International Journal of Medical Science and Clinical Invention 7(10): 5053-5059 2020
DOI:10.18535/ijmsci/v7i10.02 **ICV: 77.2**
e-ISSN:2348-991X, p-ISSN: 2454-9576

Research Article,

Early Orientation of Preclinical MBBS Students in Clinicoradiological Skills

Dr.Bijit Kumar Duara[1], Dr Rupak Baishya[2], Dr Banani Deka[3]

[1]Department of Radiology cum Coordinator, Medical Education Unit, Gauhati Medical College (Gmc), Guwahati, Assam, India
[2,3]Demonstrators.Department of Anatomy, Gmc

Abstract:
As per GMER 2019, the goal of medical education is to create IMG, who is clinician of first contact, leader, communicator, Lifelong learner and Professional. Basic science (Anatomy) is the corner stone of Radio diagnostic principles. Early Clinico Diagnostic (Radiological) Exposure (ECDE) ensures well integrated knowledge of applied Anatomy. Aims of the study were to assess influence of ECDE on students, perception of students and faculties about utility of ECDE and to improve self-directed learning in students. After obtaining administrative approval, participating Faculties were selected and sensitized. 156 willing first year students were selected and divided in two groups by Random Selection. Group A (ECDE GROUP) and Group B (NON ECDE GROUP). ECDE Group was exposed with Radiological films and videos of cardiopulmonary system in addition to TLM methods in Anatomy, which was not done with Non ECDE Group. Assessment was made with MCQ and OSPE. After completion of assessment, feedback of faculties and students were taken for assessing perception on ECDE. In MCQ test 79% (n=62) of ECDE Group scored higher marks in comparison to Non ECDE Group. P value <0.001. In OSPE Test 89% (n=70) of ECDE Group scored higher marks compared to Non ECDE Group. P value <0.0001.
ECDE has significant impact on knowledge and skill acquisition of students.90% students expressed positively that ECDE increases their interest in basic Science (Anatomy) .86% students and 100% faculties expressed positively that ECDE should be one of the teaching methods in Anatomy. ECDE motivated students to do SDL.

Key words: GMER: Graduate Medical Education Regulations; IMG: Indian Medical Graduate; ECDE: Early Clinico Diagnostic Exposure; TLM: Teaching Learning Methods; MCQ: Multiple Choice Question; OSPE: Objective Structured Practical Examination; SDL: Self Directed Learning.

Introduction:

Traditional medical education in Anatomy that is continuing in India has been based on a model of teachings that engages medical students in class room teaching (didactic lecture), demonstration classes (small group teaching), and dissection classes for the first year of their education. Introduction to clinical classes takes place in second year

In India we need to produce Indian Medical Graduate (IMG), who is the clinician of first choice to the community. The role to be played by IMG are - Clinician, Leader of the Health Care providing team, Communicator, Lifelong learner, Professional. A Lifelong Learner is a self-directed learner who always tries to fill the gap of his knowledge, by self-motivated learning. Self-directed learning can be viewed as a method of organizing teaching and learning in which learning tasks are largely within the learner's control. Self-directed learners are disciplined and methodical, logical and analytical, collaborative and interdependent, persistent and responsible, confident and competent at learning, as well as reflective and self-aware. [1]

Learners must have the opportunity to develop and practice skills that directly improve self-directed learning. There are structural elements in medical education which work against the development of ideal physician in Indian perspective the IMG. This is now increasingly acknowledged [2]

Education systems in medicine across the world now emphasise early clinical exposure towards horizontal and vertical integration, keeping in mind the implications of ECE. MCI, New Delhi has recommended ECE in proposed syllabus from 2015 [3],[5]. Finally, ECE is accepted as important teaching learning method in GMER 2019 [16].

The objectives of Early Clinical Exposure of the first year MBBS students are to enable them to recognise the relevance of basic science in diagnosis, patient care and treatment; as well as to provide a context that will enhance basic science learning etc. [16]

Learning is a process that involves improving skills and attitude in respect to cognitive domain, psychomotor domain and affective domain of students.

Aims and objectives:

The aims and objectives of our study are:

To assess the influence of Early Clinico Diagnostic Exposure (ECDE) on students

To assess perception of students and faculties about utility of ECDE,

To improve self-directed learning in students

Methodology:

The study was carried out on 156 voluntary participants who were first year (first semester MBBS students of Gauhati medical college, Guwahati for a period of 4 months from October 2019 to January 2020 after proper informed consent. The study was done in the Deptt of Anatomy, Gauhati Medical College Assam. The study was approved by Principal , Gauhati Medical College. As no human subjects are involved in this project, administrative approval is sufficient. Orientation programme was conducted as per schedule for students and faculties. The study design was experiential one. It was done by the author and faculty of department of Anatomy.

Inclusion criteria:

156 willing first year (first semester) MBBS students of Gauhati medical college, Guwahati were included in the study.

Exclusion criteria:

Unwilling first semester students and Students from repeater batch were excluded from the study.

156 students are arranged at random into two groups:

Group A --ECDE Group

Group B-- Non-ECDE Group.

The program of ECDE Group (Group A) was started only after the students completed learning the item Chest by didactic lectures, Demonstrations (small group teaching), dissection of the item part (in the instant project Chest). This group was trained by using clinico diagnostic exposure method in blended teaching module didactic lectures (with power point presentation) for 3 days of one hour, each inclusive of 15 minutes student interaction and doubt clearing session. Didactic lectures are taken by Professor of Radiology (first Author) explaining details of Radio diagnostic principles based on basic anatomical facts learnt in anatomy teachings. Appearance and imaging interpretation of organs in chest in were demonstrated with X Rays illuminated in view boxes followed by student interaction. Clues for further self-directed learning were also given for further reading.

The topics covered are: Configuration of Heart and heart Chambers in Health and disease.

Lungs, trachea and Pulmonary Vasculature

Mediastinum.

Group B was trained by using traditional methods (chalk & Board) in didactic lectures. Demonstration of organs of Chest done in Demonstration Classes (small group teachings), and Dissection classes. Above topics (as taught in Gr A) were covered by traditional Anatomy teachings.

Both the groups are tested. Knowledge is tested by MCQ. Skills were tested by OSPE and attitude was tested with perception-based questionnaire using Likert Scale. The MCQ questions were prepared after consultation with the participating faculties, so also the steps of OSPE

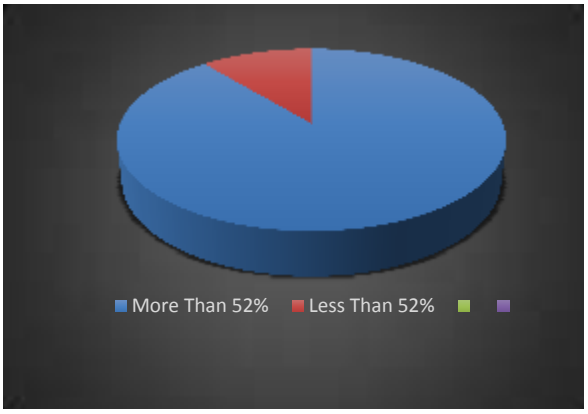
At the end of training period, the participants were tested with MCQ and objective structured practical examination (OSPE) with total marks of 25 each. Qualifying mark is kept at 13 (52%) in each test.

Six-point perception-based questionnaire were asked to the participants. On completion of evaluation, the statistical analysis of data was done to arrive at a conclusion. Statistical method used is Chi Square test.

Results and observation:

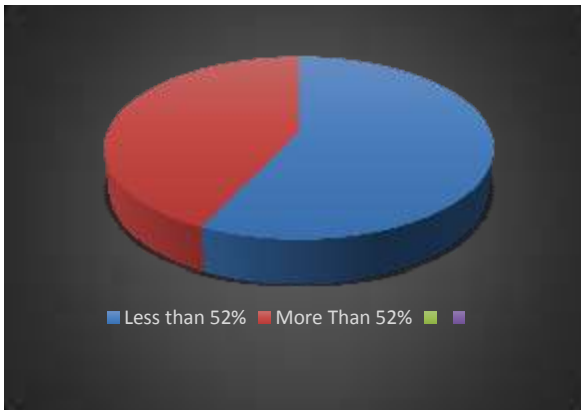
Results of the OSPE tests are:

Out of 78 students who experienced ECDE 70 (89%) students have got 13 or more marks



Pie Diagram Showing marks distribution of students who experienced ECDE

Out of 78 students who did not experience ECDE, 45 (57%) students have got less than 13 marks

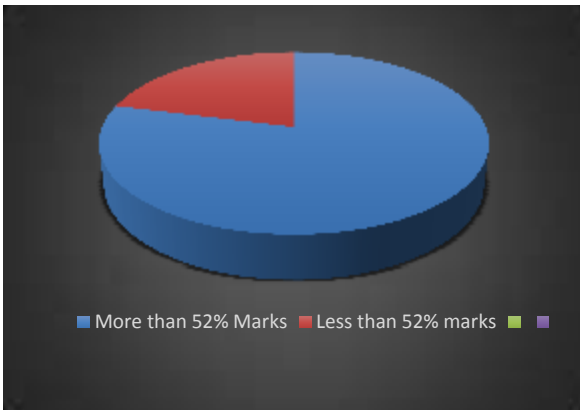


Pie Diagram Showing marks distribution of students who did not experience ECDE

	Group A (ECDE Group)	Group B (non ECDE Group)
No. of total students in group	78	78
Proportion of students who secured >52% marks	87%	57%

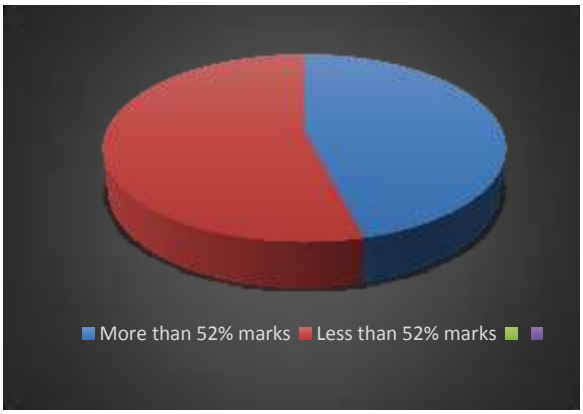
Results: 32%
Difference: 17.5827 to 45.1406
95% of CI: 20.132
Significance level: P<.00001 (Significant P value)
Results of MCQ tests are:

Out of 78 students who experienced ECDE 62 (79%) students have got 13 or more marks



Pie Diagram showing marks distribution in students who experienced ECDE

Out of 78 students who did not experience EDCE 36 (46%) students have got less than 13 marks



Pie Diagram showing marks distribution in students who did not experience ECDE

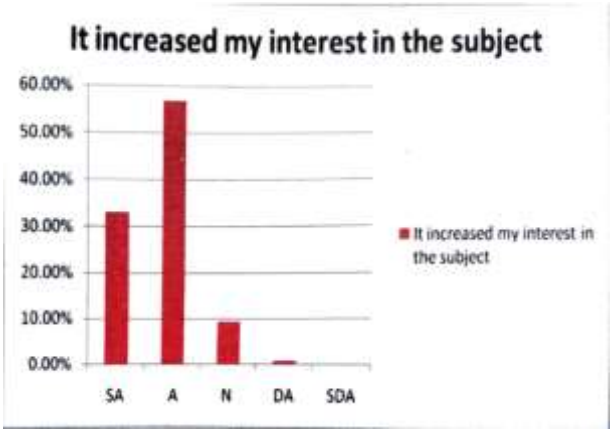
	Group A (ECDE Group)	Group B (non ECDE Group)
No of Total students in Group	78	78
Proportion of students who secured >52% marks	79%	46%

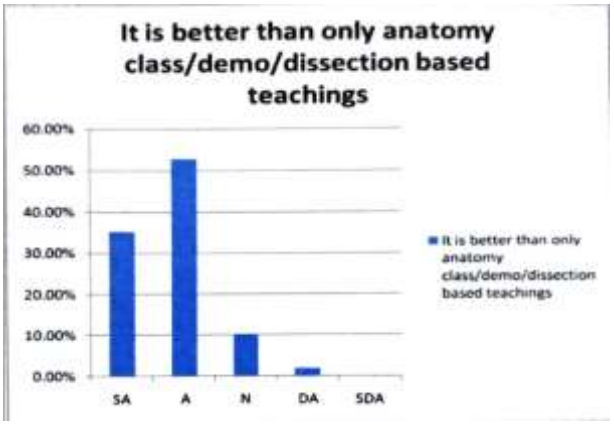
P Value < 0.0001

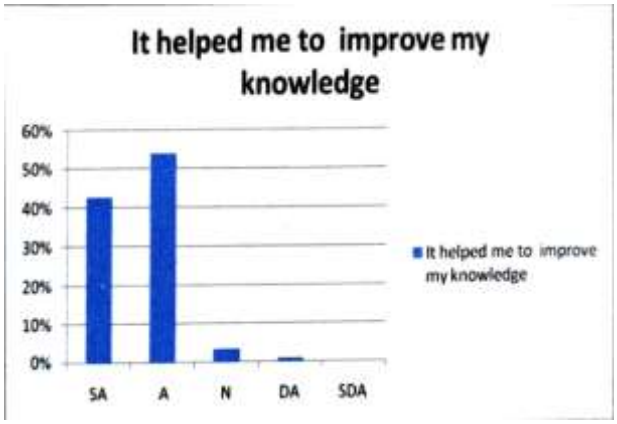
(SA – Strongly Agree, A- Agree, N-Neutral, DA- Disagree, SDA- Strongly Disagree)

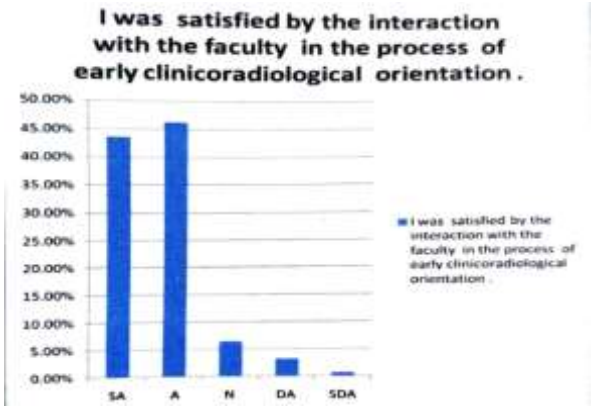
SL. No	STATEMENT	SA	A	N	DA	SDA
1	It helped me to improve my knowledge	42.3 %	53.8 %	3.2 %	0.64%	0%
2	It increased my interest in the subject	33.1 %	57%	9.1 %	0.64%	0%

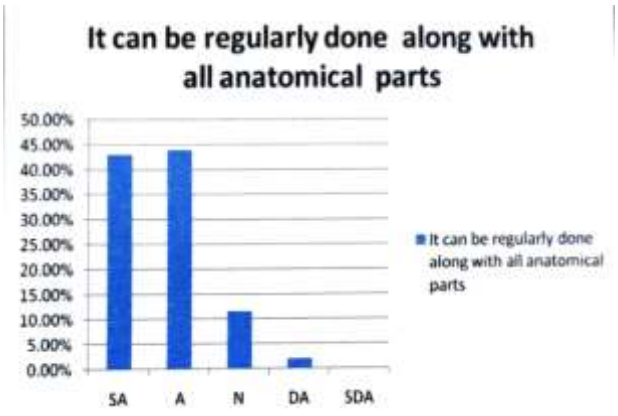
3	It is better than only anatomy class/demo/ dissection-based teachings	35.2%	52.7 %	10.2 %	1.9%	0 %
4	It motivated me to develop self-directed learning skills	34.1%	50.5 %	10.8 %	1.2%	0 %
5	It can be regularly done along with all anatomical parts	42.9%	43.7 %	11.5 %	1.9%	0 %
6	I was satisfied by the interaction with the faculty in process of early clinicoradio logical orientation	43.5%	46.2 %	6.4%	3.2%	0. 64 %











In the present study, significant difference was found in scores between the two groups. The students exposed to ECDE sessions Group A-(ECDE Group) benefitted more than the students who are taught with traditional teaching /learning methods (GROUP B -Non ECDE Group).

The Faculty perceptions were also found more positive towards early clinic diagnostic exposure than the traditional Teaching Mode.

.Discussion:

The divisions of instructional period pre-clinical, para clinical and clinical as the norm of medical education is an old system followed in the last century. Presently Medical Education systems in many parts of world ,are horizontally integrating correlating facts across the disciplines traditionally taught in the first professional (pre-clinical) period and vertically integrating practical knowledge into first year of medical education course. This helps the students to comprehend the knowledge of basic science and helps finding ways of application of principles of basic science in clinical settings. The rapid change in health Care practices and medicines is giving rise to corresponding changes in the content and practices of medical education. [6]

In our study. 89% student, who were exposed to ECDE, got more than 52% marks as compared to 57% who were not exposed to ECDE in OSPE based assessment. Significant impact of ECDE on students is seen. Again, in our study 79% students, who were exposed to ECDE got more than 52% marks as compared to 46% who were not exposed to ECDE in MCQ based assessment. Here also significant impact of ECDE is seen on students .

The goal of Medical Education ought to be student oriented in which upliftment of students should be along with knowledge, skills and attitude. Learning is an active process going inside the student's mind where churning of knowledge occurs and the students learn to proceed as a responsible learner who will be competent enough to apply knowledge into practice and ultimately resulting to desired IMG. Teachers' main role is to facilitate this learning process [7]

A good learning activity involves a good communication capability. [8]

It is now increasingly recognized that with traditional structure, teaching created compartmentalization of Medical Education into so called -Preclinical, Para clinical and Clinical stages. Changes in Health Care practices have led to several test/experiments by Medical Institutions with introduction of Clinical knowledge into otherwise didactic pre-clinical 1st year period.

Early Clinical Exposure /Early Clinico Diagnostic Exposure and the accompanying knowledge and skill development does not replace the basic sciences but rather contextualizes the learning of applied aspects of basic sciences and offers wider variety of teaching and learning methods This will strengthen the ideas of clinically relevant basic sciences

Some key issues in designing a clinically relevant basic science course are:

1. Identification of clinically relevant core content and principles of understanding

Facts based on basic science knowledge.

2. Developing critical thinking and reasoning skills by offering students opportunities to repeatedly apply learning into clinical context of diagnosing disease and subsequently patient care.

3. Encouraging students to critically think about problems of Health care evaluate and incorporate new information which is a skill that they will use For the rest of their professional works

4. It also increases their confidence and ability to establish rapport with patients.

Therefore, the purpose for early clinical exposure/ clinic-diagnostic exposure in 1st year students is to learn basic clinico - diagnostic /clinical skills, enhance their motivation and prepare them towards the purpose for which they enter Medical profession.

The purpose of ECE/ECDE is to enable the students to correlate what they are learning in basic sciences by learning basic clinical skills and observing disease abnormalities which differ from normal appearances. These also encourage students

to learn professional behavior of a doctor by observing and being motivated by clinical teachers and provide the contextual situation for application of their learning into practice [9]

Early experience motivated and satisfied students of Medical Profession and help them to acclimatize in clinical environment, develop professionally and interact with patients with more confidence and less stress. Students develop self-reflection appraisal and develop professional ability [10]

Early Clinico Diagnostic Exposure strengthen their learning and made it more real and relevant to clinical practice it helps students learn about the structure and functions of Health care system and role of health professionals.

Educational research has shown that the students who are actively involved in learning activity will learn more than those who are passive in learning process. [11]

Significant outcomes of the present project as revealed by perception-based questionnaire are:

1) 90.13% of students expressed positively & strongly agree that Early Clinico Diagnostic Exposure increases their interest in the subject (Anatomy)
2) 84.86% students expressed positively & strongly agree that Early Clinico Diagnostic Exposure motivated them to develop self-directed learning which is an important goal to be achieved by every IMG.

Conclusion:

ECDE has significant impact on acquiring knowledge and skill of students as revealed by results of MCQ and OSPE test

As per perception-based questionnaire

90% students expressed positively that ECDE increases their interest in subject

84.86% students expressed that ECDE motivated them to become self-directed learner.

86% students and all faculties expressed positively that ECDE should be one of the teaching methods in all anatomical parts.

STUDY LIMITATIONS:

The project is conducted with small sample size.

The project involved a single batch of students 2019-2020

IMPLICATIONS:

It is felt that early orientation of preclinical MBBS students in Clinico Radiological (clinico diagnostic) skills may be incorporated in the select topics like imaging interpretations of organs in the Chest in Health and Disease, so that they are oriented and acclimatized for study in clinical side

This will motivate to develop self-directed learners

References:

[1.] Internet 2016 (cited 2 March 2016), Available from http://Candy.PC Self Direction for Lifeline Learning a comprehensive guide to theory and practice San Francisco Jossey-Bass 1991

[2.] (Internet). 2016 (cited 2 March 2016). Available from: http://I Abramovich H, Shenkman L. SchlankS.Borkan IAA tale of two exposure: A Comparison of two approaches to early clinical exposure Educ Health (Abingdon) 2002153 : 386-390

[3.] Internet] 2016 (cited 2 March 2016). Available from: http://David M Kaufman: ABC of Learning and Teaching in Medicine Applying educational Theory into Practice.bmj.com BM) Volume 326.25 January 2005 pp 214-216

[4.] Internet] 2016 (cited 2 March 2016). Available from: http://kaufman.DM Mann K V Jennet P. Teaching and learning in Medical Education How Theory can inform Practice. London: Association for the study of Medical Education, 2000 (Monograph

[5.] Internet). 2016 (cited 2 March 2016], Available from: http://Medical Council of India. Vision 2015 N Delhi : MCI Publication March 2011

[6.] Internet. 2016 (cited 2 March 2016). Available from: http://Barzansky B. Berner E, Beckman CRR Evaluation of Clinical program applying the content of trustworthiness Eval Health Prof 198582193208

[7.] Internet] 2016 [cited 2 March 2016]. Available from: http://Tayade M C Kulkarni NB: The interface of Technology in India:

Current Trends Indian journal of Basic an & Applied Medical Research: April 2011 issue 1, Vol-1. pp 8-12

[8.] Internet). 2016 (cited 2 March 2016]. Available from: http://Mishra Hitesh Kumar Vipin.Modi Pankaj Kr.: Applied Medical research: March 2013.Issue a€"6,Vol-2,pp 4643C"489

[9.] Internet. 2016 (cited 2 March 2016). Available from: http://bokken L. Rethans Scherpbier AJ Vander Vleuten CP Strength and Weaknesses of Simulated and real patients in the teaching of skills to Medical students Simul Healthc.2008 Fall:3 (3) 10. [Internet). 2016 (cited 2 March 2016]. Available from: http://Dornan T, Uittlewood, Maruti SA

[10.] Internet. 2016 (cited 2 March 2016]. Available from: http://Dornan T, Littlewood L, Margulis SA Scherpbier A.Spencer, Ypinazar V.: Hoe can experience in Clinical and Community settings contribute to early Medical Education? ABEME Systemic Review 2006 Vol 28 No 1.page 3-18

[11.] Internet. 2016 (cited 2 March 2016]. Available from: the://Shenwani Dr. Mrinal R, Interactive Interaction and of Enhanced Active Learning in First MBBS Students International Journal of Health care & Biomedical Research Vole 2:Issue 1 October 2013.pp 8-11

[12.] Internet. 2016 (cited 2 March 2016). Available from: http://Chandrailak e M. Davis M, Ponnamperuma G Assessment of Medical Knowledge the pros and of using true false multiple choice questions National Med I India 2011:24:225-8

[13.] Internet. 2016 (cited 2 March 2016). Available from: http://Borell.SC Carrio F Epstein RM ; Preventing Errors in Clinical Practice A call for self-awareness Ann Family Medicine 2004 : 2 310-6

[14.] Internet. 2016 (cited 2 March 2016]. Available from: http://Papadakis MA The step 2 Clinical SE"skills Examination New England I Medicine 2004 350 1703-05

[15.] Internet 2016 [cited 2 March 2016]. Available from: http://Epstein.RM : Mindful Practice in Action IL Cultivating Habits in Mind FAM Syst Health 2003:21; 11-7

[16.] Medical Council of India. Regulations on Graduate Medical Education (Amendment). Addition as Part-II for MBBS Course Starting from Academic Year 2019-20 Onwards: 2019. Available from:https://mciindia.org/ActivitiWebClient/open/getDocument?path=/Documents/Public/Portal/Gazette/ GME-06.11.2019.pdf. [Last accessed on 2020 Feb 15].

ECE Early Clinical Exposure

ECDE Early Clinico Diagnostic Exposure

IMG: Indian Medical Graduate.

MCI: Medical council of India.

OSPE: Objective Structured Practical Examination

Acknowledgement:

The Author specially thanks Principal Cum chief Superintendent, Gauhati Medical College & vice Principal for administrative approval and permitting him to carry out the research project.
The Author Thanks Head, Department of Anatomy for facilitating the Research Project.
I thank my Co-authors Who are also co investigators.
I thank the students who have voluntarily participated in the project

Source of Financial Support: Nil
Conflict of Interest: Nil