Comparison of problem based learning with traditional teaching as perceived by the students of Rawalpindi Medical College

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ABSTRACT

Objective
To compare lecture based learning with problem based learning (PBL) and to identify the deficiencies in both teaching methodologies.

Methods
A cross sectional comparative study was carried out among 198 students studying in 2nd year and 3rd year of MBBS in Rawalpindi Medical College as the students of these two classes had been taught both by lectures and PBL sessions. They were enrolled by convenience sampling. The study was performed for a period of two months from January 2010 to February 2010. Data was collected by means of structured questionnaire.

Results
Of the total 198 students, 53% were girls while 47% students were boys. 34.8% and 65.2% respondents were students of 2nd year and 3rd year MBBS respectively and majority of those (55.06%) were hostelites. 40.92% liked only PBL followed by both Lecture Based Learning (LBL) and PBL (36.36%). 41.91% students claimed that PBL has lead to better understanding of subject while 35.34% respondents favored both LBL and PBL. 93% respondents admitted that PBL has lead to more clarification of their concepts while 32.82% students appreciated both LBL and PBL. Coverage of sufficient syllabus through PBL and both (LBL & PBL) was claimed by 52.54% and 65.67% students respectively. Majority (52.02%) was satisfied with training of lectures for traditional teaching while 52.52% were dissatisfied with training of facilitators for PBL. 44.95% were satisfied with availability of resources for PBL while 55.58% respondents preferred present scenario (LBL parallel with PBL).

Conclusion
Lecture Based Learning must go parallel with Problem Based Learning for better analytical approach and clarification of concepts among medical students. There is need to improve the information resources for PBL. (Rawal Med J 2010;35:249-253).

Key words
Problem based learning, learning, assessment.

INTRODUCTION
PBL was started in 1969 by Barrows and Tamblyn at Mc Master University, Canada for undergraduate medical students. Later the system was adopted by Europe, USA and rest of the world.1 A study carried out among 1st year students at Nelson Mandela school of Medicine showed that majority of the students benefited from input of other students in PBL tutorials as they were conducted in small groups.2 Contrary to this study, a study
from Kuwait University revealed that introduction of new teaching methodologies may evoke certain factors that lead students to develop adverse perception of their educational environment.

Another study showed that knowledge and power of interpretation was quite improved among students on reaching the 3rd year but their interest in the process of PBL conduction was lost and they developed short cuts to solve the problem. It has been reported that instead of didactic communication in lecture hall, active participation of students in PBL had a bigger role to play in continuing medical education. The current study was aimed to compare the perception of MBBS students regarding the two teaching methodologies of LBL and PBL in Rawalpindi Medical College, Rawalpindi.

SUBJECTS AND METHODS
A cross sectional comparative study was conducted among 198 students of 2nd year and 3rd year MBBS of Rawalpindi Medical College (RMC). As only current 2nd year and 3rd year MBBS students of RMC were taught both by lectures and PBL sessions, only these were enrolled in the study by convenience sampling. Duration of the study was two months (from January-February 2010). In this study, LBL was a teaching methodology characterized by delivery of lectures i.e., knowledge is imparted by teachers whereas in PBL, problem based scenarios were given to the students instead of delivering lectures and students are supposed to solve those problems themselves by means of books, internet and journals. Data was collected by means of structured questionnaire (Annexure). Moreover, we asked the students about their contentment with resources available for PBL sessions and their satisfaction with present scenario where PBL is running parallel to lectures.

Statistical analysis: Data was analyzed using SPSS version 10.0 and Microsoft Excel 2003. For difference in availability of facilities for PBL sessions among 2nd and 3rd year MBBS students, chi-square test was applied.

RESULTS
Of the total 198 students, 89 respondents were day scholars while 109 students were host elites. Male to female ratio was 31:35. Maximum respondents enrolled in the study were 3rd year MBBS students (Table 1).

**Table 1. Participants from 2nd year and 3rd year MBBS class.**

<table>
<thead>
<tr>
<th>Academic year</th>
<th>Number</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>2nd year</td>
<td>69</td>
<td>34.8%</td>
</tr>
<tr>
<td>3rd year</td>
<td>129</td>
<td>65.2%</td>
</tr>
<tr>
<td>Total</td>
<td>198</td>
<td>100%</td>
</tr>
</tbody>
</table>

Eight-one respondents liked only PBL, 72 liked both LBL and PBL and 20 appreciated only LBL. 83 students expressed that PBL leads to better understanding of subject while 70 respondents appreciated both LBL and PBL in this perspective (Fig 1).
Approach of the study participants pertaining to the attribute of different teaching methodologies in imparting better analytical approach, long term learning of subject, more clarification of concepts with different teaching methodologies and benefit in integration of all subjects is reflected in Table 2.

Table 2. Attribute of various teaching methodologies.

<table>
<thead>
<tr>
<th>Better analytical approach imparted by various teaching methodologies</th>
<th>PBL</th>
<th>PBL &amp; LBL</th>
<th>LBL</th>
<th>Any other</th>
</tr>
</thead>
<tbody>
<tr>
<td>PBL</td>
<td>120 (60.62%)</td>
<td>36 (18.18%)</td>
<td>19 (9.59%)</td>
<td>23 (11.61%)</td>
</tr>
<tr>
<td>PBL &amp; LBL</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LBL</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Any other</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>More clarification of concepts in medical studies imparted by various teaching methodologies</th>
<th>PBL</th>
<th>PBL &amp; LBL</th>
<th>LBL</th>
<th>Any other</th>
</tr>
</thead>
<tbody>
<tr>
<td>PBL</td>
<td>81 (40.93%)</td>
<td>65 (32.82%)</td>
<td>35 (17.67%)</td>
<td>17 (8.58%)</td>
</tr>
<tr>
<td>PBL &amp; LBL</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LBL</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Any other</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Significance of subjects’ integration in better concepts of the students</th>
<th>Yes</th>
<th>No</th>
<th>Don’t know</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>149 (75.2%)</td>
<td>35 (17.7%)</td>
<td>14 (7.1%)</td>
</tr>
<tr>
<td>No</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Don’t know</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

130 respondents expressed that sufficient syllabus was covered by traditional teaching / lectures (Fig 2).

Fig 2. Coverage of sufficient syllabus by PBL.
Competency of both PBL facilitators as well as lecturers indulged in traditional teaching as perceived by the students of RMC is shown in Table 3.

Table 3. Training of facilitators/Lecturers for respective teaching methodologies.

<table>
<thead>
<tr>
<th>Training of facilitators for PBL sessions in RMC</th>
<th>Well trained</th>
<th>Not trained</th>
<th>Don’t know</th>
</tr>
</thead>
<tbody>
<tr>
<td>65 (32.84%)</td>
<td>104 (52.52%)</td>
<td>29 (14.64%)</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Training of lectures for traditional teaching / lectures in RMC</th>
<th>Well trained</th>
<th>Not trained</th>
<th>Don’t know</th>
</tr>
</thead>
<tbody>
<tr>
<td>103 (52.02%)</td>
<td>74 (37.36%)</td>
<td>21 (10.62%)</td>
<td></td>
</tr>
</tbody>
</table>

55.58% respondents were satisfied with present scenario in RMC. However, 29.28% students were totally dissatisfied with current state of affairs while 15.14% respondents were neither satisfied nor dissatisfied. Overall satisfaction of the respondents with availability of resources/facilities (library, internet, journals) for PBL sessions is reflected in Fig 3.

Fig 3. Overall Satisfaction of students with availability of facilities for PBL sessions.

Degree of satisfaction among 2nd year and 3rd year students was not found to be statistically significant (Table 4).

Table 4. Degree of satisfaction pertaining to availability of facilities for PBL sessions among study participants.

<table>
<thead>
<tr>
<th>Academic year of MBBS students</th>
<th>Satisfaction of students with facilities for PBL sessions</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>2nd year</td>
<td>37</td>
<td>32</td>
</tr>
<tr>
<td>3rd year</td>
<td>64</td>
<td>65</td>
</tr>
<tr>
<td>Total</td>
<td>101</td>
<td>97</td>
</tr>
</tbody>
</table>

$X^2_{cal} = 0.28$  \hspace{1cm} P>0.50
DISCUSSION

In present study, majority of the students (41%) liked PBL while only 9% liked LBL and 36.4% respondents were in the favor of both PBL parallel with LBL. This might be due to great diversity in medical subjects/topics. Some of them are easily understood by self learning while comprehension of some topics needs the help of tutor for better understanding. A study on teaching methods in Shifa College of Medicine showed that 67% of the students wanted LBL and PBL going on side by side.\(^5\) A cross-sectional study showed that 79% of the medical students liked PBL sessions and it was observed that PBL helped them in building up communication skills, interpersonal relationship and problem solving capacity to great extent.\(^6\)

Maximum students expressed that PBL leads to better understanding of subject and invokes self learning habit among students. Probably this was due to the fact that PBL scenarios in RMC are designed by the trained faculty members of the college who have full command on their respective subjects/topics. This methodology not only helps the students to understand the subject in depth but the process of PBL conductance also inculcates self learning practice among students as they have to formulate their learning objectives themselves after receiving PBL scenarios, solve the problem themselves by means of internet, consulting various books etc. and actively participate in group discussions. A similar study by Alam AY et al also concluded that PBL along with LBL will promote independent and creative learning among medical students.\(^5\)

In this study, 31.3% students claimed that facilitators were well trained for conducting PBL sessions while 51% respondents found lecturers/demonstrators in RMC to be highly skilled. Facilitators committed for PBL sessions have undergone through various workshops to polish their skills for PBL facilitation. Moreover, facilitators in PBL are not supposed to teach the students. Rather they have just to observe their performance and check them from deviation of their right track that is why students might not be able to judge the capability of their facilitators. An international study to assess the role of facilitators in PBL tutorials showed that facilitators must regularly review PBL tutorial processes and group dynamics with in tutorial settings.\(^7\)

In current study, only 44.95% students were found to be satisfied with the availability of facilities for PBL sessions. As RMC has a well established library that is equipped with all the latest editions of all the medical subjects, the reason might be the provision of limited computers in the college due to which students are facing difficulty in finding solutions to their PBL scenarios. However, degree of satisfaction among students of 2\(^{nd}\) year and 3\(^{rd}\) year regarding availability of facilities for PBL sessions did not seem to be statistically significant (P>0.50). This was probably due to provision of the facilities to the students by the administration of the same college and we would be able to see the significance difference if comparison regarding availability of facilities for PBL sessions between two or more different institutions.

In our study, 75.2% students agreed with the significance of the subjects’ integration in the clarification of concepts in medical studies. Likewise, another study revealed that integrated curriculum promoted better understanding of health sciences pertaining to common diseases and majority of the respondents (77.61%) expressed that PBL in modules assisted to great extent in interpreting the cases in their annual examinations.\(^8\)
CONCLUSION & RECOMMENDATIONS
Both of the teaching methodologies we studied are indispensable for better understanding and more clarification of concepts pertaining to health sciences as both have their own deficient areas and together these methodologies synchronize each other. There is need to improve the facilities for better performance of the students in PBL, especially the provision of computers and internet facility in hostels as well as in college.

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REFERENCES

Annexure

Comparison of Teaching Methods (PBL versus Traditional teaching) as perceived by the Students of Rawalpindi Medical College

Questionnaire
1. Name of the student (optional)
2. Academic year of MBBS students
   □ 2nd year □ 3rd year
3. Gender □ Male □ Female
4. Category of the student □ Day scholar □ Host elite
5. Have you attended any session of PBL?
   □ Yes □ No □ Don’t know
6. Which of the following teaching methods is liked by you?
   a. Lecture Based learning      b. Problem Based Learning
   c. Both a & b                  d. Any other
7. Which of the following teaching methods in your opinion leads to the better understanding of subject?
   a. Lecture Based learning  
   b. Problem Based Learning  
   c. Both a & b  
   d. Any other
8. Do you think that the habit of self learning is inculcated by:
   a. Lecture Based learning  
   b. Problem Based Learning  
   c. Both a & b  
   d. Any other
9. Which of the following teaching methods in your opinion leads to better analytical approach
towards problem?
   a. Lecture Based learning  
   b. Problem Based Learning  
   c. Both a & b  
   d. Any other
10. Do you think that integration of all the subjects is beneficial for better concepts?
   □ Yes  □ No  □ Don’t know
11. Which of the following teaching methods in your opinion leads to more clarification of concepts in medical studies?
   a. Lecture Based learning  
   b. Problem Based Learning  
   c. Both a & b  
   d. Any other
12. Are you satisfied with the availability of resources (library, internet, stationary, separate room etc.)
   by the college administration for conductance of PBL sessions?
   □ Yes  □ No  □ Don’t know
13. If No, what other facilities must be added for better performance of the students?
14. Do you think that sufficient syllabus as per university requirement is covered through PBL
   sessions?
   □ Yes  □ No  □ Don’t know
15. Do you think that facilitators are well trained to do PBL sessions?
   □ Yes  □ No  □ Don’t know
16. Do you think that lecturers / demonstrators are well trained in traditional teachings / PBL to
deliver lectures?
   □ Yes  □ No  □ Don’t know
17. Are you satisfied with the present scenario where lectures are concurrent / parallel with PBL?
   □ Yes  □ No  □ Don’t know
18. If Yes, why?
19. If No, what would be your recommendation for improvement of the current scenario?