



## RESEARCH ARTICLE

### “CASE BASED INTEGRATED TEACHING OF DIABETES MELLITUS TO SECOND MBBS STUDENT”

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#### ABSTRACT

**Background:** The Medical Council of India has laid down the norms and guidelines for integrated teaching to enhance the student's approach to learning in a comprehensive manner. Improvement in the quality of learning by the students through integrated learning is the need of hour.

**Objective:** To assess and compare the effects of traditional teaching with Integrated teaching. **Materials and Methods:** A comparative study was carried out on II MBBS students. After taking pre-test of students they were divided randomly into two group, one group underwent learning through traditional teaching sessions and other group took sessions of learning through integrated teaching technique. After finishing the topic post test was taken. Significance of difference of scores of pre and post-test of students was assessed by paired 't' test while significance of difference in mean change of scores in both groups of students was assessed by unpaired 't' test. Students' and faculty's perception regarding the new approach was also inquired.

**Results:** Mean change of score of students from pre-test to post-test in the study group was significantly higher ( $p < 0.001$ ) than in control group ( $3.43 \pm 1.88$  v/s  $0.65 \pm 1.81$ ) while the difference in pre-test in both the groups was insignificant. More than 90 % students liked and retained the subject better with the new teaching methodology only 9.3% felt it more time consuming. Majority of faculty had liked this method.

**Conclusions:** Integrated teaching was found to be more effective than the traditional one. This INTEGRATED TL method was well accepted by faculty as well as students. Both students and faculty had a positive attitude toward this innovation in education.

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#### INTRODUCTION

Integrated teaching is a means and process by which the student's potential to approach a subject logically, scientifically and in an objective manner is cultivated. Several recommendations were made to incorporate multi – disciplinary integrated teaching module as an essential ingredient of medical school curriculum. The learning process, applications and clinical skills are designed in such a manner to lead the medical students in the desired direction to effect quality medical education and patient care<sup>1</sup>.

The Medical Council of India has laid down norms and stipulations for integrated teaching, evolving the medical curriculum in a manner that enhances the student's approach to learning in a comprehensive way<sup>2</sup>.

In the field of medical education several innovations and new trends have come up and have been accepted globally that include Integrated teaching, problem based learning, self directed learning and community orientation.<sup>3</sup> In a vast number

of settings, integrated teaching is being employed in bridging the gap between academic knowledge and its practical application.<sup>4</sup>

Medical education basically aims to produce medical personnel having sound clinical competences and community orientation with proficient communication skills. All these are fundamental to counter the formidable health problems.<sup>5</sup>

With the existing medical practices, there is a general dissatisfaction. The present day medical curricula are labeled as the basis of this dissatisfaction.<sup>6</sup> These are discipline based, teacher centered, examination oriented, where in learners are presented with a series of discipline or building blocks in isolation. Such modules are under criticism for placing too much emphasis on memorization of facts and figures and for overloading the students with excessive details.<sup>7</sup> As a result, students are unable to correlate the basis of clinical problems or cases, as they are unable to correlate in context of a clinical problem. This could affect quality of diagnosis and treatment of a patient.

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To improve the quality of students and to have effective diagnosis and better treatment of the patients, integrated learning is the need of hour. In recent years throughout the world such curricula have been used by faculties to teach the students.<sup>8</sup>

Medical educationists realized that there was need for integrating basic and clinical medical sciences.<sup>9</sup> Medical teaching of yester-years was initiated in the pre- and para-clinical sciences with structured boundaries in various disciplines and the students and faculty used to strictly adhere to the ambit and purview of the varied disciplines. It was observed that such fragmentation in medical education did not serve the very spirit of medical pedagogy. Subsequently, the concept of integrated medical teaching evolved breaking the frontiers of structured teaching, sensitizing the students to the multi – disciplinary and multi – axes approach to clinical dilemmas. This interdisciplinary approach has gained acceptance world – wide and has opened new horizons for active interactive medical education.<sup>10</sup>

It is also said that students learn best when they are engaged by different materials of learning presented in variety of ways and formats<sup>11</sup>. So, this present study of integrated teaching was designed for undergraduate medical students with following objectives:-

1. To assess and compare the effect of traditional teaching with Integrated TL modular teaching in II MBBS students.
2. To find out the feedback of students and faculty teachers about this Integrated TL modular teaching

**MATERIALS AND METHODS**

After taking approval from Ethics committee, this study was conducted on second MBBS (Fifth semester) students. Students, who has given written inform consent were assessed with a pre-designed pre-test questionnaire and then randomly divided in two groups, one group were taught diabetes in traditional manner (Control group) whereas another group of students (Study Group) were taught diabetes with this new integrated TL.

questionnaire. Students absent on the day of post-test were excluded from the study.

Significance of effect of traditional teaching and integrated TL method teaching were assessed with the difference of scores of pre and post-test students paired ‘t’ test.

Significance of difference in effect of traditional teaching and integrated TL method teaching were assessed with students unpaired ‘t’ test.

Student’s and faculty’s perception of the new approach was also inquired. It was followed by clinical examination of a diabetic patient and students were taught the significance of clinic- pathological association.

**RESULT**

Out of total 150 students of II MBBS students 93 students were present on the day of selection of subjects for the study. Out of these 93 students everyone has given written informed consent for the study so they have given pre-test and then randomly divided into two groups i.e. 46 for study group (integrated TL teaching) and 47 for control group (traditional teaching). But at the time of post-test 3 from study group and 4 from control group were absent. So, finally 43 students for each of the group were included for assessment of effect of teaching.

It was observed through pre-test that although mean scores of control group was slightly higher than study group (6.09±1.38 v/s 5.69±0.84) but there is no significant difference in mean scores of control and study group (p>0.05).

It was also observed in this study that although post-test mean scores of control group was slightly higher than pre-test scores (6.74±11.84 v/s 6.09±1.38) but there is no significant difference in mean scores of pre-test and post-test in control group (p>0.05).

It was also depicted from this study that post-test mean scores of study group was significantly higher (p<0.001) than pre-test scores (9.13±1.63 v/s 5.69±0.84).

When change in mean scores from pre-test to post-test in both

**Table 1** Analysis of Pre-test and Post Scores of Control Group and Study Group

Pre-test Scores of Control Group and Study Group				
S. No.	Groups	Mean Scores	SD of Scores	Test of Significance P value      LS
1	Control Gp (n=43)	6.09	1.38	Unpaired ‘t’ Test=1.624 at 84 DF P Value= 0.108      NS
2	Study Gp (n=43)	5.69	0.84	
Pre-test and Post-test Scores of Control Group (n=43)				
1	Pre-test Scores	6.09	1.38	Paired ‘t’ Test =1.609 at 41 DF P Value= 0.102      NS
2	Post-test Scores	6.74	11.84	
Pre-test and Post-test Scores of Study Group (n=43)				
1	Pre-test Scores	5.69	0.84	Paired ‘t’ Test =6.948 at 41 DF P Value<0.001      HS
2	Post-test Scores	9.13	1.63	
Mean Change of Scores from Pre-test to Post-test of Control Group and Study Group				
1	Control Gp(n=43)	0.65	1.81	Unpaired ‘t’ Test =6.985 at 84 DF P Value<0.001      HS
2	Study Gp (n=43)	3.43	1.88	

Integrated teaching was implemented by the active involvement of the departments of Pathology, Endocrinology and Medicine. The faculty of all the departments was sensitized to this method and feedback forms from them were taken in order to find out their response. Students of “study group’ were taught the through this integrated TL method. After finishing the teaching from both the methods to both the groups, they were again assessed with a pre-designed post-test

the group it was revealed that mean change of score of students in study group was significantly higher (p<0.001) than in control group (3.43±1.88 v/s 0.65±1.81).

Regarding student’s feedback it was observed that out of 43 students of study group, 39 (90.7% ) students were liking the new teaching methodology & felt that they had a better clinico pathological association. 4 (9.3%) felt that a lot of time was

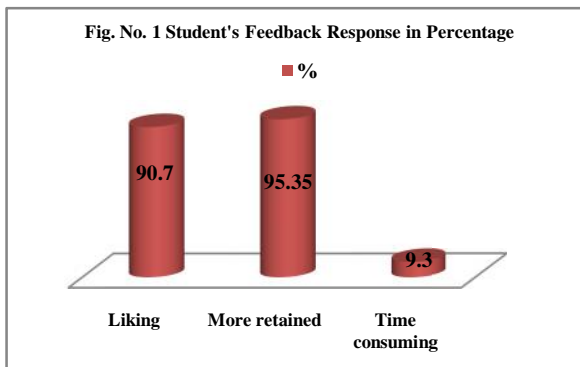
spent on teaching of a single topic. 41 (95.35%) students opined that this method helped them to retain the subject better. 26 (60.47%) students appreciated the fact that they could relate to the clinical aspects and wanted this approach to be extended to other topics as well.

Regarding faculty's feedback it was observed that from the faculty of pathology, physiology and medicine 100%, 100% and 87% respectively were liked this new integrated teaching method and 63%, 51% and 46% respectively were in favor of applying this method in MBBS curriculum at least for certain selected topics.

## DISCUSSION

In the view of new guideline of regulatory body in medical education every country and medical college must educate the student regarding physical, mental health and social and spiritual well being.

The ideal basic objective of medical education in every country and institution is to educate the students in such a way that they should be capable enough to use their teaching in a effective manner. Educational program has a better chance of being effective if its purpose has been clearly expressed. One can give an analogy of functioning of human body, where no system functions in isolation but operates in an organized and interdependent manner to achieve optimum level of functioning.<sup>1</sup> Medical teachers should present the vast amount of information to the students in a planned, organized and integrated manner<sup>1</sup>.



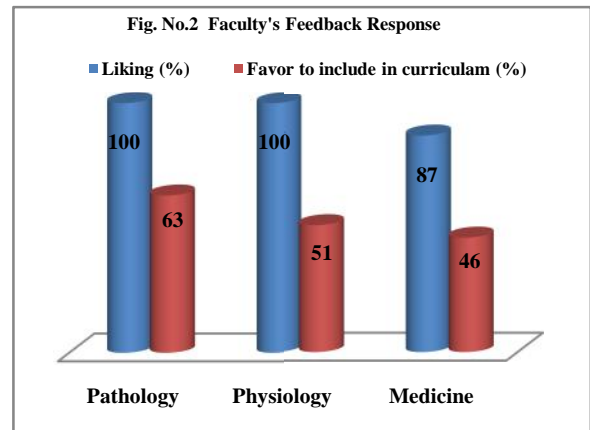
The need for integration is also felt by the students. Students find the preclinical subjects not so interested, one of the main reason for which is its theoretical and fragmented nature<sup>12</sup>. In this the same subject is taught by each preclinical department at different times, without any awareness of what is taught by other departments. This disjointed approach to the topic leads to unnecessary repetition, loss of valuable time and also creates confusion in the student's mind.<sup>12</sup>

This project was designed to teach diabetes mellitus to undergraduate second MBBS students in an integrated fashion. Hence, the faculty of pathology, physiology and medicine were sensitized to this new integrated TL method and the feedback from them was also taken.

This study has revealed that those students who were taught by this new integrated TL method were performed significantly better than students of traditional teaching.

Regarding student's feedback it was observed in this present study that majority (90.7% ) of students were liking the new

teaching methodology & felt that they had a better clinico-pathological association only 9.3% felt that a lot of time was spent on teaching of a single topic. Likewise all most all (95.35%) students opined that this method helped them to retain the subject better.



Regarding faculty's feedback it was observed that all most all faculty members of pathology, physiology and medicine (100%, 100% and 87% respectively) were liked this new integrated teaching method and more than half of faculty member liking this new method (63%, 51% and 46% respectively) were in favor of applying this method in MBBS curriculum at least for certain selected topics.

Smith SR<sup>3</sup> also reported new trends in field of medical education that have been accepted globally that include integrated teaching, problem based learning, self directed learning and community orientation.

Barzansky et al also said that an integrated curriculum refers to a non compartmentalized approach to basic science learning, in which course of study is instead organized around organ systems like cardiovascular system, gastro intestinal system, respiratory system etc.<sup>13</sup> Paul, V.K. et al<sup>5</sup> also reported that medical education basically aims to produce medical personnel having sound clinical competences and community orientation with proficient communication skills. All these are very essential to solve formidable health problems.

Harden et al<sup>7</sup> and Tennyson, R.D. et al<sup>10</sup> also observed that nowadays this teaching is disciplined based, teacher centered, examination oriented, where in learners are presented with a series of discipline or building blocks in isolation. Such modules are under criticism for placing too much emphasis on memorization of facts and figures and for overloading the students with excessive details.<sup>7</sup>

Ruth, N et al suggested that the feedback helps the faculty identify the strength and weaknesses of their teaching methods.<sup>14</sup> Even Sehgal, R et al also observed that feedback from students regarding teaching is very important to improve the quality of teaching and is the best method available to bridge the communication gap between students and teachers<sup>15</sup>.

## CONCLUSION

The new integrated TL method of integrated teaching was found to be more effective than the traditional ones. This integrated TL method was well accepted by faculty as well as students. Students showed better clinico-pathological

understanding along with improvement in cognitive and psychomotor domains. Both students and faculty had a positive attitude toward this innovation in education. However careful and motivated deliberations need to be done in the field of medical curriculum to identify the topics which can be taught by using this methodology.

To improve the quality of students and to have effective diagnosis and better treatment of the patients, integrated learning is the need of hour.

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