

Acceptance And Impact Of Integrated Teaching In Undergraduate Medical Student: An Observational Cross- Sectional Study

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Abstract: Background & Objective: Among various method of medical education integrated teaching help in integration of basic, clinical and psychosocial sciences. Integrated teaching involves bringing together traditionally separate subjects so that students can grasp subject with more authentic understanding. We conducted the study to compare this scientific method of teaching with traditional learning and also obtained student's and teacher's feedback. Methodology: After approval from ethic committee faculty members from various departments we arranged integrated teaching program on important topic. Basic science faculty were made to participate actively in both case based learning and hospital visits along with clinical experts. The completed program was evaluated based on structured questionnaire and student and teacher feedback. Results: Among 58 students of 8th semester students, Pre test (TL) and post test (IL) mean of incorrect answers out of 10 structured questionnaires were 4.5517 and 2.9310. There was 35.5% improvement in result after integrated method of learning. 63% of faculty members felt that integrated teaching could be very useful. 85% students were enthusiastic about the new teaching methodology & felt that they had a better clinico pathological correlation. Conclusion: The new method of integrated teaching was found to be more effective than the traditional one. This method was well accepted by faculty as well as students. So it is need of today's medical curriculum. [Kumar S NJIRM 2016; 7(1):93-98]

Key Words: IL – Integrated Learning TL – Traditional Learning.

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Introduction: The ideal basic objective of medical education in every country and institution is to educate the students regarding health, which includes physical, mental, social and possibly spiritual well-being. Medical education is changing rapidly in order to enhance the student's understanding of the body systems, or the related clinical science disciplines through interdisciplinary integration.

There are six main concepts in medical education methods known as SPICES model i.e. Student centred teaching, Problem based learning, Integrated curriculum, Community based teaching, Electives with a core, and the use of Systematic methods .As a part of SPICES model integrated teaching is main cornerstone for student centred learning as it promote holistic thinking regarding problem presented and student start correlating differ concept learn in different subject¹

"Regulations on Graduate Medical Education, 1997" by Medical council of India recommend a teaching approach characterized by maximal efforts to encourage integrated teaching between traditional subject areas using a problem based learning approach and de-emphasize compartmentalization of disciplines so as to achieve both horizontal and vertical integration in different phases².

Integrated teaching is also introduced in our newly formed medical college Indira Gandhi institute of medical sciences (IGIMS), PATNA for last few years but this is first study to know acceptance and impact of this integrated teaching among students and faculty.

The aim of this study was to be to analyze the perception and impact of the students and faculty members about integrated teaching. The students and faculty members were interviewed using structured validated questioners in order to expose the barriers to integration and to identify a potential new mechanism for facilitating the implementation of the integrated curricula in our college.

Objectives are:

- 1 .To find out acceptance level of integrated teaching among undergraduate medical students and teachers
2. To see the effect of integrated teaching on student retention of knowledge

Material and Methods: After obtaining permission from ethics committee this cross sectional study was conducted in department of General Medicine in collaboration with the department of Microbiology, Preventive and Social medicine and Pharmacology,

IGIMS, Patna. The study was explained to participants and consent was taken.

Study Area: This study was restricted to the 8th semester students studying in the same college.

Study Design: Cross sectional study

Data Source: Roll call register

Tools of Data: Planned questionnaire, pre- & post-test incorrect answers.

Sample size: 58

Statistical Tests: 't' test (paired)

Procedure: We went through the MCI University syllabus of Microbiology, PSM, Pharmacology and General medicine and identified the areas of overlap between the subjects. Out of these areas, infectious disease (Malaria) topic was chosen. The project was explained to the students & they were motivated to participate in it. In both Pre-test & post-test students were given same prevalidated MCQ's. As this topic were already covered by various department We took pre test as marker of traditional learning (TL) score .Post test assessment after integrated teaching was taken as integrated learning (IL) score. Also, the student's feedback was taken by giving them prevalidated questionnaire containing both close & open-ended questions. Students were told not to reveal their identity to make this exercise honest & free from bias. Student's knowledge enhancement by the new approach was collected using a pre-validated pre-test and post test questionnaire and the data was analyzed using 'student's paired t' test. .

Student and faculty feedback was taken after the completion of the module, using a questionnaire.. It was five point Likert's' scale and open ended questions(strongly agree,agree,neither agree nor disagree, disagree , strongly disagree) about the positive and negative aspects and the students and teachers suggestions to improve the integrated teaching. The data from the questionnaire was be compiled and analyzed by using the SPSS software.

Results:

Mean of incorrect answer out of ten question before starting module(traditional learning /TL) was 4.5517 and mean of wrong answers after integrated module

(IL) was 2.9310. Significant results [P=0.000] were obtained in the pre (traditional learning /TL) and post test questionnaire using integrated teaching (IL),using Students paired t-test. (Table1)

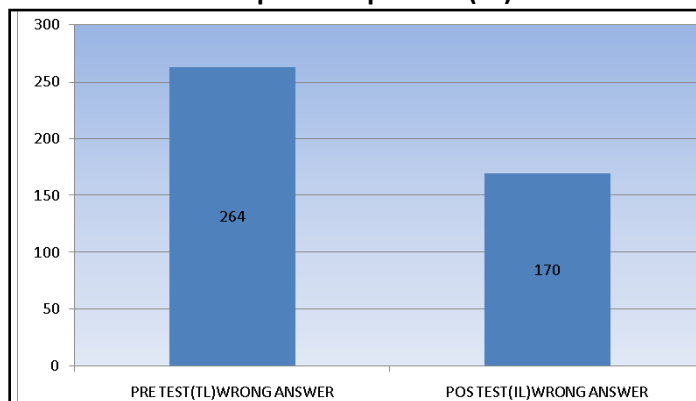
Table 1

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Pre Test	4.5517	58	1.61324	.21183
	Post Test	2.9310	58	1.74579	.22923

		Paired Differences				t	df	Sig. (2-tailed)	
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					lower	upper			
Pair 1	Pre Test - Post Test	1.62069	2.34579	.30802	1.00390	2.23748	5.262	57	.000

It was also found that there were 35.5% improvement in overall understanding of student by integrated teaching in comparison to traditional learning as shown by bar diagram (Bar diagram 1)

Bar diagram 1: improvement in incorrect answers after IL compared to pre test (TL)



Faculty feedback :(Based on likert's scale) :- (Table-2) Initially 100% faculty from department of General Medicine, Microbiology ,Preventive and Social medicine, Pharmacology were enthusiastic towards this new approach but as the project progressed 30 % backed out citing sectional exams and time as constraints. 63% out of eleven Teachers felt that integrated teaching could be very useful .54% teacher were strongly agreed that Integrated teaching covered a wide range of knowledge

compared with conventional teaching. Only 9% teachers found integrated teaching more boring compared with conventional teaching. 45% teachers found integrated teaching more relevant to study compared with conventional teaching. 36% teachers were strongly agreed that integrated teaching should be followed for each important topic. Integrated teaching may influence the final outcome in a better way was the opinion of 36% teachers. Integrated teaching was exhausting compared with conventional teaching were found by 44% teachers. 18% teachers found integrated teaching more stressful compared with conventional teaching.

The unanimous opinion from these departments was that this methodology should be incorporated in the MBBS curriculum after more detailed deliberations.

Student feedback: (Based on Likert's scale)(Table 3)
85% of 58 students were enthusiastic about the new teaching methodology & felt that they had a better clinico-pathological correlation after the module. 14% students felt that a lot of time was spent on teaching of a single topic. 87% students opined that this method helped them to retain the subject better. 90% students appreciated the fact that they could relate to the clinical aspects and wanted this approach to be extended to other important topics as well. Integrated teaching covered a wide range of knowledge compared with conventional teaching were found by 89% students. 69% students found integrated teaching was more relevant to study compared with conventional teaching. 51% students were agreed that integrated teaching may influence the final outcome in a better way. 15% students found that integrated teaching more stressful compared with conventional teaching. 44% students were agreed that the attitude of teachers during integrated teaching was better compared with conventional teaching.

Discussion: This study was conducted to demonstrate the utility & feasibility of an integrated learning process compared to traditional teaching method. This study was an attempt to improve the quality of medical education with the innovative curricular strategy.

After meeting with faculty members of participating department we identified a common important topic (malaria). As this topic was already covered to 8th semester students by various departments in previous semester, we took pre-test as a marker of traditional learning (TL) score. After pre-test integrated teaching about malaria was conducted by various departments.

Post-test assessment after integrated teaching was taken as integrated learning (IL) score. We have taken incorrect answers for evaluation in calculating pre-test and post-test score as it gave an idea about difficult areas about the subject during evaluation. It helped us in pointing weaker areas of students about the topic. Also, the student's feedback was taken by giving them a pre-validated questionnaire containing both close & open-ended questions. Students were told not to reveal their identity to make this exercise honest & free from bias. This study helped us to develop a new format for teaching materials that enhance teacher-student and teacher-teacher interactions with special focus on difficult areas of the topic.

Need for integrated curriculum

Medical colleges in India have been following a traditional curriculum, characterized by "discipline wise model" with a high degree of compartmentalization into subjects of basic sciences, para-clinical and clinical branches. The most difficult task of proper training starts after the students are admitted. "Some people talk in their sleep. Lecturers talk while other people sleep." This was the effect of traditional lecture for most of the students. They feel that traditional lectures are more boring, monotonous & good sedatives whereas integrated lectures are more explanatory, less boring, interesting & supportive.^{3,4}

In our study, this new method of integrated teaching was found to be more effective than the traditional one. 35% enhancement in knowledge was found after integrated learning. Significant results were obtained by comparing traditional with integrated method.

For an integrated curriculum to succeed, these different perspectives from students as well as the faculty should be given a voice, as medical schools envision, plan and embark upon a redesign of their undergraduate education curricula.⁵

Feedback from students and teachers helped us to develop a new format for teaching materials that enhance teacher-student and teacher-teacher interactions, reduce redundant content and which integrates disciplines through patient-oriented medical education.

Faculty feedback

The unanimous opinion from participating departments were that this methodology should be incorporated in the MBBS curriculum after more detailed deliberations.63% out of eleven Teachers felt that integrated teaching could be very useful .54% teacher were strongly agreed that Integrated teaching covered a wide range of knowledge compared with conventional teaching.

Kingsley et al⁶ stated in similar study that curricular integration was one method for improving the teaching and learning of the complicated and interrelated concepts, thus providing an opportunity to incorporate the research training and objectives into traditionally separate didactic courses

In a study which was done by Soudarssannae and Sahai⁷ the integrated teaching of epidemiology and the incorporation of the presentation and discussion of the actual studies which were conducted in the local population with the involvement of the clinical departments, was a novel attempt in the lecture discussions of the subject. This method was well appreciated by their students.

Schmidt⁸ reported that in his experience, integration was most successful when it occurred naturally as a part of the teaching and learning process, rather than that of the mandated course structure.

Table No 2: Feedback Form For Teachers (N=11)

S.N	Questions	Strongly Agree	Agree	Neither Agree Nor Disagree	Disagree	Strongly Disagree
1.	Integrated teaching is better compared with conventional teaching	7(63.64%)	2(18.18%)	1(9.09%)	1(9.09%)	0
2.	Integrated teaching covered a wide range of knowledge compared with conventional teaching	6(54.54%)	3(27.27)	1(9.09%)	1(9.09%)	0
3	Integrated teaching is more boring compared with conventional teaching	0	1(9.09%)	1(9.09%)	6(54.54%)	3(27.27%)
4.	Integrated teaching is more relevant to study compared with conventional teaching	5(45.45%)	4(36.36%)	1(9.09%)	1(9.09%)	0
5	Integrated teaching should be follow for each important topic	4(36.36%)	5(45.45%)	1(9.09%)	1(9.09%)	0
6	Integrated teaching may influence the final outcome in better way	4(36.36%)	5(45.45%)	1(9.09%)	1(9.09%)	0
7	Integrated teaching is exhausting compared with conventional teaching	2(18.18%)	3(27.27%)	5(45.45%)	1((9.09%)	0
8	Integrated teaching is more stressful compared with conventional teaching	0	2(18.18%)	3(27.27%)	5(45.45%)	1(9.09%)

Student feedback

90%of the students found the integrated learning programme to be a useful feasible method of learning. Integrated teaching was perceived to be useful by a majority of the students with regards to an improvement in the appreciation and application of basic science knowledge. A similar finding was noted by Vyas et al.⁹

51% would like similar integrated lectures to be organized periodically, especially for certain important

topics.

In general, the students used positive statements to respond to open ended questions which solicited their opinions and suggestions about integrated teaching. The student’s suggestions on mind mapping and concept maps and that more integrated teaching classes to be the taken regularly, will be incorporated in the subsequent integrated teaching sessions. These findings were noted in a study by Musal etal¹⁰

In a similar study which was done by Grkovic¹¹, the author has highlighted the efforts which were made to expose the medical students to the real research environment and the academic way of thinking, in order to create health professionals with an ongoing interest in medical research.

The lacuna of the study was the small sample size. Similar study with larger sample size will be more

productive. Also, we could not cover the long-term impact of integrated teaching methodology. But the integrated teaching would surely reduce the fragmentation of medical course; prevent repetition, waste of time & rationalization of teaching resources. It will also promote the interdepartmental collaboration & students will learn to apply their knowledge to clinical practice.

Table 3: Integrated Teaching Feedback Form For Students (N=58)

SN	Questions	Strongly Agree	Agree	Neither Agree Nor Disagree	Disagree	Strongly Disagree
1.	Integrated teaching is better compared with conventional teaching	22(37.93%)	28(48.27%)	5(8.62%)	2(3.44%)	1 (01.72%)
2.	Integrated teaching covered a wide range of knowledge compared with conventional teaching	18(31.03%)	34(58.62%)	5(8.62%)	1(1.72%)	0
3	Integrated teaching is more boring compared with conventional teaching	4(6.89%)	3(5.17%)	8(13.79%)	34(58.62%)	9 (15.51%)
4.	Integrated teaching is more relevant to study compared with conventional teaching	11(18.96%)	30(51.72%)	9(15.51%)	4(6.89%)	4 (6.89%)
5	Integrated teaching should be follow for each important topic	30(51.72%)	24(41.37%)	1(1.72%)	0	4 (6.89%)
6	Integrated teaching may influence the final outcome in better way	21(36.20%)	30(51.72%)	2(3.44%)	2(3.44%)	3 (5.17%)
7	Integrated teaching is exhausting compared with conventional teaching	1(1.72%)	7(12.06%)	4(6.89%)	37(63.79%)	9 (15.51%)
8	Integrated teaching is more stressful compared with conventional teaching	2(3.44%)	7(12.06%)	5(8.62%)	36(62.06%)	8 (13.79%)
9	Attitude of teachers during integrated teaching is better compared with conventional teaching	15(25.86%)	26(44.82%)	13((22.41%)	2(3.44%)	1 (1.72%)

Conclusion: The new method of integrated teaching was found to be more effective than the traditional one. This method was well accepted by faculty as well as students. Significant results were obtained by comparing traditional with integrated method.

This indicates that the time has come to modify the traditional methods of teaching. Integrated approach in teaching can be introduced in undergraduate medical

curriculum with appropriate sensitization of the faculty and the students.

This study helped us to develop a new format for teaching materials that enhance teacher-student and teacher- teacher interactions, reduce redundant content and which integrates disciplines through patient-oriented medical education.

References:

1. Van den Berg H. Rating of SPICES criteria to evaluate and compare curricula. *Med Teach* 2004; 26:381-
2. Medical Council of India:website.salient features of *Regulations on Graduate Medical Education*. 1997.
3. Joglekar S, Bhuryan PS, Kishore S. Integrated teaching – Our experience. *J Postgrad Med* 1994; 40:231-2
4. Ghosh S, Pandya HV. Implementation of an integrated learning program in neuroscience during the first year of the traditional medicalcourse; Perception of the students and faculty . *BMC Medical education* 2008; 8:44
5. Muller J H, Jain.S, Loeser H, Irby D.M. Lessons which have to be learned about integrating a medical school curriculum and the perceptions of the students, the faculty and the curriculum leaders. *Med. Educ* 2008;42: 778-85
6. Kingsley K, Malley S O, Stewart T, Howard M K. Research Enrichment: evaluation of the structured research in the curriculum for dental medicine students as a part of the vertical and horizontal integration of biomedical teaching and discovery.*BMC Med Edu* 2008;8:91472- 6920
7. Soudarssanane MB, Sahai A. Innovative integrated teaching of epidemiology *Indian Journal of Community Medicine*.2007;32:1- 10) Schmidt H. Integrating the teaching of basic sciences, clinical sciences and biopsychosocial issues .Chapter 4. *Academic Medicine* 73: S-24- 31
8. Vidic B, Weitlauf HM. The horizontal and vertical integration of academicdisciplines in the medical school curriculum. *Clin Anat* 15:233-5.
9. Vyas R, Jacob M, Faith M, Isacc B, Rabi S, Satish Kumar S , Selvakumar D, Ganesh.A. An effective, integrated learning programme in the first year of the medical course. *The National Medical Journal of India*. 2008; 21:1-6.
10. Musal B, Taskiran C, Kelson. A. Opinions of tutors and students about the effectiveness of PBL in the Dokuz Eylul University School of Medicine. *Med Educ Online* 2003; 8:16.
11. Grkovic I. Transition of the medical curriculum from classical to integrated: A problem based approach and the Australian way of keeping academics in medicine. *Croat Med J* 2005; 46; 16-20

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