

ASSESSMENT OF STUDENTS LEARNING EXPERIENCE ABOUT EARLY CLINICAL EXPOSURE ON TYPES OF ANAEMIA: AN EDUCATIONAL ANALYTICAL STUDY

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Abstract

Background: Early clinical exposure is one of the important educational strategies introduced by NMC right from first professional year. The main aim of this strategy is that the students should better retain the subject with basic clinical relevance. This will motivate the students to become a good clinician by giving more emphasis on development of communication skills, empathy, commitment and professional behaviour. This study aims at assessment of the outcome of early clinical exposure on types of anaemia in terms of improvement in the knowledge (K) domain and learning experience of students through their 'self- reflection' in logbook. **Materials and Methods:** This study assessed the neurodevelopmental status of severe acute The study was conducted on 200 medical students of first MBBS 2022-23 batch .The students who were willing to participate and given informed consent. After preliminary classes on anaemia and blood indices we began the ECE session with pre-test on four case based questions with lab investigation report of blood. After pre-test we have done case discussion in classroom settings, and then post-test was taken on the same case based scenario questions. At the end reflective writing and feedback of student and teachers was taken on early clinical exposure on types of anaemia. **Result:** There was a significant improvement in pre and post test scores of the students before and after ECE using paired t test by software epi info 7 where $P > 0.001$, this proves that there was significant improvement in knowledge domain. All the teachers and students have given positive response to ECE feedback but for such activity adequate faculty should be needed. **Conclusion:** Early clinical exposure though challenging due to constraint of medical faculty compare to number of Students admitted per year but is a way to stimulate and motivate the students. This process helps the medical student for better and longer retention of knowledge.

INTRODUCTION

As per Drake's awakening call "Train the medical students to become physician" in their budding phases of medical education via vertical integration of clinical sciences with basic biomedical, behavioural and social sciences.^[1] To achieve this national medical council of India/MCI has revised the traditional curriculum into competency based medical education across all the medical colleges of India in the academic year 2019. The MCI in its vision 2015 document introduced a new educational strategy in form of early clinical exposure.^[2,3] Early clinical exposure is one of the important educational

strategies introduced by NMC right from phase one, where the first year medical students are exposed very early to patients/short clinical cases. The main aim of this strategy is that the students should better retain the subject with basic clinical relevance. This will motivate the students to become a good clinician by giving more emphasis on development of communication skills, empathy, commitment and professional behaviour.^[4] In traditional curriculum the main focus was on cognitive domain hence psychomotor and affective domains were completely missing. This is one of the reasons that initially first MBBS was considered boring and dry by newly admitted students to the medical profession.^[5] ECE was first implemented in 1993,

when "Tomorrow's Doctor" by the Medical Council of the United Kingdom suggested that clinical medicine be introduced to students early in their curriculum. It was recommended to use real clinical scenarios to make teaching more relevant and stimulating.^[6] All medical colleges in Maharashtra are affiliated to Maharashtra University of health sciences [MUHS] Nashik. As per competency based medical education for phase one MBBS students, university has provided a logbook in which the students have to write down their reflections on ECE experience on various topics they learn during their first year curriculum. So, the present study aims at assessing the students, cognitive, psychomotor and affective domain as a learning experience about ECE on types of anaemia.^[7]

Aim

Appraisal of students learning experience about early clinical exposure (ECE) on types of anaemia.

Objectives

1. To assess the outcome of early clinical exposure on types of anaemia in terms of improvement in the knowledge (K) domain.
2. To assess the learning experience of students through their 'self- reflection' in log book.
3. To summarize the feedback given by students about ECE session.

MATERIALS AND METHODS

The study was conducted on 200 medical students of first MBBS 2022-23 batch. The students who were willing to participate and given informed consent were only be enrolled for the study. The students were oriented to the objectives and requirements of ECE during foundation course. The didactic lecture on anaemia and blood indices was already given to them during the lecture series on blood/haematology, so we began the ECE session on the topic types of anaemia with introduction and instruction to the students and reflective writing sensitization.

Then pre-test on four case based questions with lab investigation report of blood. In all four case based questions we have asked the students to 1) Identify the type of anaemia 2) Its possible causes 3)

Treatment as per their knowledge of didactic lecture. Fifteen marks were allotted for each case based question and the answers of it was assessed by senior faculty physiology. The pre-test was taken for just a simple recall of what they have learnt from didactic lecture on anaemia and blood indices. The four case based questions were as follows:

1] A 6 year old child was brought with complaints of tiredness, loss of appetite [weight decreased] fever, blood in sputum, his Blood examination showed the following results. Hemoglobin content- 7g/dl PCV- 22%. RBC count -3 million/cumm of blood. Calculate the blood indices and diagnose the type of Anemia. [15 marks]

2] A 35 year old male (Pure Vegetarian) was brought with complaints of tiredness, breathlessness & tingling numbness. His Blood examination showed the following results. Hb = 10mg/dl, RBC = 3 million /mm³, PCV = 30%. Calculate the blood indices and diagnose the type of Anemia. [15 marks]

3] A 20 year old male brought with complaints of tiredness, severe pain in the body, difficulty in breathing, with following blood reports and high performance liquid chromatography report. Hb= 6mg /dl RBC= 3 million/mm³, PCV= 22 % MCHC = 26 %, HPLCREPORTS= Hbs =74.6%, HbF =19.6%, [1-2%] HbA= 2% [95%] calculate the blood indices and diagnose the type of Anemia. [15 marks]

4] A 14 year old boy come to OPD with following complaints severe fatigue, shortness of breath O/E pale skin and nail bed. His Blood examination showed the following results. Hb= 6mg /dl, RBC= 3.5million cu/mm PCV= 30 %, Peripheral blood smear shows – reticulopenia, Bone marrow examination shows hypoplasia. Calculate the blood indices and diagnose the type of Anemia. [15 marks] After pre-test we have done case discussion in classroom settings on signs and symptoms of anaemia. We have shown them how to ask the symptoms and examine signs of anaemia and how to handle the case. Then post-test was taken on the same case based scenario question, reflective writing and feedback. We planned ECE as shown in table I.

RESULTS

Table 1: Work plan of early clinical exposure

Sr.no.	Work plan of early clinical exposure	Time 180 minutes
1	Introduction and instruction to the students	15
2	Reflective writing sensitization	15
3	Pre-test	30
4	Case discussion in classroom settings – signs and symptoms of Anaemia	40
5	Post test	30
6	Reflective writing	30
7	Feedback from students on 10 point likert,s scale about ECE	20

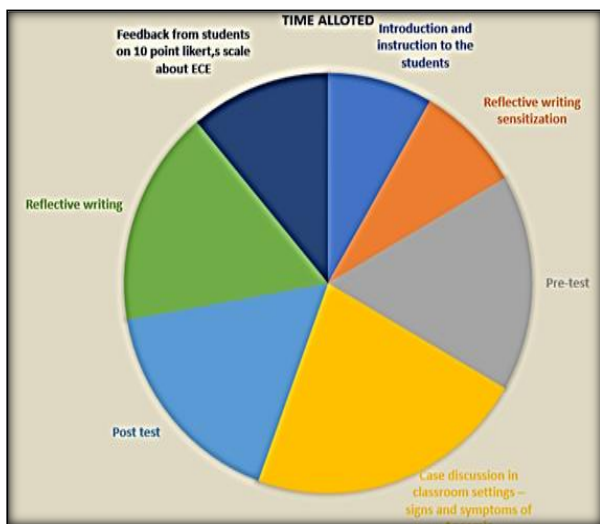


Figure 1 Work plan of early clinical exposure = 3 hours [180 minutes]

Student's t-test was used to compare the performance of the students before [pre-test] and after [post-test] ECE. The reflective writing was analysed by codes based upon important attributes of a doctor by [Bernard HR 2006].

Findings

Analysis of student's report

- Study population - 200
- Actual participation - 150
- Study participant percentage - 75%
- Self-reflection percentage - 100%
 - Boys - 42.4%
 - Girls - 57.6%

1. Attendance of the students. – 75%
2. Active participation in the session. 100%
3. Timely completion – one week
4. Quality of write up of reflections – satisfactory
5. Overall presentation – satisfactory

Statistical analysis Used

Table 2 Mean comparison score of students before and after early clinical exposure on types of anaemia.

	Mean Score + SD	SEM 95% CI Of the Difference	t test	df Significant	P value
Before ECE [Pre-test]	17 ± 2.36	- 31.53	- 83.30	298	P > 0.001 HS
After ECE [Post-test]	48 ± 3.99				

In this study, 150 students [75%] have participated. There was a significant improvement in pre and post test scores of the students before and after ECE using paired t test by software epi info 7 where P > 0.001, this proves that there was significant improvement in knowledge domain. [Table II].

Table 3 Summary of self-reflection of students from the log book - The reflective writing codes were based upon important attributes of a doctor by Bernard HR 2006. [7]

Sr No	Excerpts of self-reflection	Code assigned	Percentage %
1	Being a doctor one must understand the duties and responsibility towards patient as well as society.	Professionalism and commitment	96 (64%)
2	I will always polite towards my patients and respect their feelings.	Empathy and ethics	80 (53%)
3	Doctor's profession have highest value and respect in the society, so i will keep respect of it and will become responsible person.	Professionalism and commitment	35 (23%)
4	As a budding doctor we have lots of responsibility on our shoulder ,so we always need to be patience, humble, punctual, and understand others feeling keeping oneself at their place	Professionalism and empathy	130 (87%)
5	Doctors should respect patient's feelings, their privacy and maintain confidentiality. Also they should give every possible information for betterment of patient health.	Professionalism, commitment and empathy.	102 (68%)
6	As a doctor i should be a good communicator, good listener, accountable and have leadership quality to become good clinician	Professionalism and integrity.	65 (43%)
7	Doctors should understand his/her duties towards patient for proper diagnosis, better treatment ,respect patients autonomy	Professionalism, commitment and empathy, ethics	88 (59%)

The reflective writing-A short narratives of the students in logbook were analysed by the following questions given on ECE reflection, for the important tools of learning attitudinal, ethical and moral values. And it was assessed by senior faculty physiology. The above reflective writing codes were based upon important attributes of a doctor by Bernard HR 2006. [Table III]

1. What did you learn from the ECE session of Anaemia – Your learning experience
2. What are the applications of this learning?
3. What knowledge or skills do you need to develop so that you can handle this type of situation?
4. Suggestions for improvement for ECE session.

Table 4 Students feedback on early clinical exposure on ten-point Likert's scale.

Sr. No	Feedback questionnaire	Strongly disagree & Disagree n (%)	Can't Say n (%)	Agree & Strongly Agree n (%)
1	Do you think that it was an interesting and interactive session?	5 (3.33%)	0	145 (96.66%)

2	Do you think ECE session motivated you to learn better	0	0	150 (100%)
3	Do you think that it a was thought provoking and relevant	0	8 (5.33%)	142 (94.66%)
4	Do you think that it has made you understand the physiological basis of the clinical condition of Anaemia	0	10 (6.66%)	140 (93.33%)
5	Do you think that it has made you confident in answering clinical physiology questions	0	35 (23.33%)	115 (76.66%)
6	Do you think that it was an interactive lecture and made you learn better than the traditional non-interactive lecture?	0	0	150 (100%)
7	Do you think an interactive clinical physiology lectures can be extended to teaching all clinical physiology aspects?	0	9 (6%)	141(94%)
8	Do you think that an interactive learning was helpful in improving in depth knowledge about the topic?	0	0	150 (100%)
9	Do you think that interpretation of lab report example made your learning better about the topic- Anaemia	0	6 (4%)	144 (96%)
10	Do you think that you have developed the basic clinical understanding about the topic-Anaemia	0	4 (2.6%)	146 (97.33%)

Students feedback- based on 10-point questionnaire on Likert's scale - we found that more than 95% of the students were agreed upon, ECE is an interesting and interactive session, it motivated them to learn better. It was thought provoking and relevant and it helped them to understand the physiological basis of the clinical condition of Anaemia. Students also suggested that all clinical physiology aspects should be taught in similar way, this will help them to improve in depth knowledge about the topic. The case-based scenario with interpretation of the lab report example made them learn better about the topic on types of anaemia. This helped them to develop the basic clinical understanding and correlation about the topic. So, 80% of the students were agreed upon giving confident answers of clinical physiology question on types of anaemia. [Table IV].

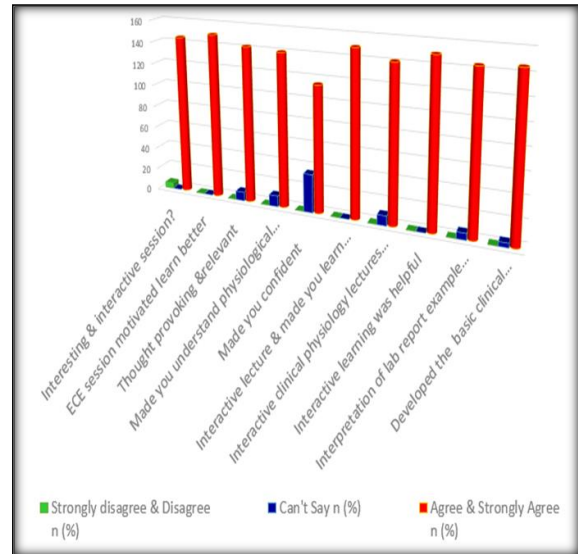


Figure 4 Chart showing the distribution of developmental delay among various scales.

Table 5 Senior faculty physiology feedback on early clinical exposure on ten-point Likert's scale

No	Feedback questionnaire	Strongly disagree & Disagree n (%)	Can't Say n (%)	Agree & Strongly Agree n (%)
1	Do you think that it was an interesting and interactive session?	0	0	5 (100%)
2	Do you think ECE session motivated students to learn better	0	0	5 (100%)
3	Do you think that it a was thought provoking AND relevant	0	0	5 (100%)
4	Do you think that it has made students to understand the physiological basis of the clinical condition of Anaemia	0	0	5 (100%)
5	Do you think that it has made student confident in answering clinical physiology questions	0	0	5 (100%)
6	Do you think that it was an interactive lecture and made student learn better than the traditional non-interactive lecture?	0	0	5 (100%)
7	Do you think an interactive clinical physiology lectures can be extended to teaching all clinical physiology aspects?	0	0	5 (100%)
8	Do you think that an interactive learning was helpful in improving in depth knowledge about the topic?	0	0	5 (100%)
9	Do you think that interpretation of lab report example made students learning better about the topic- Anaemia	0	0	5 (100%)
10	Do you think that will develop the basic clinical understanding about the topic-Anaemia	0	0	5 (100%)

After this we have taken feedback from senior faculty physiology, they were five in number, all were agreed upon the fact that ECE is the new

educational strategy and students will definitely benefitted by this type of learning. It will boosts the students' self-confidence and promote the self-directed learning. [Table V]

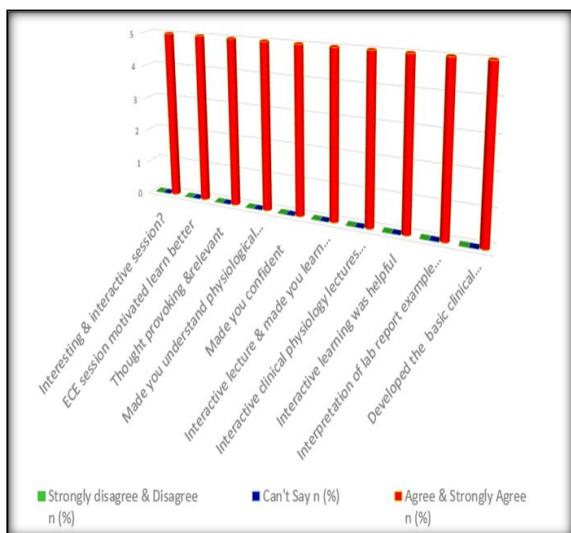


Figure 5 Senior faculty physiology feedback on early clinical exposure on ten-point Likert's scale

Feedback is a communication technique in which the teacher provides information to the students about their progress in mastering certain skills or achieving learning objectives of the course. This will motivate students learning and encourage them to perform better which makes the learning more effective.

DISCUSSION

In the present study, paired t-test showed that the performance of the students has been significantly improved after ECE. ECE was helpful to them for easier and longer retention of knowledge with development of clinical skills. We planned ECE for three hours on types of anaemia. It was a short case discussion in the classroom settings along with self-reflection on the same. Using ten point questionnaires on ECE based upon Likert's scale we found that 95% of students agreed upon, such type of early clinical exposure learning highly motivated them and played important role in understanding basic clinical, social relevance of the particular topic. Tayade et al in 2014 done a study on ECE where they showed a significant difference between ECE and non ECE groups.^[8] In various studies done on ECE proved that early clinical exposure has important role in understanding the basic clinical and social relevance of the disease more real for the first year MBBS students, as it initiates active and lifelong learning.^[9] It motivates the students for professional behaviour in early stage of their medical education. Many studies have proved that incorporation of physio clinical aspect early, using real clinical scenario makes the teaching more effective and relevant and it reinforces vertical integration of basic sciences with clinical sciences. Early clinical exposure bridges the gap between the preclinical with the clinical years, in this student learn few basic clinical skills through patient contact which makes the learning easier and more interesting.^[10-14] Authors stated that as physiology is

foundation of medicine, if it is taught in clinical context like providing ECE, students will appreciate the importance of the subject and they will able to integrate the subject with clinical science. In one of the study it is observed that clinical relevance is a contributing factor to the retention of basic science knowledge.^[15,16] In traditional way of teaching, it mostly focuses on the knowledge domain only and not on skill and affective domain. Such types of lectures do not motivate students sufficiently and they find it dry and boring. With introduction of new educational strategy in form of ECE, the knowledge they have gained in first MBBS will help them use in various clinical situations during clinical posting in wards. ECE enable the students to recognize the relevance of basic sciences with clinical sciences in patient care.^[17] This type of learning not only boosts the students' self-confidence but promotes the self-directed learning with critical thinking and skill development and the subject can be retained longer. [18] Similar to the present study, other studies also concluded that ECE is beneficial and effective teaching learning method for first MBBS students but it is time consuming process and cannot be applied for all physio clinical aspect of physiology topics. Also due to shortage of faculties in all medical colleges mainly due to huge rise in number of medical colleges within the last two decades without rise in number of medical teachers.^[19] Moreover the vertical and horizontal integration is not possible always due to engagements of medical teachers at various places by the administration.^[20]

CONCLUSION

To conclude, early clinical exposure though challenging due to constraint of medical faculty compare to number of Students admitted per year but is a way to stimulate and motivate the students. This process helps the medical student for better and longer retention of knowledge.

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