Peer Assisted Versus Expert Assisted Learning: A Comparison of Effectiveness in Terms of Academic Scores

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ABSTRACT

Objective: To compare the effectiveness of peer assisted learning versus expert assisted learning in terms of academic scores.

Study Design: Cross over-randomized control trial followed by a cross-sectional survey.

Place and Duration of Study: Fatima Memorial Hospital, College of Medicine and Dentistry, Lahore, during January to October 2012.

Methodology: This study was conducted on 4th year MBBS students. The students were randomly divided in two groups by lottery method following their roll numbers. The groups A and B were dealt with Peer Assisted Learning (PAL) and Expert Assisted Learning (EAL) respectively. Effectiveness of both methods of learning was calculated on the basis of academic scores obtained in MCQ tests. One best answer type of MCQs were used and their construct validity was checked by other senior faculty members. After crossover of groups and altered teaching strategy, academic scores were compared again within the group and the comparable group. Student’s views about this technique were measured by Likert's scale. P-values were obtained by applying independent and paired t-tests and considered statistically significant at ≥ 0.05.

Results: There were 70 students of 4th year MBBS which included 24 (34.3%) males and 46 (65.7%) females. The Cronbach's alpha value of these MCQs was 0.64. Scores of MCQ test were compared by applying independent t-test and p-value obtained was 0.971; after cross over p-value was 0.468 which was not significant between the results obtained by two learning strategies. Twenty five students (46.3%) said that PAL is an effective technique. Thirty eight (70.4%) students found it easy to communicate with a peer. For incorporation of PAL in curriculum of community medicine, 24 (44.4%) students voted in its favour.

Conclusion: Peer assisted learning has proved of equivalent efficacy in terms of students score in MCQs test as expert assisted learning.

Key Words: Expert assisted learning. Peer assisted learning. Academic scores. Student’s views.

INTRODUCTION

Recent trends in medical education include a shift from the traditional, didactic, lecture-oriented approach to a more student-driven, problem-based approach to learning. The boundaries of knowledge are no longer restricted to textbooks and lectures. The student of today has access to journals, Internet resources, educational videos, online conferencing and much more. Team based learning, problem based learning, peer assisted learning and online learning is few of the popular options for acquisition of knowledge.

Peer Assisted Learning (PAL) has been defined as “the development of knowledge and skill through active help and support among status equals or matched companions”. Peer teaching in medical schools often occurs as reciprocal peer teaching, in which students alternate between the roles of peer teacher and peer learner.

The benefits of Peer Assisted Learning (PAL) are well established with positive effects on examination scores, student satisfaction and reported personal and professional development. A study was conducted in first year undergraduate students in which 82% of the students said that PAL helped them get a clearer understanding of course direction and expectations.

Peer assisted learning has been used in many medical schools as a support to Expert Assisted Learning (EAL) because of the shortage of faculty members. Recent trends in medical education in Pakistan also include a shift from the traditional to a more student based approach.

The effectiveness of peer assisted learning has been reported by many studies but only few references is available in Pakistani context.

PAL is perceived as rewarding in terms of fostering higher order thinking, effective teaching skills and in improving self efficacy among learners. Local comparison of effectiveness in peer assisted learning and expert assisted learning will help us to give
evidence in incorporating peer assisted learning in Pakistani medical schools. This will also help faculty members to utilize the strengths of students to enhance their learning opportunities as well as provide evidence to medical educationists that PAL can be incorporated in local setup.

The objective of this study was to compare the effectiveness of peer assisted learning and expert assisted learning in terms of academic scores obtained after MCQ test in a private undergraduate medical college of Lahore.

METHODOLOGY

This study was conducted in 4th year MBBS students of Fatima Memorial Hospital, College of Medicine and Dentistry, Lahore, during January to October 2012. It was a cross-over, randomized control trial to collect quantitative scientific evidence of effectiveness of two strategies in terms of numbers gained in MCQs by students. Considering ethical issues in educational intervention, sampling was avoided and whole class was included in the study. Informed consent of the students was taken prior to conducting the study. The class of 4th year MBBS was divided into two groups (A and B) randomly by using lottery method. An expert faculty member (professor) delivered a lecture to group A and a peer tutee delivered lecture to group B. This peer tutee was selected on the basis of best academic record and willingness to act as tutee. The student selected to implement Pal was oriented thoroughly with this strategy and initial training was given to him to impart lecture. Prevention of chronic diseases was the topic and two different diseases were dealt in two sessions. The topics of lectures were of same difficulty. Both groups were assessed about their knowledge of the subject with MCQ test. MCQs used were of one best answer type of MCQs. The reliability coefficient of these MCQ scores was calculated by using Cronbach’s Alpha which was 0.64. It was observed that mean scores of group A and B were 42.65 ± 16.75 and 42.50 ± 16.79 respectively. There was no significant difference found in p-values after application of independent t-test. Then the groups were crossed over and group A had peer assisted learning and group B had expert assisted learning and the MCQ test was conducted. It was observed that mean score of group A which had peer assisted learning was 41.47 ± 16.72 and group B which had expert assisted learning was 44.44 ± 17.31. There was no significant difference found in p-values after application of independent t-test (Table I).

For analyzing the difference in the same group after two techniques of learning, the results of group A and group B were compared to their own performance with two interventions. It was observed that there was no statistically significant difference in p-values of independent t-test. In the next session, there was a crossover of batches and then they were exposed to alternate intervention. Group B had an expert tutee and group A had peer tutee and they were again exposed to the MCQ test and their marks of MCQ test were compared. The reliability coefficient of these MCQ scores was calculated by using Cronbach’s Alpha which was 0.64. Students views about peer assisted learning were gathered by using a questionnaire with a Likert scale on the preformed questionnaire.

Data was analyzed through Statistical Package for Social Sciences (SPSS) version 17. Mean scores of MCQ tests were compared by application of t-test and p-value of significance was fixed at equal to or below 0.05. Confidentiality of the students was ensured by keeping questionnaires anonymous and fictitious roll numbers were allocated for compilation of data. IRB clearance was taken before starting the project.

RESULTS

This study was conducted on 70 students of 4th year MBBS in Fatima Memorial Hospital, College of Medicine and Dentistry. Amongst these 24 (34.3%) were males and 46 (65.7%) were females. The mean age of this group was 22.05 ± 0.652 years with a variance of 0.426 years. These 70 students were randomly divided into two groups. Group A had 34 (48.6%) and group B had 36 (51.4%) students. Group A had a subject expert assisted and group B had peer assisted learning session in the subject of Community Medicine. They were assessed through one best answer type of MCQs. The reliability coefficient of these MCQ scores was calculated by using Cronbach’s Alpha which was 0.64. It was observed that mean scores of group A and B were 42.65 ± 16.75 and 42.50 ± 16.79 respectively. There was no statistically significant difference in p-values of independent t-test. After cross over group A had 34 (48.6%) 42.65 16.75 0.971

<table>
<thead>
<tr>
<th>Group</th>
<th>Number of students</th>
<th>Mean score</th>
<th>Standard deviation</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. Expert</td>
<td>34 (48.6%)</td>
<td>42.65</td>
<td>16.75</td>
<td>0.971</td>
</tr>
<tr>
<td>B. Peer</td>
<td>36 (51.4%)</td>
<td>42.50</td>
<td>16.79</td>
<td></td>
</tr>
</tbody>
</table>

Table II: Comparison of MCQ scores of each group after application of paired sample t-test.

<table>
<thead>
<tr>
<th>Group</th>
<th>Number of students</th>
<th>Mean score</th>
<th>Mean difference</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. Peer</td>
<td>34</td>
<td>41.47</td>
<td>-1.176</td>
<td>0.794</td>
</tr>
<tr>
<td>A. Expert</td>
<td>36</td>
<td>42.65</td>
<td>-1.944</td>
<td>0.554</td>
</tr>
</tbody>
</table>

Table I: Comparison of MCQ scores after peer and expert assisted learning.
Responses of students about PAL session.

<table>
<thead>
<tr>
<th>Responses</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>PAL is an effective teaching strategy</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>25</td>
<td>46.3%</td>
</tr>
<tr>
<td>No</td>
<td>27</td>
<td>50.0%</td>
</tr>
<tr>
<td>Don’t know</td>
<td>2</td>
<td>3.7%</td>
</tr>
<tr>
<td>Are you satisfied with content coverage in PAL</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>16</td>
<td>29.6%</td>
</tr>
<tr>
<td>No</td>
<td>33</td>
<td>61.1%</td>
</tr>
<tr>
<td>Don’t know</td>
<td>5</td>
<td>9.3%</td>
</tr>
<tr>
<td>PAL gives safer environment as compared to EAL</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>27</td>
<td>50.0%</td>
</tr>
<tr>
<td>No</td>
<td>24</td>
<td>44.4%</td>
</tr>
<tr>
<td>Don’t know</td>
<td>3</td>
<td>5.6%</td>
</tr>
<tr>
<td>It is easy to communicate with peer as compared to expert</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>38</td>
<td>70.4%</td>
</tr>
<tr>
<td>No</td>
<td>13</td>
<td>24.1%</td>
</tr>
<tr>
<td>Don’t know</td>
<td>3</td>
<td>5.6%</td>
</tr>
</tbody>
</table>

41.47 ± 16.72 with peer assisted learning. When the scores of group B were compared it was observed that mean score with expert assisted learning was 44.44 ± 17.31 and with peer assisted learning 42.50 ± 16.79. Application of paired sample t-test showed no significant difference in scores after the application of two techniques (Table II).

The students were asked to share their views about peer assisted learning sessions in comparison to expert assisted learning. Out of 70 students, 54 agreed to participate with a response rate of 77.14% and their responses were assessed on Likert's scale of 1 - 3. It was observed that 25 (46.3%) students agreed that Peer Assisted Learning (PAL) is an effective teaching strategy. Out of 54 students, only 16 (29.6%) were satisfied with coverage of course content in PAL sessions. Fifty percent participants agreed that PAL gives a safer environment of learning as compared to expert assisted learning. Out of 54 respondents, 38 (70.4%) strongly agreed that it was easy to communicate with a peer in lecture as compared to subject expert (Table III).

When the students were asked about incorporation of peer assisted learning session in Curriculum of 4th year MBBS in subject of Community Medicine, 24 (44.4%) responded in favour while 30 (55.6%) responded against it. When it was asked what are students’ recommendation about PAL incorporation in the routine session, 9 out of 24, which constituted 37.5%, responded that there should be sessions of PAL on monthly basis.

DISCUSSION

Many different types of peer assisted learning have been identified which include peer teaching, peer assessment and feedback, peer mentoring and peer leadership. Peer assessment and feed back has provided an opportunity of positive and constructive criticism regarding communication skills, professionalism, clinical problem solving skills and clinical performance in different medical schools.

Peer mentoring is a supportive relationship between two students of differing academic or experience levels within the professional program which focuses more on emotional support and encouragement, rather than on peer teaching and learning. Peer leaders supervise their colleagues and can provide clinical supervision by taking correct decisions.

The results of this study have shown that there was no significant difference in the marks obtained by students by two learning strategies. Many studies in comparison to that have shown that PAL has a positive effect in terms of examination scores.

Some other studies have shown the evidence that in PAL group, students with similar knowledge, values and backgrounds, can limit learning opportunities for other students.

The results of this study have also shown that there is no significant difference in learning of the individual groups after PAL and expert assisted learning. When p-value was obtained for each group after two learning strategies, it was 0.794 and 0.554 for group-A and group-B respectively. It has been documented that peer assisted learning is not only beneficial for tutee but it also plays a key role in cognitive development, communication skills and improvement of self esteem of tutor as well.

While gathering the responses of students about peer assisted learning, multiple responses were obtained. It was observed that (25) 46.3% of the students believed that PAL is an effective teaching strategy. Worldwide acceptance of students for peer assisted learning is very high. A study published showed that 82% of tutees considered the peer teaching model to be sufficient, and a mere 1% expressed the wish for skills training to be provided by faculty staff only. PAL is used in many medical schools of United Kingdom and it plays an important role in robust process for assuring the quality of teaching in future teachers and consultants.

This study found that 16 (29.6%) students were satisfied with content coverage and 33 (61.1%) were not satisfied. It has been documented that peer assisted learning has certain disadvantages. Sometimes the peer tutees are not well conversant with the topic and do not have full depth of knowledge; in that case, further confusions can be created for tutee. In some cases of peer assisted learning, peer pressure, embarrassment and inappropriate behaviour has also been reported.

This research shows that students feel much safer in environment with peer assisted learning and they feel that it is much easier to communicate with peers as compared to experts.
Research has shown that peer-teaching in undergraduate medical programs is comparable to conventional teaching when utilized in selected contexts.14 Some of the studies have shown a greater impact of peer assisted learning and near peer learning when imparted as a revision course after the core course taught by teachers.15,16

In this study, 27 students (50%) said that PAL provides safer environment as compared to EAL. It has been proven by many studies that in comparison to teacher led lessons, peer assisted learning provides much safer environment for interactive learning.17 A study was conducted in fifth-year medical undergraduates, who had completed their communication skills modular training and attended a preparatory workshop, facilitated a role-play session for their second-year colleagues, it was observed that both tutor and tutee were relaxed and comfortable during the session and developed an environment of confidence and trust which served as an ideal atmosphere for learning.4 Another study aimed to evaluate the implementation of a same-year Peer-Assisted Learning (PAL) scheme, showed that the majority of students agreed that PAL helped with social aspects of learning but not contributed to improved study skills or assignment preparation.18

The documented qualitative benefits of peer-teaching strategies in the setting of health professional education has shown enhancement of cognitive, psychomotor and affective domains of tutor and tutee both.19

When the students were asked about incorporation of peer assisted learning in curriculum of community medicine, 24 (44.4%) favoured it.

Out of these (24) 44.4%, the students who wanted to incorporate it on monthly basis were (9) 38%. Peer assisted learning can be intentionally planned and incorporated in timetables by faculty members, but sometimes incidentally by the students themselves.20

For implementation of peer assisted learning in institutions a 24 questions framework have been designed by Ross which gives a clear picture for organization and implementation of this program.21 PAL is attaining significant importance in medical education where the restrictions on resources have forced teachers to create new educational environments which can be delivered at a lower cost.19 By and large, healthcare and academic staffs are enthusiastic about teaching, but are often limited by resources and staff numbers.19 Peer assisted learning may result in cost saving and can address curricular outcomes as well.10 PAL is increasingly being used in medical education. To increase the effectiveness of peer assisted learning in medical schools, some important aspects which cover organizational issues, tutor selection, training of the tutor, and running and evaluating the sessions is essential.22 The authors gave special emphasis on tutor selection and his training for this research.

PAL has been embraced by medical educationalists for many years in the United States of America which has shown high examination scores, lowered subjective distress and enhanced course satisfaction among students of this system.4 Some of the developing countries are also trying to experience the peer assisted learning in their local set up and the most recent example is of Sri Lanka, where Kuppi classes are arranged to promote peer assisted learning. Despite many advantages it recommends that administration may need to consider different aspects in planning and developing future peer assisted learning activities.12 This indicates the need of PAL associated activities to be incorporated in Pakistani medical schools as well. There is limited scientific evidence available regarding peer assisted learning in Pakistan. Although informally peer teaching, mentoring and leadership are present in different forms which are mainly student driven. The need of hour is to incorporate these peer assisted learning in growing medical college’s curriculum where lack of teaching staff is a strong indication to promote such activities. It should be clearly kept in mind that these PAL activities need proper administrative and training support to get the maximum benefits. Faculty should be trained to become familiar with PAL and should change stance towards the continuously changing trends of medical education and help us in incorporating new teaching methodologies.

A large group used during PAL and EAL is one of my limitations as it is recommended that PAL is more effective in small groups. Such studies should be repeated at different medical colleges before making PAL a part of curriculum.

CONCLUSION

Peer assisted learning has proved of equivalent efficacy in terms of student's scores in MCQs test as expert assisted learning. Many students favour its application in regular teaching practices so PAL can be used as supporting technique in delivery of the curriculum in undergraduate level.

REFERENCES

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