

# Traditional Teaching versus Integrated Teaching in Undergraduate Medical Curriculum, a Comparative Study

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Received: June 2019

Accepted: July 2019

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## ABSTRACT

**Background:** Integration in medical education means coordination in the teaching learning activities to ensure a harmonious functioning of the educational process.<sup>1</sup> Integration of teaching is defined as the organisation of teaching matter to interrelate or unify the subjects which are frequently taught in separate academic courses or departments.<sup>2</sup> It means bridging or clubbing together connections between academic knowledge and practicals.<sup>3</sup> It is often called by other terminologies like synergistic teaching, inter-connected teaching, thematic teaching because on the same topic different subject experts /same teacher will deliver their knowledge at the same time. Shoemaker has defined, an integrated curriculum as "education that is organized in such a way that it cuts across subject matter lines, bringing together various aspects of the curriculum into meaningful association to focus upon broad areas of study."<sup>4</sup> By integration the ossification of different boundaries is lost and the subject loses its own identity due to correlation with other departments in related subject matter. **Objectives:** 1.To study the level of Pre-existing knowledge of 1st year MBBS students regarding thyroid gland. 2. To assess the difference between the traditional and integrated lecture method of teaching on thyroid gland. **Methods:** This is a cross-sectional interventional study conducted in the lecture theatre of S.C.B. Medical College, Cuttack, amongst the 1st year MBBS students of the 2017-18 batch. A total of 240 students participated in the study and they were equally divided into 2 groups based on random allocation. **Results:**  $6.27 \pm 2.32$  and  $5.41 \pm 1.81$  are the mean marks secured in pre-test by Gp-A and Gp-B respectively. The difference in the mean marks secured in pre-test is not found to be statistically significant. Out of the 120 Gp-A students the mean marks secured in pre test and post test was  $6.27 \pm 2.32$  and  $15.31 \pm 1.54$  respectively. A comparative analysis in the total marks secured in post test of Gp-A and Gp-B showed that, Gp-A students secured remarkably more marks in post test than Gp-B and this was found statistically significant. **Conclusion:** Integrated learning helps the students to understand and correlate the different clinical problems/cases and enhances clinical learning. On long term basis it helps to improve the academic standard of the doctors, improve diagnosis of diseases and management providing better health care.

**Keywords:** Integration, thyroid gland, traditional teaching, curriculum, didactic lecture.

## INTRODUCTION

Traditionally, the undergraduate medical curriculum is taught as separate subjects. The basic sciences are taught in the beginning while clinical subjects are taught in the later years. However, now there is a greater emphasis on teaching in an integrated fashion to achieve the larger goals of the curriculum. This article describes the various types and steps of integration, its advantages and the challenges in its implementation.

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Abraham Flexner paved the way for the standard model of undergraduate medical teaching where basic sciences are taught in the first half of the course and clinical subjects in the later years.<sup>[5]</sup> Medical Council of India in its document 'Vision 2015' when it talks of its plan to "facilitate horizontal and vertical integration between disciplines, bridge the gaps between theory and practice, between hospital based medicine and community medicine".<sup>[6]</sup>

Moving from the conventional model of delivering undergraduate medical education to integrated teaching can be a daunting task. To begin with, there is the inevitable resistance to change. Integration breaches and often demolishes the boundaries between disciplines. Teachers may find this difficult as they often have a sense of belongingness to their respective disciplines.

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Furthermore, it requires a lot of inter-departmental planning and co-ordination, even more so at the outset when the entire curriculum has to be reviewed and recast in the new model.

A good starting point can be curricular mapping.<sup>[7]</sup> The desired competencies (knowledge, skills, attitudes) should be well defined considering the larger goals of the curriculum. The content of the curriculum, i.e. the syllabus, should facilitate the acquisition of these competencies. Next steps in curricular mapping are outlining how this syllabus is to be taught (teaching methods, learning resources) and preparing a suitable teaching schedule. Finally, appropriate methods and timings of assessment need to be decided.

Horizontal integration refers to integration across subjects that are usually taught separately but simultaneously. They may be unified into one inter-disciplinary block. For example, anatomy, physiology and biochemistry may be combined in phase 1. It helps by reducing redundancy in content and assessment and frees up more time for self-learning.

Vertical integration implies integration across phase. It attempts to transcend the conventional barrier between basic and clinical sciences. The student is exposed to both basic and clinical subjects throughout the course. The curriculum may consist of a larger proportion of basic sciences in the beginning and in the later part the clinical subjects may increase in their content as the student progresses through the course. Introduction of early clinical exposure provides a better opportunity to correlate theory with practice. Presently the existing teaching pattern in most of the medical colleges in India is by the traditional didactic lecture method. It is found that in most of the time there is duplication, time consumption, and overlapping of topics taught in the MBBS course.<sup>8</sup> Now the teaching learning methods are in a new dimension in all medical colleges of India with the establishment of Medical education department supervised by Medical Council of India. The integrated teaching methodology (both horizontal and vertical) is a holistic, methodical and planned approach which provides more benefits to students, facilitators and the institution by large. With the vision of a five star doctor to meet the health needs of the community it was decided to conduct a study.

### **Objectives:**

1. To study the level of Pre-existing knowledge of 1st year MBBS students regarding thyroid gland, its anatomy, different hormones, functioning and clinical conditions related to it.
2. To assess the difference between the traditional and integrated lecture method of teaching on thyroid gland.

3. To study the impact of integrated teaching in improving the knowledge of 1st year MBBS students, in comparison to traditional lecture method of teaching.

## **MATERIALS AND METHODS**

### **Type of study:**

A cross-sectional, interventional study

### **Place of study:**

Lecture Theatre of S.C.B. Medical College, Cuttack

### **Period of study:**

3 months

**Study participants:** Total 240 MBBS 1st year students.

**Sampling and sample size:** A total of 240 MBBS 1st year students participated in the study and they were equally divided into 2 groups based on random allocation by lottery method.

### **Inclusion criteria:**

Total 240 students who were present for the theory class of 2 hours had participated in the study.

### **Exclusion criteria:**

Those absent for the class on that particular day.

### **Method of data collection:**

This particular study was undertaken at S.C.B. Medical College, Cuttack amongst the 1st year MBBS students of 2017-18 batch. The study was approved by Institutional Ethics Committee. A written informed consent was obtained from those students before enrolling them into the study. Total 240 students participated in the study. After a brief introduction about the teaching session on integrated teaching, all the 240 students were given a pre-tested questionnaire on thyroid gland. The pre-test questionnaire consisting of 20 multiple choice questions carrying one mark each. Then the students were divided into 2 groups as Group-A and Group-B, by random allocation by lottery method, having 120 students in each group. Group-A students received integrated teaching on thyroid gland for 1 hour by faculties of Anatomy and General surgery. Out of the total period of 2 hours a period of 1 hour each was allotted to either of the faculty. The anatomy faculty taught about the basics of thyroid gland, its structural anatomy, blood supply, nerve supply, macro and micro anatomical features and embryological development of thyroid gland followed by the surgery faculty giving a simulated patient scenario with a video teaching on thyroid gland and its clinical importance. Teaching learning methods used in the Group-A was integrated teaching lecture by power-point presentation and video session with question-answer session, and an interactive group discussion. While Group-B students received traditional didactic lecture on

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same topic by Anatomy faculty for 1 hour. Following the lecture, the same questionnaire as post test was provided to students to assess the change in the level of knowledge after teaching the students through integrated and traditional lectures.

Then at the end of the session, evaluation of integrated teaching methodology was done by a feedback questionnaire of students using Likert scale from 1 to 5. The effectiveness of study was thereby assessed by analyzing pre and post-test questionnaires. Pre-test and post-test scores were compared. The mean knowledge scores of pre-test and post-test of both the groups were compared by using paired t' test.

### Analysis of data:

Data were entered, compiled and analysed by IBM -SPSS and appropriate statistical analysis was done using students paired t'-test and the level of significance at 95% confidence limit was kept at P-value of less than 0.05.

## RESULTS

**Table 1: Comparative Analysis of marks secured in the pre-test between Gp-A and Gp-B**

Groups	Total no. of students	Mean $\pm$ Sd	P- Value
A	120	6.27 $\pm$ 2.32	P< 0.05
B	120	5.41 $\pm$ 1.81	Not significant

**Table 2: Comparative Analysis of marks secured in the pre-test and posttest in Gp-A (Integrated Teaching)**

Group	Total no. of students	Mean $\pm$ Sd		P- Value
		Post test	Pre-test	
A	120	15.31 $\pm$ 1.54	6.27 $\pm$ 2.32	P < 0.001 Highly significant

**Table 3: Comparative Analysis of marks secured in the post test between Group A & B**

Groups	Total no. of students	Mean $\pm$ Sd	P-Value
A	120	15.31 $\pm$ 1.54	P<0.001
B	120	8.31 $\pm$ 2.47	Highly significant

**Table 4: Feedback of Students on Integrated teaching Methodology**

Questions	Response of the students (%)				
	Strongly Agree	Agree	No reaction	Disagree	Strongly Disagree
Achieves higher level of objectives of learning	82.61	15.29	2.10	0.00	0.00
Effective Clinical Reasoning and Application Of Knowledge	80.12	13.66	3.10	3.12	0.00
Introduction to knowledge and skills	79.21	14.97	4.70	1.12	0.00
Prevents repetition of wastage of time	71.31	23.87	2.70	2.12	0.00
Reflecting the real world in a holistic Way	75.13	19.77	5.10	0.00	0.00

## DISCUSSION

[Table 1] shows the Comparative analysis of marks secured in the pre-test between Gp-A and Gp-B. 6.27  $\pm$  2.32 is the mean marks secured in pre-test by Gp A and 5.41  $\pm$  1.81 is the mean marks secured by Gp-B. The difference in mean marks secured is not found to be statistically significant.

[Table 2] depicts the comparative analysis of marks secured in pre-test and post test using integrated teaching. Out of 120 students the mean marks secured in pre-test and post test was 6.27  $\pm$  2.32 and 15.31  $\pm$  1.54 and difference in the mean marks was more in the integrated teaching method probably because the students analysed and developed a clear concept. The difference in the means was statistically highly significant.

[Table 3] shows a comparative analysis in the total marks secured in post test of Gp-A and Gp-B. Gp-A students secured remarkably more marks in post

test than Gp-B and this was found to be statistically highly significant.

[Table 4] shows the students' feedback on integrated teaching methodology using the Likerts scale. At the end of the teaching class both for integrated and traditional didactic lecture, evaluation was done by feedback questionnaire implemented on students using Likert scale from 1 to 5, where 1 is for strongly agree and 5 is for strongly disagree.

In our study integrated teaching method was found better in comparison to traditional teaching method in terms of improvement in the marks secured. Similar study was done by Doraisamy et al where they found that the marks obtained by the 1st year MBBS students with integrated teaching was more in comparison to the marks obtained with traditional teaching and this difference was found to be statistically significant.<sup>[8]</sup> Raman et al,<sup>[9]</sup> and Kate et al,<sup>[10]</sup> conducted similar studies among the

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second year MBBS students, so also Kalpana Kumari et al,<sup>[11]</sup> conducted a study in students of third year MBBS and came out with exactly the same results.

Similar studies conducted in various other medical colleges in India like at Jawaharlal Nehru Medical College, Belgaum Karnataka by Dandannavar,<sup>[12]</sup> Seth GS Medical College, Mumbai, Maharashtra by Joglekar et al,<sup>[13]</sup> at MGM's Medical College, Navi Mumbai, by Kate et al,<sup>[10]</sup> at Pramukhswami Medical College, Karamsad, Gujarat by Ghosh S et al,<sup>[14]</sup> and at Terna Medical College, Nerul, Navi Mumbai by Nikam and Chopade,<sup>[15]</sup> revealed that the marks obtained by the students with integrated teaching was comparatively higher which was also found to be statistically significant.

In another study, which was conducted at JIPMER, Pondicherry by Soudarssanane MB et al, where the students appreciated integrated teaching and they said that it had enhanced their understanding of the topic, they even felt that integrating the medical topics/ subjects was very useful and of immense interest to them.<sup>[16]</sup> It also helped them to correlate the pre-clinical, para-clinical and the clinical subject. Such conclusions were similar to studies done by Dandannavar at Karnataka,<sup>[12]</sup> Nikam and Chopade,<sup>[15]</sup> at Mumbai. In another study by Basu M et al,<sup>[17]</sup> integrated teaching sessions was perceived to be very good by a majority of the students with regards to an improvement in the appreciation and application of the basic science knowledge. Besides this, in the students' feedback questionnaire the Cronbach's alpha was 0.90; average student ratings across the items varied between 3.7 and 4.1. A similar finding was also noted by Musal B et al,<sup>[18]</sup> Vyas R et al,<sup>[19]</sup> and Kumari KM et al.<sup>[20]</sup> However in a study by Kadam S et al,<sup>[21]</sup> done at Rajiv Gandhi Medical College, Kalwa, Thane, Maharashtra, the statistical comparison between the evaluation after integrated and traditional lectures had not shown significant impact of integrated lectures.

### CONCLUSION

Integrated teaching was found more effective than traditional teaching. Integrated teaching should be introduced in undergraduate medical curriculum. Integrated teaching approach can be introduced in undergraduate medical curriculum with appropriate sensitisation of the faculties and students. However careful and motivated deliberations need to be done in the field of medical curriculum to identify the topics which can be taught using this methodology.

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**How to cite this article:** Panda M, Panda S, Nanda S, Panda M, Garabadu S. Traditional Teaching versus Integrated Teaching in Undergraduate Medical Curriculum, a Comparative Study. Ann. Int. Med. Den. Res. 2019; 5(5):AT01-AT04.

**Source of Support:** Nil. **Conflict of Interest:** None declared