the effectiveness of this program.

### Case details

During the program of Early Clinical Exposure which was conducted at PSG IMSR, Coimbatore, the students visited selected clinical departments as observers. In the year 2014, one hundred and fifty-first year students of the class (77 per cent female, 22 per cent male) attended the ECE program, which was held in two rotations. Students were grouped into fifteen batches. The visits to the department lasted for nearly ninety minutes and each day was spent in a different department. The departments visited during the first rotation included Transfusion Medicine (blood bank), Radiology (Radiography and Ultrasonography), Surgery, Orthopaedics, and Clinical Simulation Laboratory. For the second rotation, Cardiology, Nephrology, Respiratory Medicine, Clinical Simulation Laboratory and Radiology (CT and MRI scans) departments were selected.

In the Clinical Simulation Laboratory, students had the opportunity of learning Basic Life Support (BLS) with hands-on experience. The effectiveness of the program, in particular, that of BLS session was analysed by taking the feedback from the students. During the BLS session held in the Simulation Lab, the group was taught the basics in giving Cardiopulmonary Resuscitation (CPR). Basic Life Support (BLS), according to the American Red Cross Basic Life Support for Healthcare Providers Handbook, is "care healthcare providers and public safety professionals provide to patients who are experiencing respiratory arrest, cardiac arrest, or airway obstruction." BLS thus is a generic term used for any type of vital support, and with regards to helping a case of cardiac arrest and sometimes in airway obstructions. CPR "circulates blood that contains oxygen to vital organs in a patient with cardiac arrest when heart and breathing have stopped. It includes chest compressions and

ventilations as well as the use of an automated external defibrillator."<sup>9</sup> During our ECE posting in the Clinical Simulation Laboratory, a physician explained the procedure first with a video clipping shot from campus. This was followed by a demonstration of a BLS scenario in a classic case of cardiac arrest. Students got the opportunity of practising CPR, on mannequins, multiple times and the physician personally supervised and corrected their procedure.

After completing the program, students were requested to fill out a retrospective pre-post survey. This survey was designed to evaluate the changes in their opinions and knowledge after going through this program. A retrospective survey is a "survey with questions related to the occurrence of vital events during a specified period preceding the date of interview". A retrospective study brings out the status of the learner in all the domains of learning both before and after the intervention program. In a prospective study, however, only the present status is evaluated and hence, a retrospective study helps to evaluate learning outcomes before and after an event.<sup>10</sup> The questionnaire asked if students knew "the chain of survival involved in CPR, the importance of performing CPR, the signs of severe airway obstruction in an unresponsive victim, how to give chest compressions at the proper depth and rate, the difference between giving CPR when there is only one rescuer and when there are two rescuers." Students rated their knowledge based on Likert scale, which is "a psychometric response scale primarily used in questionnaires to obtain participant's preferences or degree of agreement with a statement or set of statements".<sup>11</sup> The results of the survey were then statistically analysed. The second part of the feedback was an open feedback, where they were required to register their thoughts and comments about the sessions. This information was then analysed.

The pre-test mean score was 16 and the post-test mean score was a radical improvement to 34. The statistical analysis confirmed that the data collected from the surveys were relevant. Kolmogorov-Smirnov test proved the normal distribution of the results. Wilcoxon signed rank test confirmed a p-value less than 0.001, which is very significant. The feedback was then reviewed and separated into two categories for analysis: positive feedback and constructive criticism about the program. The positive feedback was further divided to general and specific feedback.

The results showed more of definite improvement in students' knowledge and experience after the program.

Generally, most of the students, in the open feedback, found the session “useful”, “informative” and “interesting.” They “liked the department the most” because it was more of a “hands-on” session and they had a wonderful interaction with the hospital staff. In particular, the majority of the students were very “confident that they can save a life through CPR” and they genuinely realised its importance. They realised the pivotal role this skill plays in everyday life; it's an extremely simple life-saving act that can make the difference between life and death. This realisation allowed them to fully engage in and gain valuable knowledge from the health care trainers during the session. Students commented that this session has an “excellent initiative” and appreciated the “handouts, videos, and demos” presented to them. They found that all the “procedures were clearly explained” to them and this is essential for any learning session experience. Some students felt the “lack of time spent in the lab.” CPR is such an important skill and if done properly is life-saving, so more time definitely is needed in completely mastering it. Despite a shortage of time, however, based on analysing the students' scores and feedback, which depicted a significant eighteen point mean score improvement and an encouraging response, it was overall an excellent and unique experience for the students.

### Discussion

The concept of introducing undergraduate medical students to clinical experience very early in their career has in general gained acceptance by many regulatory authorities world over. The obvious reluctance to accept this concept may be due to issues of finding appropriate time in the ever busy schedule of the first year undergraduate medical curriculum. Time allotted for studying preclinical subjects has greatly reduced over the years. When there is a need to ‘complete’ the syllabus in the allotted time, academicians may probably not think of adding anything ‘new’ to the already overburdened curriculum, where there has been a remarkable ‘shrinkage’ of time allotted for the instruction in basic medical sciences. Sending the students across to the hospital for clinical exposure may also pose a problem, in situations where the teaching hospital is away from the preclinical buildings. An effective clinical observer ship for the preclinical students will surely demand the time and effort of the clinicians. The students and participating clinicians need to be well informed about the program. Clinicians need to be well appraised about the objectives of this exercise. Their willingness to contribute to this program is an essential and valuable adjunct to the success of this program.

In the present PSG IMSR model of ECE, all the components mentioned above have been addressed to make the program a success by overcoming the hurdles that many institutions face. Student feedback on this program reflected the acceptance of BLS module within the framework of ECE. After training in BLS, the students felt confident to administer CPR. Many students found the session very interactive and engaging as they got an opportunity to learn the technique of CPR and appreciated the learning process through handouts, videos, and demonstrations followed by hands-on training. This aspect of the program supports the view expressed by Dhonde et al. in their study, which reiterates that interactive learning is more beneficial in retention of facts and skills. It was also a very “different style of learning” compared to the conventional classroom lessons which mainly promotes rote learning.<sup>6</sup>

Training in Basic Life Support is an essential component of cardiac health care. Studies have shown that there is a “lack of knowledge regarding the typical signs and risk factors associated with serious medical conditions among medical students and laypersons.” It is of utmost importance to learn medicine without placing patients at an increased risk of complications. This can be achieved by resorting to simulation-based clinical learning, which has been considered as the best way to effectively train medical professionals in managing medical emergencies.<sup>12</sup>

It is a general observation that in spite of the significance of this procedure, instruction of BLS seems not to be included in any particular subject of the medical curriculum, even though the skill is listed as mandatory in the CRRI induction program. An undergraduate medical student need not wait till he or she qualifies as a doctor to get this training. It is advisable to learn the protocol as early as possible. The present module has shown that such a training protocol can be included in ECE and has been done rightly so. As performing CPR, however, is such an essential skill for any healthcare professional, it is felt that more time can definitely be devoted to practising skills in the clinical simulation laboratory, during the course of their clinical training. Skills laboratory or even better, a clinical simulation laboratory seems to be the ideal place to learn this technique.

### Conclusion

Medical colleges have been trying to make a success of this program, ever since MCI mandated Early Clinical Exposure for first-year undergraduate students. The current study has indicated the possibility of incorporating an important and

clinically relevant program into the ECE module. This has proven to be successful, based on the students' experience.

---

## References

1. Sawant SP, Rizvi S. Importance of Early Clinical Exposure in Learning Anatomy. SJAMS. 2015;3(2G):1035-1038.
2. World Federation of Medical Education. Basic Medical Education, WFME Global Standards for Quality Improvement. Ferney-Voltaire and Copenhagen: World Federation of Medical Education; 1998.
3. McLean M. Sometimes we do get it right! Early clinical contact is a rewarding experience. EfH. March 2004;17(1):42-52.
4. Afra B, Alizadeh M, Taghavi S, et al. The Impact of Early Clinical Exposure on the Knowledge and Attitude of Basic Sciences with Medical Students at Tabriz University of Medical Sciences. RDME. 2015;4(1):55-60.
5. Esfehiani RJ, Yazdi MJ, Kamranian H, et al. Effects of Early Clinical Exposure on Learning Motivation of Medical Students. FMEJ. 2012;2(2):3-7.
6. Dhonde DSP, Jagtap DP, Belwalkar DGJ, et al. Early Clinical Exposure: A Tool to Learn Biochemistry: A Small Group Study. NJIRM. 2015;6(5):76-80.
7. Medical Council of India. Reforms in Undergraduate and Postgraduate Education, Vision 2015. New Delhi: Medical Council of India; 2015.
8. Kumar PA, Kumar PN. Clinical observership: A desirable adjunct to preclinical training. AMJ. 2011;4(6):294-299.
9. American Red Cross. American Red Cross basic Life Support for Healthcare Providers' Handbook. American Red Cross; 2015.
10. Tipa RO, Bobimac G, Davila C. Importance of basic life support training for first and second year medical students. JMP. 2010;4:465-467.
11. Mann CJ. Observational research methods. Research design II: cohort, cross sectional, and case-control studies. Emerg Med J. 2003;20:54-60.
12. Boone HN, Boone DA. Analyzing Likert Data. JOE. 2012;50(2):92-96.

## ACKNOWLEDGEMENTS

The authors thank all the physicians and staff nurses who were involved in this program for their generous time in teaching this course. They thank Dr Sudha Ramalingam, Registrar - Research at PSG IMSR for her help in designing the study and Ms. Divya Kumari, Research Fellow, PSG IMSR for the help in analysing the data.

## PEER REVIEW

Not commissioned. Externally peer reviewed.

## CONFLICTS OF INTEREST

The authors declare that they have no competing interests.

## FUNDING

None

## ETHICS COMMITTEE APPROVAL

PSG Institute of Medical Sciences and Research, Coimbatore, Institutional Human Ethics Committee approval No: 15/141 dated 03-04-2015.