DOI: 10.7860/JCDR/2015/12854.6154

Original Article

Community Medicine Section

Assessment of a Group Activity Based Educational Method to Teach Research Methodology to Undergraduate Medical Students of a Rural Medical College in Gujarat, India

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ABSTRACT

Context: Early undergraduate exposure to research helps in producing physicians who are better equipped to meet their professional needs especially the analytical skills.

Aim: To assess the effectiveness and acceptability of small group method in teaching research methodology.

Setting: Sixth semester medical undergraduates (III MBBS-part1) of a self-financed rural medical college.

Materials and Methods: The workshop was of two full days duration consisting of daily two sessions by faculty for 30 minutes, followed by group activity of about four hours and presentation by students at the end of the day. A simple 8 steps approach was used. These steps are Identify a Problem, Refine the Problem, Determine a Solution, Frame the Question, Develop a Protocol, Take Action, Write the Report and Share your Experience. A Pre-test and post-test assessment was carried out using a questionnaire followed by anonymous feedback at the end of the workshop. The responses were evaluated by blinded evaluator.

Results: There were 95 (94.8%) valid responses out of the 99 students, who attended the workshop. The mean Pre-test and post-test scores were 4.21 and 10.37 respectively and the differences were found to be significant using Wilcoxon Sign Rank test ($p<0.001$). The median feedback score regarding relevance, skill learning, quality of facilitation, gain in knowledge was four and that of experience of group learning was 5 on a Likert scale of 1-5.There were no significant differences between male and female students in terms of Pre-test, post-test scores and overall gain in scores.

Conclusion: Participatory research methodology workshop can play a significant role in teaching research to undergraduate students in an interesting manner. However, the long term effect of such workshops needs to be evaluated.

Keywords: Medical education, Participatory learning, Problem Solving for Better Health, Small group teaching, Undergraduate Research training

INTRODUCTION

A physician is expected to provide most rational treatment choices to the patients. This calls on the physician to regularly update his/her medical knowledge. Given the vast amount of information available making a rational choice will require considerable amount of analytical skills on part of the physician. Also, there is increasing demand on physicians to be part of research teams. Thus, a fairly intense training in research methodology is required for undergraduates to meet their research and analytical needs. Early undergraduate exposure to research helps in producing physicians who are better equipped to meet their professional needs especially the analytical skills. Also, the trainees who have an early research exposure are more likely to be involved with research in their career [1,2]. The Medical Council of India (MCI) also emphasizes and prescribes focus on self-learning methods including group based activities with hands on experience [3]. The World Federation of Medical Education also encourages the involvement of medical students in activities which promote research [4]. Several methods have been adopted globally to provide this early research exposure to the undergraduates [5-7]. Indian Council for Medical Research- Short Term Studentship (STS) and Kishore Vaigyanik Protsahan Yojana (KVPY) an on-going National Program of Fellowships in Basic Sciences, initiated and funded by the Department of Science and Technology, Government of India promote research among undergraduate medicos, but these are usually limited to a very small proportion of students [8-10]. Research methodology workshops and research promotion activities involving the entire class are arranged in very few institutes in India [11-13]. Department of Community Medicine has been conducting a research methodology workshop for MBBS III, part 1 (VI semester) based on Problem Solving for Better Health (PSBH) approach for last six years [14]. Current study was conducted to assess the effectiveness of a group activity based educational method and perceptions of students about teaching of research methodology.

MATERIALS AND METHODS

The study was carried out during a research methodology workshop for III MBBS part1 (VI semester, 99) students of Pramukhswami Medical College, Karamsad, Gujarat, in May 2013. The students were exposed to research methodology by using simple 8 steps approach. These steps are Identify a Problem, Refine the Problem, Determine a Solution, Frame the Question, Develop a Protocol, Take Action, Write the Report and Share your Experience. These eight steps are based Dreyfus Health Foundations' PSBH module [15,16]. The workshop consisted of daily two sessions by faculty of about 30 minutes, followed by group activity of about four hours and presentation by students at the end of the day lasting for around two hours. The faculty sessions were on introduction to workshop,

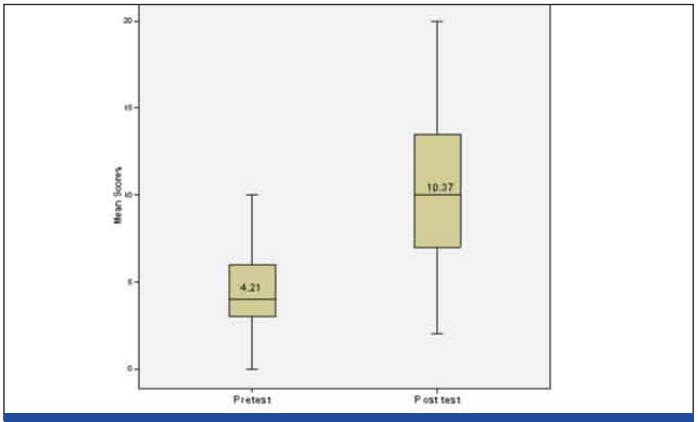
asking the right question, literature search and protocol writing. All other sessions including clinics were cancelled and students were posted at department of Community Medicine for two days. It was a mandatory workshop and carried weightage in internal marks sent to University for the final exam. Students were divided into groups of 10 and were assigned a faculty and resident as facilitators. At the end of workshop students are expected to present a draft of research proposal. The students then further refined their proposal, got it cleared by institutional ethics committee, carried out the project and submitted a report within 6 months. The projects were carried out in groups of five students. Some projects carried out by students were:

1. Effect of health education on menstrual hygiene among school girls.
2. Knowledge, attitude, practice among nurses regarding breast cancer.
3. Soft drink consumption patterns among medical students.
4. Self-medication pattern among college students.
5. Knowledge, attitude, practice among hospital staff regarding hypertension.

A Pre-test and post-test assessment was carried out using a questionnaire based on the workshop contents. The test questions were based of multiple choice and small answers type. Also anonymous feedback was collected at the end of the workshop. Feedback responses were based on Likert scale (1-Highly satisfactory, 2- Satisfactory, 3- Not Sure, 4-Unsatisfactory, 5-Highly unsatisfactory) [16]. The identification details and post or Pre-test status of response sheets was masked by an opaque label with new series of codes. The response sheets were evaluated using a predesigned answer key by a blinded evaluator. Following evaluation the response sheets were decoded. The data was entered in Microsoft excel sheet and analysed using Statistical Programme for Social Sciences (SPSS) version 15. As Pre-test scores were not normally distributed, we used non -Parametric (Wilcoxon signed rank) test for comparing the scores. The study was cleared by the Human Research and Ethics Committee of the institute.

RESULTS

There were 95 (94.8%) valid responses out of the 99 students, who attended the workshop. There were 50 (52.6%) male and 45 (47.4%) female students. The mean Pre-test and post-test scores were 4.21(95% Confidence Interval 3.73-4.7) and 10.37 (95% Confidence Interval 9.54-11.2) respectively [Table/Fig-1]. The differences were found to be significant using Wilcoxon Sign Rank test ($p < 0.001$). Thus, there was an improvement of 6.16 (146%) over the Pre-test scores. There were no significant differences between male and female students in terms of Pre-test, post-test scores and overall gain in scores as shown in [Table/Fig-2]. All the students were able to complete the projects and submit them, though the deadline for submission had to be extended. The median feedback score regarding relevance, skill learning, quality of facilitation, gain in knowledge was four and that of experience of group learning was 5 on a Likert scale of 1-5. The detailed breakup of the feedback scores are provided in [Table/Fig-3].



[Table/Fig-1]: Mean pre and post-test scores of the participants

	Males	Females	p-value
Pre-test score	4.34	4.07	0.519*
Post-test score	9.68	10.53	0.074*
Gain in score	5.34	6.46	0.063#

[Table/Fig-2]: Sex-wise comparison of the test score of the study population
*-Mann Whitney U-test
#- Wilcoxon Signed Rank Test

S. No	Topic	Likert score*						
		1	2	3	4	5	Mean	Median
1	Relevance of workshop	2	5	9	38	41	4.17	4.00
2	Quality of Faculty presentation	3	0	15	33	44	4.21	4.00
3	Quality of facilitation /guidance	3	2	12	32	47	4.23	4.00
4	Experience with group learning	3	1	11	30	51	4.30	5.00
5	Improvement of knowledge	3	6	14	38	35	4.00	4.00
6	Improvement in skills							
	• Problem identification	5	4	14	37	36	3.99	4.00
	• Protocol development	2	1	20	40	32	4.04	4.00
	• Literature search	2	6	23	40	25	3.83	4.00
	• Project writing	2	6	17	40	31	3.96	4.00
7	Plenary sessions	3	4	17	37	34	4.00	4.00

[Table/Fig-3]: Distribution of the feedback scores of the students following research methodology workshop
* Total number of responses are less than 99 due to some data missing in feedback forms

DISCUSSION

Modern physician needs to know how to conduct and interpret research as a part of his professional competencies. Including the research methodology in undergraduate medical curriculum is recommended by MCI and several other international organizations and groups [3,4]. The exact timing, duration and modality of providing research experiences to the undergraduate students are debatable. However the methods involving participatory group learning are preferred. Some authors have also advised making the students part of actual real life research projects to provide them the research exposure [5]. Also, it is advisable to get active feedback from the learners and involve them in the planning of such trainings. Our methodology is based on the PSBH approach. Following the workshop there was 146% improvement over the baseline score. Other studies have also reported similar improvement in the scores [6]. The workshop was very well received and appreciated by the students. The students also felt that including research methodology in the curriculum was relevant, improved their knowledge and research skills. Thus the students were very satisfied by experience of self-learning using group activities as evidenced by the mean and median feedback of 4 or more out of 5 for most topics. Other studies have also reported similar positive and encouraging feedbacks about including research methodology teaching in undergraduate curriculum [6,12,17,18,]. All the students were able to complete the planned projects and submit the report. However, the deadline for submission had to be extended twice. The delay in report submission was due to lack of availability of protected time to carry out the project activities. Some of the students in the group did not participate in the project activities actively. Other study had also identified these issues [18]. This issue was tackled providing weightage to attendance and participation in various project activities (from proposal writing till report submission) in the final score that was sent to the university as part of internal assessment. This was communicated well during the workshop to the students

CONCLUSION

The research methodology workshop based on participatory group learning can play a significant role in teaching research to

undergraduate students in an interesting manner. To enable the students to complete the projects undertaken a protected time slot may be provided in the schedule. However the long term effect of such workshops needs to be evaluated.

ACKNOWLEDGEMENT

We would like to acknowledge the support provided by the faculty and residents of Department of Community Medicine, Pramukhswami Medical College, Karamsad in conducting the workshop. We also acknowledge the support provided by Health Action by People, Trivananthpuram, Kerala in sharing with us the training modules, providing inputs in earlier workshops and providing certificates to the participants and faculty. Finally we would like to thank our institute for allowing us to conduct the workshop and our beloved students for their active participation.

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FINANCIAL OR OTHER COMPETING INTERESTS: None.

Date of Submission: **Jan 06, 2015**
Date of Peer Review: **Apr 14, 2015**
Date of Acceptance: **May 15, 2015**
Date of Publishing: **Jul 01, 2015**