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Study of Impact of Interdisciplinary Seminar as an Integrated Teaching - Learning Innovation in M.B.B.S Students

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Abstract
Introduction- *Integration of teaching method is very important in overcoming the barriers of learning. In order to improve learning and understanding of students, innovative educational approaches have been introduced, such as interdisciplinary seminars. An Interdisciplinary study is an academic program or process seeking to synthesize broad perspectives, knowledge, skills and interconnections in an educational setting. Our institute has conducted a series of interdisciplinary seminars.*
Aims & Objectives: *The objective of the present study was to evaluate the impact of integrated teaching programme on performance of III MBBS students by administering pre and post-test.*
Methods- *A questionnaire was framed for hyperthyroidism, asthma and HIV interdisciplinary seminars, each consisting of 20 MCQs out of which 5 were True/False type. These 3 seminars were conducted at the interval of one month.*
A pre-designed pre-test questionnaire were distributed amongst M.B.B.S. (III) students attending each of these seminars, once before start of the seminar [PRE-TEST] and then again after completion of the seminar [POST-TEST].150,100 and125 questionnaires were distributed for hyperthyroidism ,asthma and HIV interdisciplinary seminars respectively.
Post-test performance was compared with pre-test performance for each seminar using 'paired t- test' and change in performance due to this seminar was compared using 'Unpaired t-test'. Only those students who completed pre and post-test were considered for statistical analysis.
Results - *The seminars on hyperthyroidism and bronchial asthma and HIV resulted in 90.47%, 66.66% and 61.95 improvement in performance respectively. There was statistically significant improvement in students' performance ($p<0.001$) in all the 3 seminars.*
Conclusion- *A positive response was received for the implementation of the integrated teaching in the curriculum by the student as well as teacher population. This study therefore supported the view that interdisciplinary seminars improve understanding and knowledge of the students. Therefore medical colleges should actively and regularly organize such seminars for the topics which are useful to undergraduate students.*
Keywords: *MCI, interdisciplinary seminar, integrated teaching, medical education.*

INTRODUCTION

Basic objective of medical education in every country and institution is to educate the students to make them better doctors for tomorrow. Medical education is imparted through contribution from multiple branches and specialties. As knowledge base is growing fast, it is impossible for one section of teachers to keep abreast of all subjects. So, integration in medical education is very important in cementing the gaps between the preclinical, paraclinical and clinical subjects. Integration in education means coordination in the teaching learning activities to ensure harmonious functioning of the educational processes.[1]

It is involved in connecting skills and knowledge from multiple sources and experiences and applying it in various settings. It therefore helps in bridging connections between academic knowledge and practicals.

There are advances in scientific knowledge and innovations in educational field that necessitate constant changes in medical curricula among many innovations and trends undertaken in education field. To improve quality of students and to have effective diagnosis and better treatment of the patients, integrated teaching is need of hour.[2,3]

Integration of teaching means the organization of teaching matter in such a way where it interrelate or unify the subjects which are frequently taught in separate academic courses or departments.[4] An integrated curriculum refers to a non compartmentalized approach to basic science learning, in which course of study is organized around organ systems like cardiovascular system, gastrointestinal system and respiratory system etc.[5]

The learning process, applications and clinical skills should be designed in such a manner to lead the medical students in the desired direction to effect quality medical education and patient care.

Harden described the integration ladder as having 11 points on a continuum between two extremes i.e subject based at the bottom of the ladder (Isolation) to integrated teaching learning (Transdisciplinary) at other end.[6]

The term 'interdisciplinary' means a knowledge view and curriculum approach that consciously applies methodology and language from more than one discipline to examine a central theme, issue, problem, topic, or experience.[7]

Students are given readymade study materials but they are not actively involved in learning process. This is passive learning. Majority of the medical colleges follow traditional curriculum in teaching. This is discipline based, teacher centered and the learners are presented with a series of discipline in isolation. Such curricula are under criticism for placing too much emphasis on memorization of facts and overloading students with excessive details.[8]

According to Edinburgh Declaration, there is tremendous responsibility on institutions providing medical education for bringing about required innovations in existing system so as to meet the defined needs of societies.[9] So, various integrated medical curricula have been adopted by many medical schools globally to ensure holistic approach rather than a fragmented one in medical education to encourage meaningful learning.

Medical council of India has recommended both horizontal and vertical integration to be introduced throughout the curriculum. The innovative new curriculum has been structured to facilitate horizontal and vertical integration between disciplines. Likewise, it also tries to bridge the gaps between theory and practice as well as between hospital based medicine and community medicine.[10]

Thus, integration method of teaching and learning is more effective than the traditional method wherein teaching is compartmentalized by discipline with little reference and coordination with other disciplines. These events should be designed to encourage the sharing of information and ideas. Faculty from across the medical college campus will have opportunities to learn about teaching and curricular innovations from their colleagues during interdisciplinary seminars.

Each subject has its own block of time usually restricted to one part of course is at different

phases of the curriculum.[11] So, it is very essential to remove the time block so as to have easy dissemination of knowledge. Due to the lack of interdepartmental collaboration student find it difficult to correlate and apply their knowledge and transfer this information into clinical practice. Interdisciplinary studies can also take advantage of opportunities to work with collegues who are able to offer and support enriched learning experiences and opportunities for young people's wider involvement in society.[12] In horizontal integration, three or more departments teach the same topic concurrently by properly planning their teaching programme within a short time span, may be a week. In vertical integration, integration occurs among the different phases of curriculum. A vertical scheme unites subjects of various academic years through a topic or theme. 13Head injury, for example, can draw contributors from anatomy, biochemistry, pathology, forensic medicine, pharmacology, ophthalmology, medicine and neurosurgery. Ultimately, improving student achievement depends on both horizontal and vertical alignment in an educational system. This requires strong collaboration among administeration, teachers and students. Interdisciplinary seminar is one of the integrated teaching –learning activities.

Interdisciplinary seminar is an educational programme which has better chances of being more effective over other teaching method, improves the cognitive psychomotor domains of students, enhances students skills to correlate clinically, improve diagnosis skills and benefit the society.

A disease, its diagnosis and treatment cross the barriers of administrative convenience. Hence an integrated approach to teaching and later its practice has to be defined.

Hence, we decided to study the impact of a series of interdisciplinary seminars in medical students.

AIMS & OBJECTIVES

1. To evaluate the impact of integrated teaching programme on performance of III MBBS students by administering pre and post test.
2. To bring the different disciplinary perspectives and methods together so as to provide a comprehensive approach to the understanding of the topic.
3. To inculcate the concept of integrated teaching in undergraduate MBBS curriculum.

METHODS

This was a students' interdisciplinary seminar wherein 'students' themselves acted as 'faculty' and presented the respective components of the topic which was allotted to them.

Target learners were the students from different batches of II & III MBBS. I MBBS students attended the activity so that they could get sensitized to the idea of integration of teaching.

It was implemented by the active involvement the departments depending upon the need for the management of the disease under consideration.

This academic activity was carried out in the following manner:

- Discussion of the modality of the interdisciplinary seminar with the head of departments of each branch.
- Meeting of each department for faculty sensitization regarding integrated teaching and its implementation procedure.
- Orientation programme to the process of implementing an integrated teaching module for faculty members of various departments to discuss time integration of different components of topic by considering horizontal and vertical integration.
- Framing of time table for interdisciplinary teaching module regarding the number of hours allotted to different subjects.

8- 10 students were assigned topics of clinical relevance for their presentation.

Ist MBBS students were recruited to present the anatomical, physiological and biochemical aspects of the topic selected. II MBBS students were recruited to focus on the disease progression and pathophysiology of disease as well as the applied aspects and correct & skilful application of drugs, while III MBBS students were recruited to present the discussion regarding treatment and of the disease and its complications. To focus on the disease progression and pathophysiology .One faculty member was allotted to each student to guide. He/she facilitated the learning in student. Such sessions were organized periodically in order to make students aware of interdisciplinary seminars.

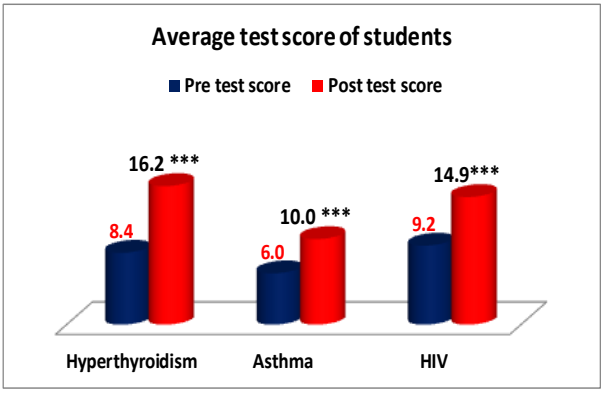
Each student was given the task of preparing seminar under the guidance of preclinical/ paraclinical /clinical faculty. Thereafter, joint rehearsals were conducted in the presence of respective department faculties. Finally, interdisc-iplinary seminar was organized and conducted in the presence of all faculties of college which was very well received by both the faculties as well as the students. Each presentation lasted for about 8 minutes followed by interaction sessions among students and brain storming sessions between students and teachers. This entire programme used to last for two to two and half hours.

RESULTS

Table 1: Comparison between pre test and post test questionnaire interdisciplinary seminar

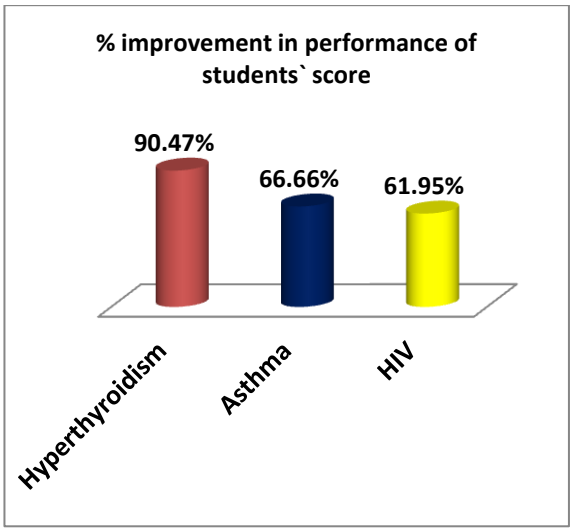
Paired Sample Statistics					
Interdisciplinary seminar	Test	Mean	N	Std. Deviation	Std. Error Mean
Hyperthyroidism	Pre-test score	8.4	140	3.265	0.2768
	Post-test score	16.2		4.358	0.3683
Bronchial Asthma	Pre-test score	6	91	2.836	0.2973
	Post-test score	9.2		3.605	0.3779
HIV	Pre-test score	9.2	120	3.264	0.2979
	Post-test score	14.9		3.143	0.2869

Fig. 1: Average test score of students before and after interdisciplinary seminar.



*** P<0.001

Fig. 2: % improvement in performance of students' score after interdisciplinary seminar.



*** P<0.001

The pre-test score was 8.4 and post-test was16.2 for hyperthyroidism, the pre-test score was 6 and post-testwas10 for bronchialasthma, The pre-test score was9.2 and post-test was14.9 for HIV.

The seminars on hyperthyroidism and asthma and HIV resulted in 90.47% and 66.66%, 61.95 improvement in performance respectively. (P<0.001)

DISCUSSION

Teacher-driven medical education is transformed to student-driven and student-centered teaching – learning activity. This has forced a change in the role of the teacher to become a facilitator of the learning process. Practical experience with the new approach to medical education has shown its strengths and limitations.

Smith SR 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.[15] In our study also, utility and effectiveness of integration of different branches of curriculum as a mean of teaching method was studied. The seminars on hyperthyroidism and asthma and HIV resulted in 90.47% and 66.66%, 61.95 improvement in performance respectively (P<0.001) which was statistically highly significant.

Students showed better clinico pathological correlation along with improvement in cognitive and psychomotor domains.[16]

It helped the students to learn the topic in its entirety.

Horizontal integration, where in all the three departments teach conveniently merging their educational activities. A vertical integration, unites subjects of various academic years through a topic or theme. So, in our study both horizontal and vertical integration were implemented by involving preclinical, paraclinical as well as clinical departments. Topics were provided in a more meaningful way and students tried to apply their knowledge because of better understanding. The Faculty acted as facilitator and played a role in shaping learning experience.

It is reported interdisciplinary education develops a number of intellectual skills in problem solving, critical thinking, evaluation, synthesis, and integration. It also promotes the ability to think in creative and innovative ways and to create sensitivity to disciplinary and other biases.[17] It was observed in our study that discussion among students bring out new ideas and experiences from different groups. Brain storming sessions were very helpful in giving way for new ideas and encourage full participation. It also created spirit of cooperation.

This was a students' interdisciplinary seminar wherein 'students' themselves acted as 'faculty' and presented the respective components of the topic which was allotted to them. This innovative modality gives the students the opportunity to explore more than one subject and skills which develop critical thinking. We used to take the rehearsals of the students. Students, who had stage fear or lack of confidence, were given extra attention. It also removed subject phobia and develop interest in topic.

In our study, we observed a statistically significant improvement in student's performance (p<0.001) in all the 3 seminars. The seminars on hyperthyroidism and asthma and HIV resulted in 90.47% and 66.66%, 61.95 improvement in performance respectively. (P<0.001)

Through in-depth discussions across disciplinary boundaries, students learn how experts from other branches think and jointly assess challenges facing healthcare system, exploring various resources available to address these challenges and propose solutions. Interdisciplinary activity is a higher level of integration.[8]

Cromwell reports that the brain recalls holistic experiences more quickly and easily than fragmented experiences, there is a connection between neuropsychology and educational methods and that the human brain learns better when presented with meaningful patterns.[18]

Sharma et al reported that 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.[19]

Toppo et al showed that there was a statistically significant improvement in student performance score after the integrated teaching activity which is similar to our study results.[20]

It is stated that 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. Similar curricular strategies are planned by Medical council of India. It desires an increase in integration in order to provide students with a holistic rather than fragmented learning perspective. Both students and faculty had a

positive attitude toward this innovation in education.[21]

Caine and Caine states that the brain may even resist learning fragmented facts that are presented in isolation.[22] So, the new integrated method of teaching has to be given a serious thought

This interdisciplinary seminar focuses on use of the research knowledge base about teaching and learning to explore the answers to future problems, with an eye toward ways to study and improve teaching and learning in multiple contexts. These seminars provide students an opportunity to work closely with a faculty member and think about complex problems and issues across disciplinary boundaries.

CONCLUSION

It is observed in our study that Interdisciplinary Seminar provides an excellent model for bridging content gaps in the clinical curriculum. There is a need that both interdisciplinary and discipline-field associated teaching –learning activities are important. It provide students with sustained opportunities to explore links across disciplines and with the world beyond the academy.

LIMITATION

Interdisciplinary seminar activity cannot be applied to all the topics and needs strong support from all departments. Integrative learning is unlikely to occur without commitment, creativity and joint planning from educational institutions.

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CONFLICT OF INTEREST: NIL

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