Comparison of conventional and integrated method of teaching in MBBS students

Seema Anjenaya*, NC Mohanty**, Pankaj Patil***

Abstract

Background: Most of the medical institutions in India follow the conventional method of teaching where knowledge gained by the students is in a fragmented and disjointed manner while integrated method of teaching is more holistic and systematic.

Objectives: Since our institution is now keen on adopting integrated teaching, this study has been undertaken as a pilot project and conducted with a view to study the impact of integrated teaching in improving knowledge, attitude and skills of MBBS students, as compared to conventional methods of teaching. It also aims at sensitizing and motivating the staff members to implement new teaching- learning methodology.

Methods: The present study is a completely randomized design (Two- group simple randomized design) done at M.G.M. Medical College and Hospital, Navi- Mumbai. A pre- tested questionnaire was given to all 100 IIrd MBBS students to study their existing level of knowledge and attitude regarding ‘Breast- feeding and Complementary feeding practices’. They were then randomly divided into two groups- a study group of 50 students who received integrated teaching by didactic lectures, case- studies and live demonstrations by Departments of Community Medicine, Obstetrics and Gynecology and Pediatrics, while a control group of 50 students who received conventional teaching through didactic lectures. Post test was conducted after 3 months of intervention. The mean knowledge and attitude scores of pretest and post test of conventional & integrated groups were compared. The students’ skills were tested by personal observations by the project faculty. Feedback was taken through informal discussions from participating staff members regarding their experience.

Results: In the post test, the mean knowledge scores of conventional and integrated groups were 12.92 and 15.06 respectively with standard deviation of 1.947 and 1.942 respectively. Similarly, with regards to attitude, the mean ranks for conventional and integrated groups were 38.49 and 62.51 respectively with sum of ranks of 1924.50 and 3125.50 respectively. There was a significant improvement in both knowledge and attitude of students of integrated group as compared to conventional group (p < 0.05). The faculties observed improved skills in students of integrated group. Feedback taken from students showed that 87% were enthusiastic about integrated approach to teaching, while 13% felt that it is time consuming. Feedback taken from faculties also showed a positive response towards the integrated approach to teaching.

Conclusion: Integrated method of teaching was found to be more effective in improving the knowledge, attitude and skills of MBBS students than conventional method thereby emphasizing the need to adopt the innovation in education.

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Introduction

The concept of integrating curriculum is nothing new. It’s been around, in fact, since the 1800s and was advocated by such well-known educational theorists as John Dewey and Meredith Smith. Presently more and more educators think that it is the best way to teach. Integration has been accepted as an important educational strategy in medical education. The Medical Council of India (MCI) has recommended both horizontal and vertical integration to be introduced throughout the medical curriculum. However many medical Institutions in India have still not incorporated it in their curriculum.

In the traditional / conventional method of teaching, much stress is given on the didactic lectures. It has various flaws like unnecessary repetition, time consumption, passive learning and disjointed approach to teaching. Hence the subject as a whole is never grasped by the students. It does not involve any active participation from the students and they are not stimulated to acquire thorough knowledge and skills. The above deficiencies can be overcome by implementing integrated approach to teaching.

Integration is defined as organization of teaching matter to interrelate or unify subjects frequently taught in separate academic courses or departments. Integrated teaching involves the teaching of various subjects in a co-ordinated fashion, so that the boundaries of the subjects are abolished and the teaching is system wise rather than subjectwise. This makes learning process more holistic, systematic and organized to students. The integration ladder is a useful tool for the medical teacher and can be used as an aid in planning, implementing and evaluating the medical curriculum. The integration ladder has 11 steps from subject- based to integrated teaching and learning.

Need for the study

In our institution, teachers teach medical students by the conventional method of teaching. By this method, students get segmented knowledge received in isolation from various disciplines. While the students gain reasonably sound knowledge of medical science, they are often found deficient in the performance of clinical skills and communication skills, which form the core of clinical competence. The integrated teaching methodology provides multifocal benefits to the students, faculty and the institution as a whole. Since our institution is now keen on adopting integrated method of teaching, this study has been undertaken as a pilot project, which would be helpful in planning and implementing integrated teaching in a systematic manner over a period of time.

The topic chosen for integrated teaching was ‘Breast feeding and Complimentary feeding practices’, as this is one of the topics which is taught by various departments at different times during their medical course. Also it is an important component of maternal and child health which the students need to know in detail.

Objectives

1) To study the impact of integrated teaching in improving the knowledge, attitude and skills of II\textsuperscript{nd} MBBS students, as compared to conventional method of teaching.

2) To study the existing level of knowledge and attitude of II\textsuperscript{nd} MBBS students regarding ‘Breast feeding and Complimentary feeding practices’ and to assess the change after integrated and conventional teaching on the subject.

3) To sensitize and motivate the staff members to implement new teaching methodology to make teaching more student centric.

4) To help the students improve their knowledge, attitude and clinical skills in their formative years.

Methods

The present study is a completely randomized design (Two- group simple randomized design) done at M.G.M. Medical College and Hospital, Navi-Mumbai. This study has been undertaken as a pilot project and introduced with a view to study the impact of integrated teaching in improving the knowledge, attitude and skills of second year MBBS students as compared to conventional method of teaching. A whole batch of 100 students of II\textsuperscript{nd} year MBBS constituted the study subjects. A group of interested staff members of the Department of Community Medicine (PSM), Obstetrics and Gynecology (OBGY), and Pediatrics, were identified and invited to participate in the study. Ethical clearance was obtained from the Institutional Ethics Committee. The questionnaire for conducting the study was prepared and validated. A pilot study consisting of 30 students was conducted.
All the 100 students were given a pre-tested questionnaire to study their existing level of knowledge and attitude regarding ‘Breastfeeding and Complementary feeding practices’. The questionnaire testing the knowledge consisted of 20 multiple-choice questions (MCQs) - single response covering issues on the entire topic. It also contained 12 questions addressing the attitude of students which was measured by an attitude scale. They were then divided into two groups - a study group of 50 students who received integrated teaching, while a control group of 50 students who received conventional teaching on the same topic by the same faculties. Randomization was done using by random sampling using Lottery method. The students of the conventional group were imparted didactic lectures on the topic ‘Breastfeeding and Complementary feeding practices’. The other group of 50 students underwent integrated teaching on the same topic by faculties of three Departments i.e. Community Medicine, Obstetrics and Gynecology (OBGY), and Pediatrics. The teaching methods adopted were didactic lectures, case-studies and live demonstrations (e.g. different positions of breast feeding, preparation of a weaning food). This was followed by question-answer session between the students and the project faculty to clarify any doubts. After 3 months, the same questionnaire was administered to students (Post test) to assess the change in knowledge and attitude of the students after integrated and conventional teaching on the subject. The project faculty assessed the skill enhancement by personal observation (e.g. demonstrating different positions of breast feeding, steps in preparation of a weaning food) of both the groups in the community during this exercise.

The effectiveness of the study was assessed by analyzing pre and post-test questionnaires. The mean knowledge and attitude scores of pretest and post-test of conventional & integrated groups were compared. The skills were tested by mere personal observations by the project faculty. Also following the exercise, feedback was taken through brainstorming informal discussions from participating staff members and from students regarding their experience about the respective teaching-learning methodology. The results were compiled, tabulated and statistical analysis of the data was done using Student’s t test. Attitude of the students was measured on Likert scale and analyzed using Mann Whitney – U test. SPSS (Statistical Package for Social Science) version 17 was used to analyze the data.

Figure 1.Trial flow
Results

<table>
<thead>
<tr>
<th>Group Statistics</th>
<th>Group</th>
<th>N</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>Std. Error Mean</th>
<th>Sig. (2-tailed) p value at 95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Conventional</td>
<td>50</td>
<td>10.10</td>
<td>2.140</td>
<td>0.303</td>
<td>0.649 (p &gt; 0.05)</td>
</tr>
<tr>
<td></td>
<td>Integrated</td>
<td>50</td>
<td>10.30</td>
<td>2.234</td>
<td>0.316</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>100</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Conventional</td>
<td>50</td>
<td>12.92</td>
<td>1.947</td>
<td>0.275</td>
<td>0.000 (p &lt; 0.05)</td>
</tr>
<tr>
<td></td>
<td>Integrated</td>
<td>50</td>
<td>15.06</td>
<td>1.942</td>
<td>0.275</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>100</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 1. Difference in mean knowledge score between conventional and integrated groups

Table 1 shows that in the pretest, the mean knowledge score of conventional & integrated groups was 10.10 and 10.30 respectively with standard deviation of 2.140 and 2.234 respectively and showed no significant difference in the mean knowledge score between both groups (P > 0.05). But in the post test, there was an improvement in the mean knowledge scores of both conventional and integrated groups (12.92 and 15.06 respectively with standard deviation of 1.947 and 1.942 respectively), and difference in the mean knowledge score was significantly more in integrated group as compared to conventional group (p < 0.05).

<table>
<thead>
<tr>
<th>Groups</th>
<th>N</th>
<th>Mean Rank</th>
<th>Sum of Ranks</th>
<th>Mann-Whitney U</th>
<th>Sig. (p-value) at 95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre test attitude</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Conventional</td>
<td>50</td>
<td>50.90</td>
<td>2545.00</td>
<td>1230.00</td>
<td>0.863 (p &gt; 0.05)</td>
</tr>
<tr>
<td>Integrated</td>
<td>50</td>
<td>50.10</td>
<td>2505.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>100</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Post test attitude</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Conventional</td>
<td>50</td>
<td>38.49</td>
<td>1924.50</td>
<td>649.500</td>
<td>0.000 (p &lt; 0.05)</td>
</tr>
<tr>
<td>Integrated</td>
<td>50</td>
<td>62.51</td>
<td>3125.50</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>100</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 2. Comparison of mean attitude score between conventional and integrated groups

Table 2 shows that in the pretest, with regards to attitude, the mean rank for conventional and integrated groups was 50.90 and 50.10 respectively with sum of ranks being 2545.0 and 2505.0 respectively and these two groups did not differ significantly (p > 0.05). In the post test, the mean rank for conventional and integrated groups was 38.49 and 62.51 respectively with sum of ranks being 1924.50 and 3125.50 respectively. Thus there was a significant improvement in the attitude of students of integrated group as compared to conventional group (p < 0.05).

Discussion

The basic objective of medical education in every institution is to educate the students regarding health, which is multidimensional and envisages physical, mental, social and spiritual dimensions. The classroom lectures however do not take into account the total factors, which have a bearing on health and disease. Meanwhile, expectation of the community is increasing and the challenge of nurturing their demands has come in forefront. It is essential to enable the medical students to be accountable towards the community and develop as socially accountable physicians. Thus apart from the didactic lectures, the students should also be exposed to integrated community based teachings. To strengthen community based medical education, medical institutions need to be accountable and must design innovative intervention strategy to address the health problems identified in the community.

An educational program with an integrated approach has better chances of being effective. As our institution is now keen on adopting integrated method of teaching, the present study has been undertaken as a pilot project and introduced with a
view to study the impact of integrated teaching in improving the knowledge, attitude and skills of second year MBBS students as compared to conventional method of teaching. The topic chosen was ‘Breast feeding and Complementary feeding practices’.

This study has revealed that students of the integrated group had improved knowledge and attitude by virtue of this new TL methodology as compared to the conventional group. In the post test, there was an improvement in the mean knowledge scores of both conventional and integrated groups (12.92 and 15.06 respectively with standard deviation of 1.947 and 1.942 respectively), and was significantly more in integrated group as compared to conventional group (p < 0.05) (table 1). Similarly, with regards to attitude, in the post test, the mean rank for conventional and integrated groups was 38.49 and 62.51 respectively with sum of ranks of 1924.50 and 3125.50 respectively. Thus there was a significant improvement in the attitude of students of integrated group as compared to conventional group (p < 0.05) (table 2). When both the student groups were taken to the community, the participating faculties assessed their skills (e.g. demonstration of different positions of breast feeding, preparation of a weaning food) by mere personal observation. It was clearly visible that the integrated group was able to demonstrate the activities/tasks much faster, confidently and with ease as compared to conventional group.

In the present study, initially there was reluctance and not much motivation among faculties regarding implementation of integrated teaching. The reasons given by them were- ‘No time’, ‘Would upset the whole teaching time-table’, ‘Not well versed with this method of teaching’ etc. But after convincing the students, faculty and institution about the benefits of integrated teaching (reported from other studies) and training them in it, the faculties were then convinced and ready to co-operate. Following the exercise, feedback taken through informal discussions from the participating faculties showed a positive response towards the integrated approach to teaching as compared to the conventional method. The faculties were happy to see the improved performance and positive response from the students. They enjoyed working as a team and showed keen interest in continuing this teaching methodology.

As regards feedback from students, 87% were enthusiastic about integrated approach to teaching, while 13% felt that it is time consuming. 86% students felt that this method helped them to retain the subject better. These findings are almost similar to a study conducted by Madhuri Kate et al.9 to assess the effectiveness of integrated teaching over traditional method among second MBBS students. The topic chosen in their study was Diabetes Mellitus and integrated teaching was implemented by the Departments of Pathology and Medicine. Their study findings revealed significant improvement in knowledge gained by integrated group. Both students and faculty had a positive attitude toward this innovation in education. 80% students were enthusiastic about the new teaching methodology & felt that they had a better clinico-pathological correlation while 20% felt that a lot of time was spent on teaching a single topic. 87% opined that this method helped them to retain the subject better.

In a study conducted by Mathur SS et al.9, one batch of 147 undergraduate medical students (Group I) underwent community based training in maternal and child health (MCH), while another batch of 140 students (Group II) did not undergo such community based training but only didactic lectures in MCH (control group). In the study group, 73.47% students showed excellent level of knowledge, 21.09% had good and 5.44% had a fair level of knowledge, while the control group showed 54.28% had an excellent, 29.28% had good and 16.23% had a fair level of knowledge and the difference in the knowledge between the two groups was statistically significant. Of the study group students, 27.8% had a favorable attitude, 53.7% were indifferent and 18.3% were not in favor, while among the non-family students, 37% showed a favorable attitude, 47% were indifferent and 15.7% were not in favor. Thus significantly higher knowledge and favorable attitude were found in Group I.

The pedagogic shift from traditional approach to a need-based approach requires a fundamental change of roles and commitments of educators, planners and policymakers.10 Certain elements that are necessary for successful implementation of integrated teaching are: (1) Training and motivating teachers to adopt new teaching methodologies, (2) keen interest and shared commitment to team teaching and ongoing communication and (3) a strong desire to ignite students’ thirst for knowledge.

**Future prospects**

1) Integrated approach to teaching will motivate the staff members of various Departments to work
together as a team for improved medical curriculum.

2) The medical students will be able to better understand the health care needs of the community and apply the knowledge and skills gained into clinical practice, thereby producing good doctors benefiting the community.

Conclusion

In the present study, integrated approach to teaching was found to be more effective than conventional teaching in improving the knowledge, attitude and skills of undergraduate medical students. The new Teaching- Learning methodology was well accepted by the faculty as well as the students.

This indicates that the time has come to modify the conventional methods of teaching and adopt the innovation in education taking into account the organizational structure of the medical school, existing curriculum, motivation, training and views of the teachers. For integrated curriculum, one can start with something small and manageable topics and can later extend it to most of the curriculum.

Limitations of the study

The post test was done after 3 months of intervention, before which the students could have been exposed to other learning opportunities e.g. self learning, and also there could have been a possibility of discussion between the students of both the groups. Since these extraneous factors were beyond my control, it may be considered as limitations of this study.

Acknowledgement

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References


