INTEGRATED TEACHING: A NEW APPROACH IN MEDICAL TEACHINGSameer M. Khan¹**HOW TO CITE THIS ARTICLE:**

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ABSTRACT: INTRODUCTION: Today's medical education system aims at imbibing new teaching-learning methods so as to keep up with the requirements of and to match the international standards. **AIMS AND OBJECTIVES:** The present study was conducted to compare integrated teaching with traditional lecture method for First MBBS students in our institution. **MATERIAL AND METHODS:** Out of 100 students 70 students participated in the study voluntarily. Two study groups each of 35 students were formed. Group I was exposed to integrated teaching and Group II to traditional lecture method. A test was conducted subsequently and the data was analyzed using students unpaired t test. Feedback questionnaire form was obtained from students and teachers. Evaluation of the face and content validity was performed by asking 15 students and 5 lecturers to evaluate the clarity and plenitude/ representativeness of the questions regarding the assessment. Evaluation of the construct validity of the questionnaire was performed by factor analysis. **RESULT AND CONCLUSION:** Statistically significant difference in the marks was obtained and the integrated teaching was found to be more effective than the traditional lecture method. Teachers' and students' feedback was positive towards the integrated teaching method. Cronbach Alpha coefficient indicates a high consistency of the questions (Cronbach's $\alpha > 0.8$). The questionnaire proved to be a valid and reliable instrument of needs of the present study. Thereby it was concluded that integrated teaching is a better method that needs to be implemented on a wider scale in medical education.

KEYWORDS: Medical education, Teaching-Learning methods, Physiology, integrated teaching traditional lecture method.

INTRODUCTION: For any system to progress and achieve excellence, it has to be subjected to suitable changes. The field of medical education, being an increasingly demanding and competitive should also be subjected to timely changes. Over the years, a lot of new teaching methods have not only evolved but also made a mark for themselves as far as teaching methodology are concerned and at the same time challenging the time tested methods such as lectures and even the black board teaching. It has been seen from the earlier days that students learn best when they are engaged by different materials of learning presented in variety of ways and formats^[1] and the concept of integrated teaching is one of them.^[2,3] Thus to improve the quality of students and to have effective understanding, diagnosis and also a better treatment of the patients, integrated teaching is need of hour.^[4,5,6]

The term integration in education means coordination in the teaching learning activities to ensure harmonious functioning of the educational processes.^[7] It is defined as organization of teaching matter to interrelate or unify subjects frequently taught in separate academic courses or departments.^[8] Integrated teaching aims to provide knowledge to the students in a complete organized and wholesome manner thereby enabling the students to have a more clear view of the topic, while on the other hand it takes a toll on the students themselves.^[9]

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To put it simply, instead of imparting knowledge on a topic in disintegrated manner, a particular topic can be taken by two or more departments by forming a co-ordinated integrated teaching program. It is akin to different systems in our body working in a co-ordinated manner to achieve homeostasis.^[10]

The incorporation of integration in the medical curriculum is always desired,^[11] in order to provide the students with complete rather than fragmented learning perspectives.^[12] Hence the concept of integrated teaching was developed and adopted in this project. Though many studies have been done involving second and third year MBBS students integrating topics vertically where disciplines traditionally taught in different phases of the curriculum are integrated showing a positive approach but this new method of integrated teaching has not been exposed to the first year MBBS students.

It is known that physiology forms the backbone of medicine and a lot of medicinal subjects rely mainly on the normal physiology for its understanding.^[13,14] What a student learns and imbibes in the first year of MBBS curriculum forms the base of future education. In this case, if the departments of Anatomy and Biochemistry co-ordinate with the department of physiology, it will be called as Horizontal integration. Earlier studies have emphasized on such horizontal integrated sessions to prevent repetition of same topics by different faculties, to save time, leading to a better understanding of a topic and avoiding confusion amongst the students.^[15,16]

Hence this study was designed to introduce the method of horizontal integration for undergraduate medical students for the first time in our medical college at International Medical School, Management and Science University, Shah Alam Selangor Malaysia. The topic of 'Basal Ganglia' was selected and taught by both traditional and integrated method for two study groups. The results were compared along with students' and teachers' feedback.

AIMS AND OBJECTIVES:

1. To evaluate the effectiveness of horizontal integration in the teaching learning methods.
2. To analyse the viewpoints of students and teachers alike regarding the present teaching methods and horizontal integration.
3. To build a platform where excellence can be achieved with the motto "Quality over Quantity".
4. To motivate teachers to work as a team.

MATERIALS AND METHODS: The study was approved by Institutional Ethics Committee. Out of 100 First MBBS students, 70 students participated in the study voluntarily. Prior informed consent with explanation that the internal assessment marks will not be affected was taken from each student participant. Students were divided into two study groups; Group I and Group II randomly with each group comprising of 35 students.

Group I (n=35) was introduced to integrated teaching on the topic selected that is, Basal ganglia. Integrated teaching was implemented by the active involvement of departments of Physiology, Anatomy and Biochemistry. In the pre-preparatory phase of this study, one faculty member from each department that is Physiology, Anatomy and Biochemistry sat together and discussed the sequence and contents of the topic amongst themselves before the integrated teaching session was conducted by them.

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Group II (n=35) had traditional lectures on the same topic by each of the three First MBBS department faculty separately instead of integrated teaching.

Following all the students were evaluated by conducting a test of 20 marks consisting of 2 short answer question (SAQs) of 4 marks each and 12 multiple choice questions (MCQs) of 12 marks. Statistical analysis of the data was done by using the unpaired 't' test. P value below 0.05 was considered to be statistically significant and P value below 0.01 was considered to be highly significant.

Feedback questionnaire form were obtained from students' and teachers' to evaluate their response and analyze the merits and demerits of integrated teaching

Group II which had traditional lectures was exposed to integrated teaching method subsequently. The method for the data collection was feedback, using a specially modified questionnaire, which it fully met the requirements of the current study and consisted of the questions of "INTEGRATED TEACHING: A NEW APPROACH IN MEDICAL TEACHING" Specifically.

Validity: Initially, the questionnaire, immediately after the design, was submitted to 15 students to determine whether the questions were clear, understandable, and in a logical order (face validity). Moreover, the same students and 5 lecturers who had long experience in horizontal teaching were asked to criticize the content of the questionnaire (content validity).

More specifically, they were asked to express their views on whether they consider these questions to be representative of the needs of present study or if some additional statements need to be added. The construct validity of the questionnaire was tested using the appropriate statistical technique in order to determine the structure of the questionnaire. The criterion validity of the questionnaire was not checked, as a gold standard tool for assessment of this type of study has not been proposed yet.

Reliability: Finally, the internal consistency and the repeatability of derived from the construct validity of the questionnaire were tested using the appropriate statistical test.

RESULT: Table 1 shows Mean and Standard deviation values of the total marks obtained in the test conducted post traditional and integrated teaching for both study groups (Group I and II) respectively and the inter-group comparison of significance using Students unpaired t-test. The total marks obtained in the test were significantly higher in integrated teaching study group (Group II) than the traditional method study group (Group I). Highly significant results were obtained on statistical comparison (P=0.000).

	Total Marks			T value	P Value
	N	Mean± SD	SE of Mean		
Group 1	35	13.72±1.80	0.30	7.90	0.000**
Group 2	35	11.87±2.36	0.35		

Table 1: Comparison of total marks obtained in the test post integrated (Group I) and traditional teaching (group II)

**P < 0.01 – Statistically highly significant

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Table 2 and 3 depicts Mean and Standard deviation values of MCQ and SAQ marks separately out of total marks obtained in the test for both the study groups (Group I and II) respectively with inter-group comparison of significance. The MCQ and SAQ marks were higher in study group of integrated teaching (Group I) than traditional teaching (Group II). Statistically highly significant results were obtained on comparison for MCQ marks ($P=0.000$) but the differences of SAQ marks between two study groups were not statistically significant ($P= 0.634$).

		MCQ's			
N		Mean $\pm$ S.D	SE of Mean	T value	P value
Group 1	35	9.44 $\pm$ 1.20	0.19	10.59	0.000**
Group 2	35	5.90 $\pm$ 1.90	0.30		

Table 2: Comparison of MCQ's marks obtained in the test post integrated (Group I) and traditional teaching (Group II)

** $P < 0.01$ – Statistically highly significant

		SAQ's			
N		Mean $\pm$ S.D	SE of Mean	T value	P value
Group 1	35	4.07 $\pm$ 1.25	0.19	0.43	0.632
Group 2	35	3.93 $\pm$ 1.00	0.15		

Table 3: Comparison of SAQ's marks obtained in the test post integrated (Group I) and traditional teaching (Group II)

$P > 0.05$ – Statistically not significant

Student's Feedback: 95 % of students felt that integrated teaching was more interesting and less time consuming than traditional teaching. 94 % students felt that integrated teaching was non-repetitive and less confusing. 90 % students opined that the topic was better understood by integrated teaching than traditional method and was more helpful in retaining and performing better in examinations.

However 4% students felt that this new approach will be time consuming with the simultaneous traditional method of teaching and will not help in writing examinations. While 6% students remained undecided regarding this new integrated approach. Overall 98% students were enthusiastic about the new integrated approach and felt that it should be implemented for all the topics from the beginning of the curriculum.

Teaching Faculty Feedback: 75% of faculty agreed to this new integrated method of teaching; however 25 % felt that it was time consuming and lot of time was spent on teaching of a single topic with syllabus burden and time as constraints for one year course of first MBBS and late admissions of students. The final decision was to implement integrated teaching in the first MBBS curriculum after more detailed planning.

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DISCUSSION: The new method of integrated teaching was found to be more effective than the traditional one. Statistically significant results were obtained on comparing the marks obtained by the students in the test post integrated method with the traditional method group. We received overwhelming response and suggestions through student's feedback such as conducting more integrated teaching sessions on difficult topics like CNS and more frequently throughout the year.

The use of integrated teaching in a way would also benefit the student that it would make the understanding of the other two subjects also easier and better. Students as well as the teaching faculty were excited to implement this new tool of education and accordingly participated enthusiastically.

The findings and the experience we have got in this study support the view of other studies that such newer methods of education help to enhance teacher-student and teacher-teacher interactions and reduce redundant content.^[7,8]

The need for integration is currently felt both by students and teachers. Our experience concurs with the finding of similar study that integrated teaching method avoids fragmented manner of teaching when teachers are not aware of what is taught in other subjects, prevents unnecessary repetition, loss of valuable time, provides better understanding and avoids confusion in the student's mind.^[8] It also removes subject phobia and develops interest in the topic.^[6,8]

With this study the aims to evaluate and analyze teaching- learning methods, motivation of the teachers to work as a team considering the views of students and teachers, were fulfilled.

Therefore, we conclude that the newer concept of integrated teaching is a better and more effective Teaching-learning method to be introduced in the medical curriculum starting from the first year of the course with more comprehensive planning and proper selection of topics in the proposed time frame without overburdening the students.

LIMITATIONS:

1. It is difficult to co-ordinate and to manage the timings of the participating teachers from different departments.
2. Lot of planning and discussion sessions amongst the teachers are required before conducting integrated sessions.
3. Students' enthusiasm and motivation has to be kept alive for permanent implementation of integrated teaching method in the curriculum.
4. I would like to follow up the study with a larger sample size in future.

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