

## Original article

# Impact of integrated teaching – an emerging tool in medical undergraduate training

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### Abstract:

**Introduction:** Current medical education imparts knowledge in a fragmented manner. The undergraduate medical student undergoes rotation in different clinical postings where the subject is taught to the best, but in an unintegrated manner. This leads to poor understanding of the subject and clinical correlation becomes a problem. Therefore this study was formulated to understand the impact on student's learning and understanding of the subject by clinical integration study method

**Material & methods:** Final year undergraduate medical students from the institute attended the integrated lecture on "Heart Disease in pregnancy" taken by obstetrics and medicine faculty simultaneously. The 45 minute lecture was framed by the two faculties which would help to cover different aspects of heart disease in pregnancy. At the end of the session, student's knowledge and views regarding integrated teaching method was assessed using MCQ

**Results:** It was observed that maximally used clinical tool in our institute according to students is power point presentation, as 143 (94.66%) opted for it. Other methods used are multiple aids, OHP, Blackboard. Multiple aids were very sparingly used in our institute, as 5 (3.33%) opted for it. Overall, 140 (93.3%) students appreciated the topic well and reported improved level of understanding of both obstetric and medical aspect of the topic.

**Conclusion:** From present study it is seen that integrated teaching in classrooms provides a better impact in teaching of final year MBBS students. There is greater understanding and better application of the knowledge gained.

**Key Words-** Integrated Teaching, medical education, Final year medical students, learning.

### INTRODUCTION:

Current medical education imparts knowledge in a fragmented manner. The undergraduate medical student undergoes rotation in different clinical postings where the subject is taught to the best, but in an unintegrated manner where clinical correlation becomes a problem. The need for greater integration of subjects in the medical curriculum has featured, prominently in reports on medical education, including the GPEP report<sup>1</sup>, "Educating medical students", the report of the ACMETRI project<sup>2</sup> and "Tomorrow's Doctors", the recommendations of the general medical council in the UK<sup>3</sup>. Integrated teaching offers many advantages<sup>4</sup> and may be a key factor in the delivery of an effective educational programme<sup>5</sup>. Integration is defined as organisation of teaching manner to interrelate or

unify subjects frequently taught in separate academic courses or departments<sup>6</sup>. In most of the medical colleges, teachers impart knowledge in a conventional way, not in an integrated manner. The Medical Council of India desires to incorporate integration in undergraduate medical curriculum. Hence to provide adequate and holistic knowledge using integrated teaching, over the conventional one, this study was undertaken. Vertical integration was used to teach the undergraduate medical students. Vertical integration means integration between two or more disciplines traditionally taught in the different phases of curriculum. It refers to the combination of basic and clinical sciences in such a way that the traditional divide between preclinical and clinical studies is broken down<sup>7</sup>.

Though some teachers are in favour and some against integrated teaching, this should not hamper effective student learning. Therefore, this study was undertaken 'to assess if there is any advantage about the knowledge acquired using integrated teaching, over the conventional one'. We intended to undertake a harmonious integration of the problems of heart disease in pregnancy and assessed its impact, on the undergraduate medical student learning two academic disciplines simultaneously.

### **AIMS AND OBJECTIVES**

- 1) To introduce integrated teaching to Final year MBBS student.
- 2) To understand impact of integrated teaching on knowledge & understanding of the topic of 'heart disease in pregnancy' amongst students.
- 3) To assess the yield of using integrating teaching method for clinical applications

### **MATERIAL & METHODS:**

This was a cross sectional study conducted at B.J. Government Medical College, Pune after getting the Institutional Ethics Committee approval in September 2011.

Obstetrics & Gynaecology and Medicine faculty took a lecture on the topic of "Heart Disease in pregnancy" simultaneously in an integrated fashion during the scheduled lecture timings in the classroom and got the feedback of this novel type of teaching from the undergraduate students.

**Inclusion & Exclusion Criteria:** Final year MBBS students above 18yrs of age from the final term who voluntarily agreed to participate and consented were included in the present study.

Students who denied consent were allowed to attend the lecture but we did not provide the feedback forms to them and they were excluded from present study.

**Study duration:** 6 months

A pretested semi-structured, self- administered questionnaire was used. Written consent was taken before administration of questionnaire

Final year undergraduate medical students from the institute attended this integrated lecture taken by OBGY and medicine faculty simultaneously. The 45min lecture was framed by the two faculties in a way that would cover different aspects of heart disease in pregnancy like basic introduction, incidence, types and changing trends, changes in cardiovascular system in pregnancy, diagnosis fetomaternal outcomes and effects of heart disease in pregnancy, complications and management. Different teaching tools were used in the lecture to make it interesting for students like actual cases stories, allowing interactions and jotting down notes. After the lecture, assessment forms were given to the students and their response was noted. Also a Multiple Choice Questions (MCQ) based test was carried

out at the end of the session to see if the desired learning was achieved. Thus the students' response about the integrated teaching methodology and also their knowledge was assessed.

Integrated modality of teaching over conventional one with their reasoning was evaluated.

**Results:**

Teaching aid was assessed using below listed questions.

The responses are given below in Table 1

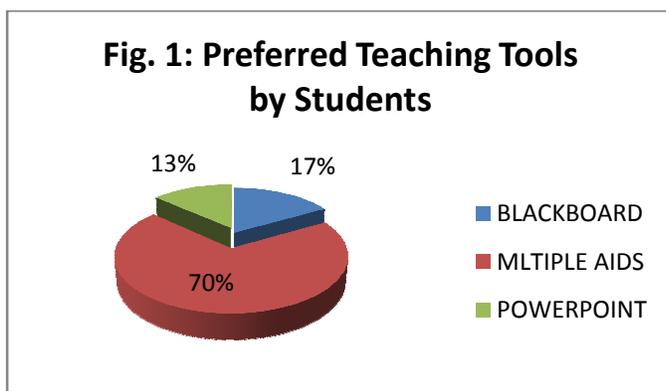
<b>Table 1: Teaching Aid Practice in Institute</b>		
<b>Sr. No.</b>	<b>Teaching Tool</b>	<b>No. of Students Opted N = 150 (%)</b>
1	Power point	142 (94.7)
2	Multiple aids	5 (3.3)
3	OHP	2 (1.3)
4	Blackboard	1 (0.7)

It was observed that maximally used clinical tool in our institute according to students is Power point presentation, 143 (94.66%). It was observed that multiple aids were very sparingly used in our institute, 5 (3.33%). Other methods used are multiple aids, OHP, Blackboard.

On asking which tool of above was preferred by the student along with justification?.

Overall, 105 (70%) students showed preference for multiple aids for various reasons like, sessions are more interesting due to audio visual aids. Total, 25 (16.67%) students reported Blackboard is good tool because various parts can be highlighted and there is greater concentration with effectiveness and 20 (13.33%) students preferred Power point for reason of better understanding and easy learning.

Fig 1-Pie chart showing preferred teaching tools



On asking about the Method of teaching students liked most with reasons, we got the following responses

Table 2 shows students preference of the teaching method

<b>Sr. no.</b>	<b>Teaching method</b>	<b>No. of students opting for N = 150 (%)</b>
1	Tutorial	6 (4)
2	Lecture	8 (5.3)
3	Group discussion	26 (17.3)
4	Clinics	110 (73.3)

Tutorials were the preferred method in 6 (4%) of which more than 50% thought it is more interactive as there is less distance between students & teacher with more individual attention. Lectures were preferred by 8(5.33%) as they are a more informative way of teaching learning method. Group discussion were appreciated by 26 (17.33%) with the reasons that topic was very well discussed, it was not monotonous & boring, there were lot of enthusiasm & interest building in subject.

Overall, 110 (73.33%) opted for clinical teaching and 75% thought it was more interactive and practical. Also clinics enabled the students to have a better co-relation between theory and clinical knowledge.

Responses pertaining to other questions are noted in the Table 3 below

<b>Questions asked</b>	<b>Responses (n=150)</b>		
	<b>Yes N (%)</b>	<b>No N (%)</b>	<b>Not answered N (%)</b>
Learning objectives covered	149(99.3)	1(0.7)	-
Adequacy of length of session	144(96)	6(4)	-
Adequacy of covering both medical and obstetric aspects	148(98.6)	2(1.3)	-
Whether lecture improved understanding of the topic	140(93.3)	5(3.3)	5(3.3)
If students wish to have more lectures with integration	138(92)	5(3.3)	7(4.7)
Was switch over of faculty disturbing	5(3.3)	135(90)	10(6.7)

We assessed if they preferred to have interaction time during the lecture conduct and what type they would prefer? Overall, 120 (80%) responded positively and felt the need to have interactive time during the session.

Table 4 gives the response on the interactive methods that were followed.

<b>Table 4: Students Preference for Interactive Teaching Method</b>		
<b>Sr. no.</b>	<b>Interactive teaching method</b>	<b>Students Preference*</b>
1	Allowed questions	29
2	Notes taking time given	28
3	Brain breaks	Nil
4	Case scenario given	38
5	Real stories	70
6	Videos	Nil

\*Multiple response questions, hence percentage are not mentioned

On enquiring as to what was novel in the lecture the students reported following different responses:

- There won't be any need to read from different books
- Theory and clinical correlation well understood.
- Session's like this saves time.
- This is multidisciplinary approach.
- 1<sup>st</sup> times ever an integrated approach with two different disciplines was effectively taken.
- Students liked the idea of two experts of their subjects teaching the same topic.

Most students felt that combined approach by two different faculties in this integrated teaching session improved the understanding of topic in a better manner.

We asked the students to grade the overall lecture

Table 5 shows that almost 103 students (68.6 %) rated the lecture as very good and above.

<b>Table 5: Rating of Lecture by Students</b>	
<b>Grade</b>	<b>No. of students N = 150 (%)</b>
Excellent	39 (26)
Very good	64 (42.7)
Good	42 (28)
Average	5 (3.3)
Fair	0 (0)

The understanding of the topic was evaluated by an MCQ test taken at the end of the session.

Table 6 shows the marks scored in the MCQ test taken at the end of the session

<b>Table 6: Marks Obtained at the End-of-Session (MCQ test)</b>	
<b>Marks obtained { out of 5}</b>	<b>No. of students N = 150 (%)</b>
1	3 (2)
2	27 (18)
3	53 (35.3)
4	50 (33.3)
5	17 (11.3)

It was appreciated that 120 (80%) students scored  $\geq 3$  and 30 (20%) students scored  $< 3$ . This shows a considerable level of understanding of the subject.

### **Discussion:**

Medical education aims to teach undergraduate students in a way so as to prepare better doctors for the society who have the best knowledge of the subject and understand various aspects of the diseases. So integrated teaching and learning can be helpful for better diagnosis and treatment of patients. As in other studies we found that integrated method was well accepted by the students who felt they had optimal learning, usefulness and application of the knowledge of the two subjects taught simultaneously.

In a study by Neelam et al, more than 2/3<sup>rd</sup> of the students appreciated the novel technique in the study which is similar to our results. Overall, 2/3<sup>rd</sup> of the students in this study expressed that this new method was very good, 16% said it was excellent and 10% mentioned it was good<sup>8</sup>. However, in our study 43% said very good, 26% mentioned

that this method was excellent and 28% said it was good which is slightly higher response than the above study. The MCQ test taken at the end of the integrated teaching session showed 37% scored >60% marks<sup>8</sup>. However in our study 80% students scored >60% marks. Many studies in literature mention about a pre and post test where statistical significance was seen in the post test response. However, this was a limitation for our study, as we only have test results following the integrated teaching session. In our study, 92% students felt that more such lectures should be included in the curriculum. 100% positive response was given in the study.

In a study by Kate et al<sup>9</sup>, 20% students felt that a lot of time was spent on teaching of a single topic. In our study, 96% of the students felt the length of the lecture was adequate.

In the studies by Dandannavar VS, Nikam LH, Chopade SV at Mumbai, Soudarssanane, Sahai at JIPMER reported that maximum students felt there was a positive interaction which helped them to correlate the whole aspect of the topic, whereas 93.3% of the students in our study felt so<sup>10, 11, 12</sup>.

Research has shown that learning is more powerfully enabled when curricula are integrated such that connections are established between subject areas rather than as fragmented island of information or knowledge.

Today, however, we are experiencing changes in medical knowledge, technology, and practice. Changes in the clinical environment, the expectation of patients, the accountability to stakeholders, and the understanding of learning and its theoretical basis demand new, effective approaches to the learning, and also converting knowledge into practice. Introspection of the current existing lacunae in medical education, introducing newer teaching learning methods and improving the students' participation in these newer teaching-learning methods is the need of the hour. From present study it was highlighted that integrated teaching in classrooms has better impact in teaching of final year MBBS students. Traditional medical curricula have been based on the model of teaching that kept medical students in classrooms and laboratory settings for the first year of their education, with an introduction to clinical medicine coming abruptly<sup>1</sup>. The rapid pace of change in health care and medicine is giving rise to corresponding rapid changes in the content and process of medical education<sup>13</sup>.

#### **Conclusion:**

From present study we can conclude that integrated teaching in clinics provides a better impact in teaching of final year MBBS students. Moreover such teaching methods need to be included in the medical curriculum. This will help to avoid learning in a fragmented manner that lacks theoretical and practical correlation.

#### **Recommendations:**

1. Students' participation and enthusiasm in responding to different teaching-learning methods should guide the curriculum developers to incorporate more of integrated teaching in the medical field.
2. Integrated teaching can improve the subject perception and understanding of the topic which in the long run can produce efficient doctors with better application of the knowledge attained in the undergraduate period.

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