

Meenakshi Bhilwar¹,
Shailaja Daral², Jugal
Kishore³

^{1,2,3}Community Medicine,
Vardhman Mahavir
Medical College, New
Delhi.

Correspondence to:
Dr. Meenakshi Bhilwar,
Community Medicine
Vardhman Mahavir
Medical College, New
Delhi.

E-mail Id: dr.meenakshi.
bhilwar@gmail.com

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An approach to enhance medical pedagogy: a study to assess the role of seminars in undergraduate teaching

Abstract

Background: Teaching in India is still controlled by teacher centered classrooms. Absence of active involvement of students in traditional teacher-centered classes leads to boredom and inability to concentrate in lectures. Recently, many active learning methods have been piloted and tested with the intention to engage students in classrooms. One such method is seminar, which is an interactive method of group teaching. The current study was undertaken to document the effect of seminar on undergraduate learning.

Methods: It was a cross sectional study conducted by the Department of Community Medicine, VMCC on undergraduate students. The Department organized a seminar on "Radiation and Cancer- Public health concerns" which brought together experienced speakers to deliver a talk on the importance of radiation. The effect of seminar was assessed with the help of predesigned questionnaire which was developed based on the topics presented at the seminar. Statistical analysis was done using SPSS v. 17.

Results and Discussion: A total of 112 undergraduate students completed the questionnaire, both pre- and post. The mean score before exposure to the seminar was 7.93 ± 2.05 whereas post seminar the score was 9.91 ± 1.80 ($p=0.001$). 84% students observed an increment in their scores post the seminar. Findings provide a scientific support to introduce alternative methods of teaching besides the routine chalk and talk method. Introducing the concept of seminars wherein experts from various medical related backgrounds come at one platform and deliver updated medical knowledge to students would be beneficial.

Keywords: Undergraduate, Education, Seminar, alternative teaching techniques.

Introduction

Teaching in India is still controlled by teacher centered classrooms.^[1] Students passively receive information from the teacher and internalize it through memorization.^[1] Concepts such as independent learning, flexibility in learning, critical thinking and problem solving are least recognized.^[2] Reports have shown that students' inactivity in traditional teacher-centred classes would make them bored and exhausted that consequently would decrease their concentration and learning and finally would result in their absence from the classroom. Nowadays a deluge of techniques is encouraged to increase the interest of students in learning. Because of increasing competitive demands in the academic community, educators now strive to provide the most productive classroom experience for their students.^[3] Facilitating small-group discussions within the larger class,

giving short writing exercises, incorporating quizzes taking field trips, using debates, seminar presentation by the students and project based learning have been promoted nowadays. The aim of active learning methods is to engage students in higher-order thinking tasks as analysis, synthesis, and evaluation.^[4]

One such method of teaching and knowledge dissemination is seminar. Seminars are an interactive method of group teaching, which usually enables an audience to gain maximum knowledge. Audience interaction with the seminar tutor allows for debate and discussion based on new ideas generated from listeners. This in turn leads to a more proactive, interesting session in which both the audience and the tutor have a learning experience. In an educational setting, seminars play a significant role in simulating the thought process. They induce people to exchange new information that would not have been available otherwise. The current study was undertaken to document the effect of seminar on undergraduate learning.

Materials and Methods

It was a cross sectional study conducted by the Department of Community Medicine, VMMC on undergraduate students to assess the benefits of seminars on their learning. The Department along with the support from NPCIL, NAPC and TMC organized a seminar on "Radiation and Cancer-Public health concerns" in VMMC, New Delhi. The seminar brought together speakers and senior officials from these organizations to speak on the importance of radiation. The specific objectives of the seminar were to highlight the importance of radiation in the diagnosis and control of cancer; to remove myths related to radiation exposure; and to bring to notice the utility of nuclear power as an efficient source of electricity and make them aware of the functioning of nuclear power plants.

A total of 112 undergraduate students attended the seminar and were included in the study. The effect of seminar was assessed with the help of predesigned questionnaire which was developed based on the topics presented at the seminar. The questionnaire consisted of 15 questions and was given to all the students once before the beginning of the seminar and then again after the end of the seminar. Each question was scored as either 0 (incorrect response) and 1 (correct

response). So the maximum score that could be obtained was 15 while the lowest achievable score was 0. Statistical analysis was done using SPSS v. 17. Descriptive analysis with reporting of proportions and McNemar test was done. A p-value of <0.05 was considered to be statistically significant.

Results

A total of 112 undergraduate students completed the questionnaire, both pre- and post. Out of the total students 56.8% (63/112) were males. The mean score before exposure to the seminar was 7.93 ± 2.05 whereas post seminar the score was 9.91 ± 1.80 and this difference was statistically significant ($p=0.001$). The total score before the seminar ranged from 3-12, while post intervention it ranged from 7-14. 84% students observed an increment in their scores post the seminar and for the rest the scores remained the same post seminar. Out of the 15 questions, 11 questions observed a statistically significant conversion of responses from incorrect to correct post the intervention. For the rest 4 questions although the percentage of students marking the correct response increased post intervention but the conversion was not statistically significant.

Discussion

Although, it is well-established that active learning provides significant practical and theoretical advantages over passive learning, teachers are often seen reluctant to employ these active learning strategies in routine teaching practice. Involvement of students in interaction and involvement of teachers, through seminars can make the more definitive outcome. The current study was conducted to document the change in knowledge level of the undergraduate students regarding radiation; its medical benefits; myths related to it through seminars delivered by subject experts. A total of 112 undergraduate students participated and there was a statistically significant change in their knowledge levels as assessed by pre and post questionnaires. Such a positive result provides a scientific support to introduce alternative methods of teaching besides the routine chalk and talk method. Introducing the concept of seminars wherein experts from various medical related backgrounds come at one platform and deliver updated medical knowledge to students would be beneficial but this will require up gradation of infrastructure.

Table 1. Proportion of students, pre and post intervention, who correctly answered the questions that aimed to ascertain the knowledge of undergraduate medical students about radiations (N=112)

Domains covered by the questions	(Pre-intervention) No. of students correctly answered (%)	(Post-intervention) No of students correctly answered (%)	P- value*
Understanding of the term "Background radiation"	97 (86.6)	101 (90.2)	0.503
Knowledge about the penetrating power of different radiations	43 (38.4)	75 (67)	0.000
SI unit of radioactivity	81 (72.3)	94 (83.9)	0.041
Naturally occurring radioactive material's contribution to environmental radioactive hazard	30 (26.8)	56 (50)	0.000
Proportion of cancer(s) contributed by radiations, globally	66 (58.9)	88 (78.6)	0.001
Radiations as a source of power generation	30 (26.8)	40 (35.7)	0.087
Ambient radiation levels based on outdoors and indoors	50 (44.6)	88 (78.6)	0.000
Cosmic radiation dose and its relation to geography i.e. location and latitude	62 (55.4)	75 (67)	0.085
Radioactive contamination in commonly consumed eatables	70 (62.5)	77 (68.8)	0.349
Contribution of nuclear industry to radiation pollution	77 (68.8)	95 (84.8)	0.008
Side effects of radiotherapy used for medical treatment	32 (28.6)	86 (76.8)	0.000
Effect of X-ray screening at airports especially for infants.	80 (71.4)	99 (88.4)	0.001
Association of use of mobile phones to cancer in humans	37 (33)	84 (75)	0.000
Knowledge about radioactive waste generated during medical procedures or treatment	35 (31.3)	84 (75)	0.000
Irradiated food and its effect on health	24 (21.4)	44 (39.3)	0.003

*Mc Nemar test used

Limitations of this study were relatively smaller size of subjects and inclusion of single medical college but this study could be taken as an initial step towards demonstrating that seminars can be a useful method to teach undergraduate medical students.

Conflict of Interest: Nil

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