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Original Article

Education Section

Effectiveness of a Teacher Training Workshop: An Interventional Study

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ABSTRACT

Introduction: There is an increasing demand upon medical school faculty to be effective teachers. Faculty development is an important component in medical education, for the institutes to excel. Pre test/post-test evaluation is one of the assessment tools commonly used in many educational workshops.

Aim: To conduct a faculty development workshop for two days, and to test the improvement in knowledge of the participants by using pre test and post-test evaluation.

Materials and Methods: A two day teacher training workshop was conducted in January 2017. A total of 29 faculty participated in the workshop. The sessions were interactive with several group activities. A pre test with 15 questions was given before the sessions, and the same questions were repeated after the sessions, to test the participants improvement in knowledge. The mean test scores for both pre test and post-test were compared using a Paired t-test.

Results: The mean post-test scores (12.552±2.080) showed significant improvement ($p<0.001$) compared to the mean pre test score (3.655±1.798), using a Paired t-test. The number of incorrect responses per question showed considerable drop: 6.138±2.199 in the pre test and 1.448±1.270 in the post-test. The number of not attempted questions also showed a decrease in the post-test (1±1.414) compared to pre test (5.207±2.896).

Conclusion: There was an improvement in the faculty knowledge, as seen on comparison of the pre-test (3.655±1.798) scores with that of the post-test (12.552±2.080) scores. Regular faculty development programs should be conducted.

Keywords: Assessment, Faculty development, Interactive sessions, Pre-test, Post-test

INTRODUCTION

Teaching requires lot of commitment and involvement from the faculty. It is not very simple, and is an art requiring a lot of skill [1]. The purpose of teaching is not merely dispensing information, but also to develop skills and attitude [1]. There is an increasing pressure on medical faculty to be effective teachers and also good clinicians [2]. There is a general view that faculty members learn to teach not from learning their content but by observing it being taught. The new joining faculty in a teaching institute generally learn their basic teaching skills by observing their teachers when they were students. [2]. Faculty development is now being recognised as an important component in medical education. Unlike the previous assumption that a competent basic or clinical scientist would be an effective teacher, it is now accepted that training for teaching is an essential component [3]. Faculty development programs have been done in several areas like health training, workshops, seminars and short courses, site visits, fellowships and other longitudinal programs. All of these have shown to bring in a good impact on the institutional climate, with enhancement in teaching, research and administrative skills of the faculty in the institution [4].

Evaluation is one of the essential elements of the educational process. Program evaluation in education is the systematic way of collection of information on whether the needs of the sessions have been met, and the objectives have been achieved. It also assesses the educational quality of the organisation, the efficiency of its training methods, and identifies aspects of the curriculum which need to be improved and modified. Program evaluations should ideally be planned before beginning the educational program and should be implemented simultaneously as the program progresses [5]. Pre-test/post-test evaluation has been recommended as a good method of evaluation of a program, as it is concise and brings in about a reasonable dialogue on improvement in learning which has occurred during the program [6]. With the above background, a two day teacher training workshop was conducted for the faculty, and was evaluated by measuring the improvement in knowledge of the participants using a pre-test/post-test questionnaire.

MATERIALS AND METHODS

A cross-sectional interventional study was done to compare the effectiveness of a teacher training workshop among the participant faculty. A two day teacher training workshop was conducted for the faculty at Apollo Institute of Medical Sciences and Research in January 2017. Ethical clearance was obtained from the Institutional Ethics Committee. Participation of the faculty was voluntary for which a circular was sent regarding details of the workshop, and the faculty was asked to send in their acceptance and details if interested. A total of 29 faculty had registered, most of them were in the grades of Tutors to Assistant Professors and Associate Professors, with a few in the Professor grade, from various clinical and basic sciences departments. All participating faculty were undergoing the training for the first time. A speaker was invited from outside, and members of Medical Education Unit at Apollo Institute of Medical Sciences and Research were also engaged in many sessions. The sessions were held for two days, with eight hours of training schedule each day. The training involved a combination of different types of teaching media (power point, white board, flip charts etc.,), lectures and teaching methods (group activities, team based learning etc.,), thus making the sessions very interactive. Topics covered in the workshop were adult learning, taxonomy of learning, various teaching-learning methods and various assessment methods for students. Finally, the sessions were wrapped with an orientation towards how to give feedback to students. All the participants attended all the sessions.

A pre-test containing 15 questions from various topics included in the sessions were given on day one before the start of the workshop, and responses to the same questionnaire were obtained at the end of the workshop on day two, to test the participants improvement in knowledge. The questionnaire contained both open ended and closed ended questions. All resource faculty contributed to approximately two questions from their respective

topics which were validated among the resource faculty. A final question paper was made with 15 questions and each question was allotted one mark. An answer key was prepared for all the questions (open and close ended). For the open ended questions the criteria selected were the inclusion of key words and the sentences giving the same meaning. Participants were given 15 minutes each time during pre-test and post-test. Each correct response was awarded one mark and an incorrect response was not given any marks. All 29 faculty were given participation certificates at the end.

Appendix 1: Questionnaire for pre and post-test for reference.

STATISTICAL ANALYSIS

The mean test scores for both pre-test and post-test were compared using a Paired t-test, for a p-value of <0.05, which was taken to be significant. The statistical package used was windows SPSS version 24.0.

RESULTS

A total of 24 female and 5 male faculty participated in the workshop, many of them were in the age group of 30-40 years. The designations of the faculty were ranging from Tutors (5) to Assistant Professors (12) to Associate Professors (10) and Professors (2). The mean post-test scores (12.552±2.080) showed significant improvement (p<0.001) compared to the mean pre-test score (3.655±1.798), using a paired t-test [Table/Fig-1]. The number of incorrect responses per question were reduced, (6.138±2.199) in the pre-test and 1.448±1.270 in the post-test [Table/Fig-1]. The number of not attempted questions were also decreased in the post-test (1±1.414) compared to the pre-test (5.207±2.896) for a p<0.001 [Table/Fig-1].

Responses	Pre-test score (Mean±SD) n=29	Post-test score (Mean±SD) n=29	p-value
Correct	3.655±1.798	12.552±2.080	<0.001
Incorrect	6.138±2.199	1.448±1.270	<0.001
Not attempted	5.207±2.896	1±1.414	<0.001

[Table/Fig-1]: Comparison of pretest and posttest scores.

DISCUSSION

The quality of medical education is determined by teachers, students and the curriculum, and of these the former has received least attention [7]. Ramalingaswami V stated that, The problem in medical education is not ability of students to learn, but the ability of teachers to facilitate learning [8]. Medical schools have been encouraged to emphasise teaching abilities when recruiting and promoting staff and to help existing staff to become better teachers. Steinert Y et al., after reviewing the faculty development interventions (to improve teaching effectiveness in medicine) opined that these interventions brought about positive changes in teachers attitude, knowledge and skills [3]. They further stated that the impact of these activities on the organisation has to be analysed further.

The participants appreciated the sessions and opined that they were informative. They also opined that the program was excellent, different teaching techniques were taught using different methods (role play, activity, videos etc.,), resource persons had good time management, and that more such activities in future would be good.

It has been established that the mode of assessment influences the learning style of students (assessment drives learning) and it has been shown that medical students are susceptible to this influence. Assessment is one of the important components of educational spiral [9]. There are several assessment methods, of which pre-test and post-test evaluation is a common method followed in medical education workshops, which assess the baseline knowledge about the topics which would be covered in the workshop, and then compares the knowledge improvement obtained about the concepts after workshop.

Pre-test and post-test is a simple method of evaluation of a program, with which we can quantify the knowledge gained during the sessions by the participants having diverse learning styles and educational backgrounds [10]. Similar outcome was seen in the present study with improvement in knowledge (improvement in scores) in the post-test compared to the pre-test.

Pre-tests are generally used to measure the pre-existing knowledge of the participants on the topic, to inform the instructor about the areas to be stressed more and to inform the students on the level of learning to be achieved during the sessions [10].

Post-tests usually measure the amount of learning which has occurred at the end of the course, whether the instructor's objectives for the sessions have been achieved, if any additional help is required for some of the learners, and if any modifications have to be incorporated in the course to achieve the unfulfilled objectives [10].

A few precautions have to be taken before preparing a test questionnaire like incorporating the mandatory instructions for the tests, proper labeling the required fields, being vigilant about the learning objectives, taking care that both pre and post-tests have the same items, correct numbering of the questions and options, avoiding negative questions misleading the learners, and taking a printout to see if all the test items are complete [10].

One disadvantage of pre-test/post-test is that it usually measures the students ability to retain and recall known facts and does not necessary indicate an improvement in performance [10].

Cook DA and Beckman TJ, recommended the only post-test study design citing a few references of Campbell DT and Stanley JC and of Frankel JR and Wallen NE [11-13]. Campbell DT and Stanley JC, stated that the pretest concept, deeply embedded in research workers in education and psychology, is not actually essential and the randomised post-test only should be preferred [12]. Fraenkel JR and Wallen NE, also stated that the randomised post-test only design is probably the best of all designs in experimental studies provided at least 40 participants are there in the group [13].

An option to the traditional pre-test and post-test is to have a post-test then pre-test method, where the learner is asked to report the post-test behavior first and then his perception of behavior before taking the course, which is said to be equivalent to pre-test. Some educators opine this to be a more accurate measurement, and that the bias in self reporting can be minimised [10]. There are a few more stating this but this was not followed in the present study.

The mean post-test scores (12.552±2.080), in the present study, showed significant improvement (p<0.001) compared to the mean pre-test score 3.665±1.798, using a Paired t-test. In a similar study done by Baral N et al., their post-test score (16.1±1.68) after a teacher training workshop showed considerable improvement over the pre-test score (13.23±2.59) for a p<0.001 [9]. In another study by Dhungana GP et al., they also reported an improvement in their post-test score (33.6±5.6) in a faculty development workshop over their pre-test score of 26.7±5.0 for a p<0.001 [4].

The present study showed a considerable improvement in knowledge of the participants after the workshop, as shown by the improvement in the post-test scores over the pre-test scores, thus indicating that the workshop was effective.

LIMITATION

Limitations of the present study were that faculty feedback was not taken in a proper format, and the opinions gathered were just only at random.

CONCLUSION

There was an improvement in the faculty knowledge after the workshop. The participant faculty gave a good feedback about the sessions and expressed their wish to attend to more such workshops. Several faculty development workshops are being conducted in medical education in several medical colleges. Only a few references are available in literature for studies concentrating on improvement in knowledge of the participants. The present study, can be cited as a reference.

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APPENDIX 1 (QUESTION PAPER)

Apollo Institute of Medical Sciences and Research

Medical Education Workshop 23-01-2017

Pre-test

1. Mention two stages of group development.
2. What are the three domains of learning?
3. Define specific learning objectives (SLO)
4. List 2 techniques for making lectures interactive.
5. Define integrated learning
6. List four methods of assessment
7. Enumerate the types of OSCE/ OSPE stations.
8. The following are all examples of the characteristics of effective feedback except:

a) Timely b) Objective c) Criterion-referenced d) Critical

9. Benefits of structured viva voce over traditional viva voce are _____, _____ and _____.
10. Viva/ Orals test _____ level of Bloom's taxonomy
11. List two advantages of lesson plan
12. Microteaching sessions provide an opportunity to teachers to
    a) Develop new teaching skills
    b) Train students
    c) Teach a small group
    d) Cover small portion of syllabus
13. How does formative assessment differ from summative assessment
14. What constitutes a small group?
15. Name four techniques which can be used in small group teaching

(The same questions were given for post-test).