



Small group effectiveness during pharmacology learning sessions in a Nepalese medical school

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RESEARCH

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Abstract

Background

Small group learning sessions are used in pharmacology at the KIST Medical College, Lalitpur, Nepal. Feedback about student behaviours that enhance and hinder small group effectiveness was obtained. This will help us improve the small group sessions and will also be useful to educators using small groups in other medical schools.

Method

The small groups were self-managing with a group leader, time-keeper, recorder and presenter. Small group effectiveness was measured using the Tutorial Group Effectiveness Instrument (TGEI) developed by Singaram and co-authors. The instrument was administered in June 2010 and key findings obtained were shared with students and facilitators. The instrument was administered again in August. The mean cognitive, motivational, demotivational and overall scores were compared among different categories of respondents in June and August. Scores were also compared between June and August 2010.

Results

A total of 89 students participated in the study in June and 88 in August 2010. In June, females rated overall group

productivity higher compared to males. The cognitive and motivational scores were higher in August 2010 while the demotivational score was lower.

Conclusion

The small group effectiveness was higher in August after the educational intervention which utilised feedback about problems observed, theoretical considerations of effective small groups and how this information can be applied in practice.

Key Words

Nepal, pharmacology, small group, tutorial group

What this study adds:

1. The study did not show significant differences in small group effectiveness according to demographic characteristics of respondents. Other studies in the literature have shown differences. The small sample size of our study necessitates further studies to explore this issue.
2. The cognitive and motivational scores increased and demotivational scores decreased after the educational intervention. The intervention could be regarded as effective in improving group dynamics. The impact on small group dynamics during future practical sessions should be considered.
3. The small sample size can make it difficult to generalise our findings but small group effectiveness can be improved and more appropriate behaviour in small groups taught to students.
4. The instrument can be used to obtain feedback on small group effectiveness during educational sessions.

Background

Group work plays an important role in problem-based learning (PBL).¹ Ensuring small groups function effectively is critical to the success of learning using this method. In diverse student populations, factors such as gender, language, prior educational training experiences, and age are important considerations when assessing the small group's effectiveness.²

At the University of KwaZulu Natal the perception of students about the effectiveness of the processes and



content of the PBL tutorials was studied.³ The average scores for the items measured varied between 3.3 and 3.8 (value 1 indicated negative regard and 5 indicated positive regard). Among process measures, approximately two-thirds of students felt that learning in a group was not frustrating or stressful and they enjoyed learning to work with students from different social and cultural backgrounds. As regards content measures, 80% of the students felt that they learned to work successfully with students from different social and cultural groups and 77% felt that they benefited from the input of other group members.

KIST Medical College (KISTMC) in Lalitpur District, Nepal admitted its first intake of students to the undergraduate medical (MBBS) course in November 2008. Solving therapeutic problems (either real or paper and pencil cases), prescribing appropriate drugs for a disease/s and delivering drug- and disease-related information meaningfully to patients are key 'transferable skills' in pharmacology.⁴

The Department of Pharmacology teaches students within this undergraduate programme to use essential medicines rationally. The department conducts pharmacology PBL sessions in small groups.⁵ The 100 students of the 2009 intake were subdivided into ten small groups of 10 students each.⁶ For the new 2010 intake each small group had 10 students. The small group is the basic unit in which students work together to solve problems and each group is usually constant for a year. The session is conducted for five small groups at a time.

Cultural and linguistic differences between students can lead to less active participation by some students, which can lead to dysfunctional tutorial (small) groups.⁷ The first two intakes at KISTMC consisted of only Nepalese students. Nepal, though a small country, is very diverse with many languages and ethnic/caste groups though nearly all can understand, speak and write Nepali. PBL and learning in small groups are not common in Nepal. Small group dynamics and effectiveness have not been studied.

Factors influencing small group effectiveness and productivity are a matter of intense study. Recently Singaram and co-workers developed the tutorial group effectiveness instrument (TGEI) to measure tutorial group effectiveness and the reliability and validity of the instrument have been studied by the authors.¹ The instrument measures participants' perception about the effectiveness of their small groups. We used the instrument to obtain information on small group effectiveness during

pharmacology learning sessions before and after an educational intervention.

Method

The study was approved by the Institutional Research Committee of KIST Medical College.

Written informed consent was obtained from VS Singaram, the first author of the manuscript and the instrument.¹ Three sets of factors: cognitive, motivational and demotivational were analysed. Students by June 2010 had been involved in small group pharmacology sessions for five months. Written informed consent was obtained from all participants and it was stressed that participation in the study was voluntary.

The results were analysed and shared with students. The process of working in small groups and characteristics of effective small groups was discussed. Help with solving problems at an individual level was provided. The findings were also shared with facilitators of the sessions. Then the instrument was administered again to the same batch of students (2009 intake) in the third week of August 2010. Scores were compared among different subgroups of respondents during June and August 2010. The scores in June and August 2010 were also compared and differences, if any, noted.

Gender and whether students were scholarship or self-financing were noted. Previous exposure to small group learning at school was recorded. Free text comments were invited in June 2010 under the headings 'two things I like about my pharmacology small group' and 'two things which can be improved'. A suggestion for further improving the small group session was obtained. We did not invite free text comments in August after the intervention as we were of the opinion that the comments would be similar to those mentioned in June 2010. Students were asked to respond to each item (19 items in total) in the instrument on a 5-point Likert scale ranging from 1 – 'strongly disagree' to 5 – 'strongly agree'. Participants were also asked to rate the overall productivity of their tutorial group on a scale from 1 to 5, i.e. 1 – insufficient, 2 – reasonable, 3 – sufficient, 4 – good, and 5 – excellent. The mean score in different subcategories were compared among male and female students, scholarship and self-financing students and students with and without previous exposure to small groups both in June and August 2010. Statistical Package for Social Sciences (SPSS) version 13.0 for Windows was used for data analysis. Independent samples t-test was used for comparison. A p value less than 0.05 was taken as statistically significant.



Results

A total of 89 students participated in the study in June 2010 and 88 in August 2010. As the 2009 intake had 100 students the response rate was 89% in June and 88% in August. Table 1 shows the demographic characteristics of respondents. The number of males and females was approximately equal. The number of self-financing students was greater than scholarship students. The college admits 10 scholarship students in every intake. Only 14 students were exposed to small group learning in school.

Table 1: Demographic characteristics of respondents in June and August 2010

Characteristic		June 2010* Number (percentage) n =89	August 2010* Number (percentage) n =88
Gender	Male	43 (48.3)	42 (47.70)
	Female	43 (48.3)	40 (45.5)
Financing	Self-financing	76 (85.40)	70 (79.5)
	Scholarship	10 (11.2)	10 (11.4)
Exposure to small group learning	Yes	14 (15.7)	14 (15.9)
	No	64 (71.9)	64 (72.7)

* The numbers may not add up to 89 or 88 as certain respondents did not fill all the required information

Table 2: Median and subcategory scores according to demographic characteristics of respondents in June 2010

	Overall (Max score 5)	Cognitive (Max score 35)
Gender		
Male	2.86	23.9
Female	3.45	23.27
P value	0.036	0.467
Financing		
Self-financing	3.13	23.67
Scholarship	3.25	22.83
P value	0.766	0.495
Exposure		
Yes	3.21	22.43
No	3.11	23.7
P value	0.790	0.283

	Motivational (Max score 35)	Demotivational (Max score 25)
Gender	26.93	14.43
Male	26.95	14.25
Female	0.982	0.813
P value		
Financing	26.96	14.54
Self-financing	26.83	12.75
Scholarship	0.925	0.092
P value		
Exposure	26.57	14.43
Yes	26.94	14.34
No	0.771	0.930
P value		

Table 2 shows the categories of scores according to respondents' demographic characteristics in June 2010. Females rated the overall group productivity higher. There was no significant difference in subcategory scores according to demographic characteristics. Table 3 shows different categories of scores according to respondents' demographic characteristics in August 2010. The cognitive category score was higher among scholarship students. Table 4 shows comparison of scores in June and August 2010. The cognitive and motivational scores were higher in August 2010 while the demotivational score was lower.

Table 3: Median and subcategory scores according to demographic characteristics of respondents in August 2010

	Overall (Max score 5)	Cognitive (Max score 35)
Gender		
Male	2.86	25.07
Female	3.19	24.51
P value	0.407	0.475
Financing		
Self-financing	3.08	24.5
Scholarship	2.90	27
P value	0.767	0.040
Exposure		
Yes	3.37	24.95
No	3.02	25
P value	0.454	0.950



	Motivational (Max score 35)	Demotivational (Max score 25)
Gender	27.93	14.42
Male	27.70	13.14
Female	0.831	0.061
P value		
Financing	27.74	13.66
Self-financing	29.1	14.9
Scholarship	0.192	0.245
P value		
Exposure	28.53	12.58
Yes	27.92	14.15
No	0.467	0.055
P value		

Table 4: Comparison of overall and subcategory scores in June and August 2010

Scores	June 2010	August 2010	P value
Overall	3	3.21	0.361
Cognitive	13.8	23.57	<0.001
Motivational	24.8	27.02	<0.001
Demotivational	27.94	14.14	<0.001

Participants were also asked two things they liked about their pharmacology small group in June 2010. Thirty-five respondents (39.3%) stated their group members were cooperative, 24 (26.9%) stated they learned from the group discussion, 11 (12.3%) said the group work was effective while 9 (10.1%) were of the opinion group work motivated self-study. Regarding two things about their group which could be improved 42 respondents (47.2%) stated problems with time management, 14 (15.73%) said that not all group members participated in the activities and deliberations, while 7 each (7.86%) stated not all members were interested in role plays and the group had problems with division of tasks. Students were asked for suggestions to further improve pharmacology small group sessions, common ones were more resources in the room [11 respondents (12.35%)], more time for the session [10 (11.2%)], rotation of group members between sessions [9 (10.1%)], and having smaller groups [8 (8.9%)].

Discussion

The response rate of students to the instrument was good. In June 2010 the overall group effectiveness score was

significantly higher among females. In August 2010 the cognitive subscores were higher among scholarship students. The cognitive and motivational scores increased and the demotivational score decreased in August 2010 compared to June 2010.

The instrument developed by Singaram et al., highlights two theoretical perspectives of group learning. The first is a cognitive perspective and the second a motivational one.¹ The motivational domain indicates the extent to which students motivate, show concern, and help each other learn. The demotivational domain indicates the extent to which non-participation of students affects group dynamics. This may have a negative effect on student learning in small groups. The cognitive domain is based on interactions and explanations between peers, which enhances learning. We are unable to explain why female students had a higher overall score for overall group productivity in June 2010. This was only one statement asking them to rate their overall group productivity. In a previous study differences in scores according to demographic characteristics were not seen. The scholarship students are stronger academically than the self-financing ones. We wanted to study whether the scholarship students might have significantly higher scores on TGEI compared to self-financing students. The cognitive subscores were higher among scholarship students in August 2010. Scholarship students usually come from more humble financial backgrounds and are more motivated and disciplined and perform better academically. At present we are not able to explain the implications of this finding which may have to be studied in future. Also the number of scholarship students was low.

The first seven items in the instrument (TGEI) measure cognitive aspects. In June 2010 the scores obtained for statement 4 about students asking critical questions to other groups or other students was low. Cross-questioning was not very frequent in our small group sessions due to various reasons including shortage of time. The score improved in August 2010. Items 13 and 14 measured motivational aspects of small group interaction. Our scores were higher than those reported by Singaram and co-workers and further increased in August 2010. Statements from 15 to 19 look at demotivational aspects of small group interaction. Our demotivational item scores were either lower than or comparable to those reported in the South African study.³ To ensure anonymity of participants and to avoid singling out particular small groups we did not identify individual participants or groups. The comments and suggestions obtained were with regard to the intake as a whole. The feedback and educational intervention were also directed towards the whole intake. We are happy to note



that student perceptions about small group effectiveness significantly increased in August 2010.

Cultural, linguistic and gender differences were identified among participants. We are not sure these differences significantly impact learning. The practical session starts with an introduction of students and facilitators and students become familiar with various resources available in the practical room. The language used during group work and presentations is a mixture of Nepali and English with which all participants are familiar. Each group has a mix of males and females. Students usually tackle problems in group dynamics on their own and if needed facilitators provide support. Students are given the option to change their group in case of personal or other problems but no one has taken the option until now.

The study had limitations. It was carried out only among a single intake of students in a single medical school in Nepal. TGEI reliability and validity has been studied by the authors of the instrument. As it is a new instrument we have not come across other studies using the instrument. Information was collected for the group as a whole and information about dynamics of specific small groups was not collected. The observed changes may have been due to sensitisation to the instrument rather than the effect of the educational intervention after the first administration in June 2010. More studies among other batches and in other medical schools are required before the results can be generalised. We plan to provide feedback about dynamics of specific small groups and guidelines to tackle problems noted during future sessions. Free text comments were not obtained in August and it is possible that we may have missed a certain amount of information which could have been significant.

Conclusion

The study looked at small group effectiveness during pharmacology sessions in a Nepalese medical school. Group effectiveness improved in August 2010 after an educational intervention analysing problems observed, the theoretical aspects of small group dynamics and how it can be applied practically. PBL is slowly becoming an important method of learning in medical schools in Nepal and similar studies are required in other schools.

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CONFLICTS OF INTEREST

The authors declare that they have no competing interests

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