ORIGINAL ARTICLE

PROBLEMS OF GROUP DYNAMICS IN PROBLEM BASED LEARNING SESSIONS

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Background: Beneficial effects of Problem Based Learning (PBL) in medical education are often emphasized. However, there is another side of the coin. This study was conducted to find out frequency of PBL group problems in our setup and the influence of these problems on students' learning. We also compared the perception of students and tutors as regard to frequency and level of hindrance caused by these problems in PBL sessions. **Methods:** This cross sectional study was conducted at Foundation University Medical College, Islamabad. 100 students of 3rd year MBBS of 2011 and their 17 PBL tutors were asked to fill a questionnaire. They were asked to rank the factors according to frequency (perceived frequency) and according to the level of hindrance to learning these factors are causing. All data was entered and analysed using SPSS-12. **Results:** Students ranked "Dominant student" as the most important problem and "Psychosocial factors" as the least important problem. Tutors ranked "Quiet student" as the most important problem and "Personality clash" as the least important factor. Student's ranked "Dominant student" as the problem causes most hindrance and "Quiet student" as the problem causing least hindrance. Tutors ranked "Lack of commitment" as the problem causing most hindrance and "Personality clash" as the problem causing least hindrance. There was good agreement between the students and the tutors on all the factors regarding important problem except "Lateness, absenteeism" (p=0.04) and "Personality clash" (p=0.001).Similarly there was good agreement between the students and the tutors on all the factors regarding hindrance except "Lack of commitment" (p= 0.015) and "Personality clash" (p=0.023). **Conclusion:** The present study showed that from both students' and tutors' perspectives, the ranking of most important problems that can disturb PBL session function and the level of hindrance they cause were statistically similar for majority of the problems.

Keywords: Problem-based learning, tutorial group problems, teachers'/students' perceptions, group's dysfunction, problems' frequency/importance

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INTRODUCTION

The Problem Based Learning (PBL) is an effective small group educational tool, which has been increasingly used in medical schools all over Pakistan during last decade.[1] This tool promotes basic principle of adult learning i.e. self-directed lifelong learning[2] problem analysis and decision making towards its solution in medical students.[3]

Despite its many advantages, there are multiple problems associated with this type of learning. To get maximum benefits learners must work together in a group—it ''does not result from simply meeting in a group''.[4] Dysfunctional groups may severely hamper the students' self-efficacy and create anxiety that hinders learning.[5] Therefore we must know the occurrence of PBL group problems as perceived by tutors and students, their' perceptions of the influence of these problems on their learning, and describe strategies that tutors and students use to manage common problems.

This issue is vital in medical schools of our country, because this tool requires a lot of resources for its proper effectiveness which we are lacking in our country. Sufficient research in this context does not exist in our country hence indicating a growing need to look into this aspect in order to generate supportive evidence for future practices. The results of this study will sensitize our Medical educators about different problems associated with PBL, with the aim of improving the quality of learning outcomes for all students. They will need further research on individual dysfunctional behaviour that clarifies causal mechanisms, and specifies and evaluates the most effective strategies for helping students to form and maintain effective groups.

MATERIAL AND METHODS

This cross-sectional study was conducted at Foundation University Medical College, Islamabad. The target population was the 3rd year MBBS students of 2011 and tutors who have already undergone through the process of PBL during their 1st and 2nd year of MBBS since 2009. 100 students of 3rd year MBBS of 2011 and their 17 PBL tutors were asked to fill a questionnaire. This questionnaire contained following twelve problems, derived from those previously reported in the literature.[6]

1. Quiet student—very quiet, rarely contributes to discussion, shy.
2. Lateness, absenteeism.

3. Dominant student—talks a lot, tries to control the direction of discussion, and prevents others from contributing.
4. Psychosocial—student disparages psychosocial aspects of a case.
5. Tutorial process is disorganized, haphazard or 'sloppy'.
6. Lack of commitment—student not making an effort to participate properly, implying that PBL is not useful.
7. Group or students express frustration with the tutor's lack of content-expertise.
8. Personality clash—student not relating well to another student.
9. Group engages in superficial study of the problem.
10. Group 'shortcuts' the tutorial process by combining sessions (e.g., session 2 and 3).
11. Group rushes through tutorials to get the 'diagnosis' or finish early.
12. Bullying—student(s) teasing or 'picking on' others, making others the subject of jokes.

They were asked to rank these according to frequency from 1–12 where 1=Most frequent 12= Least frequent. They were also asked to rank these factors from 1–5 according to the level of hindrance to learning these factors are causing. 1=Causing most hindrance 5=Causing least hindrance. Hence the lower the score the more frequent or more hindrance it causes.

All data was entered and analysed using SPSS 12. The scores for each problem were presented as mean±standard deviation. The mean scores between students and tutors for each problem were compared using the independent sample *t*-test. A $p<0.05$ was considered statistically significant.

RESULTS

When the students were asked to rank different problems according to frequency (Figure-1); they ranked "Dominant student" as the most common problem in 30%, "Quiet student" in 18%, "Lateness" in 17% and "Lack of commitment" in 16%. Uncommon factors were "Rushes through tutorials" (5%), "Personality clash" (3%), "Tutorial process is disorganized" (3%), "Psychosocial" (2%), "Express frustration" (2%), "Superficial study" (2%), "Bullying" (2%) and "Shortcuts tutorial process" in none.

When the tutors were asked to rank different problems according to frequency (Figure-1); they ranked "Quiet student" and "Lack of commitment" as the most common problem 23.5% each, followed by "Lateness" in 11.8%. Uncommon factors were "Dominant student", "Tutorial process is disorganized", "Express frustration" "Rushes through tutorials", "Personality clash", "Superficial study" and "Bullying" all in 5.9% and "Psychosocial" and "Shortcuts tutorial process" in none (0%).

When the students were asked to rank different problems according to the level of hindrance they cause (Figure 2); they ranked "Dominant student" as the most severe hindrance in 35%, and "Lack of commitment" in 30%. This was followed by "Lateness", "Rushes through tutorials" and "Express frustration" in 26%, 23% and 21% respectively. Uncommon factors included "Superficial study" (19%), "Bullying" (19%) "Personality clash" (17%), "Tutorial process is disorganized" (17%), "Shortcuts tutorial process" (14%), "Quiet student" (13%) and "Psychosocial" (11%).

When the tutors were asked to rank different problems according to the level of hindrance they cause (Figure-2); they ranked "Lack of commitment" in 58.8%, "Superficial study" in 35.3% and "Lateness" in 29.4%. This was followed by Bullying" (17.6%),"Tutorial process is disorganized" (17.6%), "Dominant student" (17.6%), "Rushes through tutorials" (11.8%), "Shortcuts tutorial process" (11.8%), "Quiet student" (11.8%), "Psychosocial (5.9%), "Express frustration" (5.9%) and Personality clash in none.

Table-1 presents the descriptive statistic and *t*-test of students and tutors for the score of frequency of the 12 problems. There was good agreement between the students and the tutors on all the factors except "Lateness, absenteeism" ($p=0.04$) and "Personality clash" ($p=0.001$). Students ranked "Dominant student" as the most important problem with a score of 3.82±3.1 and "Psychosocial factors" as the least important with a mean score of 8.25±3.2. On the other hand tutors ranked "Quiet student" as the most frequent problem with a score of 4.41±3.65 and "Personality clash" as the least important with a mean score of 9.76±2.3.

Table-2 presents the descriptive statistic and *t*-test of students and tutors for the score of level of hindrance caused by the 12 factors. There was good agreement between the students and the tutors on all the factors except "Lack of commitment" ($p=0.015$) and "Personality clash" ($p=0.023$). Student's ranked "Dominant student" as the problem causes most hindrance with a score of 2.79±1.45 and "Quiet student" as the problem causing least hindrance with a mean score of 3.54±1.35. On the other hand tutors ranked "Lack of commitment" as the problem causing most hindrance with a score of 2.78±1.52 and "Personality clash" as the problem causing least hindrance with a mean score of 3.76±1.20.

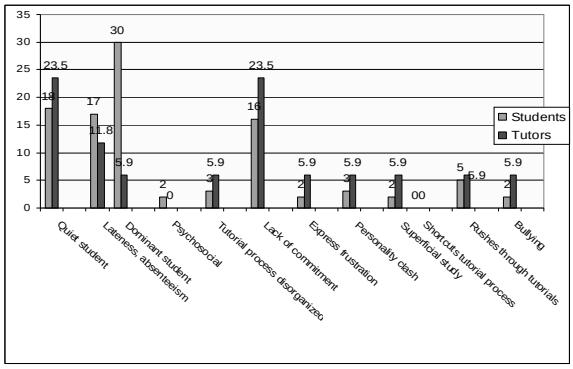

Figure-1: Ranking problems according to frequency (Percent of students and tutors that ranked the problem as the most common one)

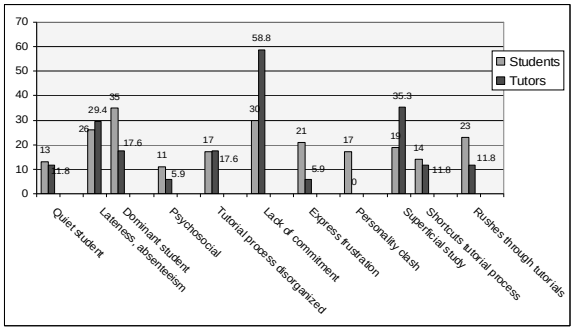

Figure-2: Ranking problems according to level of hindrance (Percent of students and tutors that ranked the problem as causing the most hindrance)

Table-1: Comparison of mean score of frequency of problems using independent samples *t*-test.

Problems	Category	N	Mean♣	SD	Sig. (*p* value)φ
Quiet student	Students	100	6.07	4.13	0.124
	Tutors	17	4.41	3.65	
Lateness, absenteeism	Students	100	6.78	3.94	0.04*
	Tutors	17	4.7	3.42	
Dominant student	Students	100	3.82	3.1	0.177
	Tutors	17	4.94	3.0	
Psychosocial	Students	100	8.25	3.2	0.931
	Tutors	17	8.17	3.3	
Tutorial process disorganized	Students	100	6.62	3.1	0.701
	Tutors	17	6.94	3.0	
Lack of commitment	Students	100	4.19	2.8	0.335
	Tutors	17	4.94	3.5	
Express frustration	Students	100	7.24	2.9	0.551
	Tutors	17	7.70	3.3	
Personality clash	Students	100	7.17	3.0	0.001*
	Tutors	17	9.76	2.3	
Superficial study	Students	100	6.68	2.8	0.399
	Tutors	17	6.05	2.2	
Shortcuts tutorial process	Students	100	6.49	2.8	0.249
	Tutors	17	5.64	2.0	
Rushes through tutorials	Students	100	7.13	3.0	0.433
	Tutors	17	7.76	3.4	
Bullying	Students	100	7.52	3.4	0.803
	Tutors	17	7.29	3.7	

♣The lower the mean score the more frequent the problem, φ Calculated using independent sample *t*-test, *Statistically significant

Table-2: Comparison of mean score of level of hindrance using independent samples *t*-test.

Problems	Category	N	Mean♣	SD	Sig. (*p* value) φ
Quiet student	Students	100	3.54	1.35	0.639
	Tutors	17	3.70	1.31	
Lateness, absenteeism	Students	100	2.92	1.46	0.177
	Tutors	17	2.41	1.17	
Dominant student	Students	100	2.79	1.45	0.228
	Tutors	17	2.94	1.19	
Psychosocial	Students	100	3.30	1.23	0.726
	Tutors	17	3.41	1.06	
Tutorial process disorganized	Students	100	3.04	1.31	0.340
	Tutors	17	2.70	1.40	
Lack of commitment	Students	100	2.78	1.52	0.015*
	Tutors	17	1.82	1.18	
Express frustration	Students	100	2.82	1.28	0.154
	Tutors	17	3.29	1.10	
Personality clash	Students	100	2.99	1.29	0.023*
	Tutors	17	3.76	1.20	
Superficial study	Students	100	2.58	1.20	0.281
	Tutors	17	2.23	1.25	
Shortcuts tutorial process	Students	100	3.12	1.35	0.065
	Tutors	17	2.47	1.12	
Rushes through tutorials	Students	100	2.76	1.35	0.505
	Tutors	17	2.52	1.00	
Bullying	Students	100	3.29	1.43	0.271
	Tutors	17	3.70	1.44	

♣The lower the mean score the more hindrance it causes, φ Calculated using independent sample *t*-test, *Statistically significant

DISCUSSION

Problem-based learning is a widely used tool of information transfer in medical education utilizing, small-group discussions of clinical cases as the stimulus for learning. Not only does it promotes active participation, reflection and self-directed learning but also the development of interpersonal and communication skills, understanding of concepts and reinforcement of knowledge. Therefore such learners are better in decision making than as individual, and are capable of taking of more complex tasks. The job of facilitator in PBL is to observe group dynamics regarding participation, group decision-making, task accomplishment, group relationships, group atmosphere, norms, membership & feelings. PBL group function relies heavily on several factors, one of which is group dynamics. One study revealed a generally low awareness of effective group dynamics and the absence of a system for reflection that could help groups scrutinize and learn from their own behavior.[7]

PBL tutors at FUMC are recruited from departments and clinical schools within the Faculty of Medicine and vary widely in their specialty and/or discipline backgrounds. Tutors receive training in PBL group facilitation, and attend case-review meetings during a block. PBL groups change tutors in each block thus giving them an experience of nine

different tutors in the first two years. Students receive an orientation to PBL at the beginning of the Medical Program, and participate in a group performance review during Block 1.

The effectiveness of problem-based learning approaches has been evaluated in a number of studies over the past 20 years.[8] Many faculty members and also students in PBL have experienced dysfunctional tutorial groups.[9] Our study reports the frequency of occurrence of PBL group problems and the hindrances they cause in learning as perceived by our facilitators and students.

When the students were asked to grade different problems; they graded "Dominant student" as the most common problem in 30%, "Quiet student" in 18%. When the tutors were asked to grade different problems; they graded "Quiet student" and "Lack of commitment" as the most common problem in 23%.

When the students were asked to grade different problems according to the level of hindrance they cause; they graded "Dominant student" as the most common hindrance in 35%, and "Lack of commitment" in 30%. When the tutors were asked to rank different problems according to the level of hindrance they cause (Figure-2); they ranked "Lack of commitment" in 58.8%, "Superficial study" in 35.3% and "Lateness" in 29.4%.

There was good agreement between the students and the tutors on all the factors except "Lateness, absenteeism" (p=0.04) and "Personality clash" (p=0.001). Students ranked "Dominant student" as the most important problem with a score of 3.82±3.1 and "Psychosocial factors" as the least important with a mean score of 8.25±3.2. On the other hand tutors ranked "Quiet student" as the most important problem with a score of 4.41±3.65 and "Personality clash" as the least important with a mean score of 9.76±2.3. There was good agreement between the students and the tutors on all the factors except "Lack of commitment" (p=0.015) and "Personality clash" (p=0.023). Student's ranked "Dominant student" as the problem causes most hindrance with a score of 3.49±1.38 and "Quiet student" as the problem causing least hindrance with a mean score of 2.46±1.34. On contrarily tutors ranked "Lack of commitment" as the problem causing most hindrance with a score of 4.17±1.18 and "Personality clash" as the problem causing least hindrance with a mean score of 2.23±1.20.

However it is noteworthy that common group problems reported by other researchers were also ranked highly by our students and tutors.

Both tutors and students rated very quiet students as a common problem but we cannot be sure whether certain students' silence was misunderstood as dysfunctional behaviour. Some main issues remaining to be studied are the possible causes of individual quietness and dominant behaviour and the degree of individual quietness as dysfunctional.

One study reports PBL group problems perceived by both facilitators and students in their educational programme. The three most common group problems in Years 1 and 2, as rated by tutors and students, were (1) a very quiet student, (2) a dominant student, and (3) one or more students arriving late or not turning up for tutorials.

Similarly a group rushing through tutorials to get the 'diagnoses or finish early has been identified as a common problem elsewhere. It is not a wide spread common problem in our set up, perhaps because all groups are encouraged by their facilitators to follow a three-stage tutorial process, which is formulated to assist the development of clinical reasoning and a deep understanding of the case. In one study, as rated by students, very quiet, late or absent colleagues have the least harmful effect on their learning. Students perceived that their learning was affected the most when their group dynamic was disorganised or haphazard, and/or engagement with the case was superficial.

In that study, students were of the opinion that their learning was adversely affected by a dominant group member. Other reasons of dysfunctional behaviour that may hamper the learning was that one or more students not making an effort to participate properly, or implying that PBL is not useful.

Another study confirmed our findings as group problems that are prevalent in their medical education system include dominant behaviour and quietness. The individual quietness may mask 'sponging off' others, but may also reflect an individual's preference for a certain type of learning or interacting in a group dynamics. Cynicism or apathy about PBL has been displayed by individuals[10] and groups.[11] Absenteeism or lateness is also mentioned[12], and may occur partly as a result of scepticism about PBL. Some group problems could be generic (e.g., dominant students), while others may be topic-specific (e.g., exclusive group focus on biological issues), perhaps as a result of student background characteristics.

In contrast to our study, another research[13] De Grave *et al*. (2001) showed that unequal participation, lack of interaction and lack of elaboration were perceived by the students as the main factors affecting adversely PBL functioning.

CONCLUSION

We experienced problems while using PBL as a teaching tool in our institution as perceived by our

Facilitators and students. Students ranked Dominant student, Quiet student, Lateness and Lack of commitment as common problems. Facilitators ranked Quiet student and Lack of commitment as the most common problems. Students ranked Dominant student as the most severe hindrance followed by lack of commitment. Facilitators ranked Lack of commitment and lateness as the most severe hindrance factors.

We must look at perceptions of students from all years. We need further research on this issue that clarifies causal mechanisms, and specifies and evaluates the most effective strategies to gain maximum benefits from PBL

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