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Evaluation of workshop on teaching skills for medical postgraduates (Ramachandra Annual Postgraduate Teaching Skills)

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Abstract:

BACKGROUND: Postgraduate medical curriculum is usually devoted to developing competencies in the specialty concerned, patient care, and submitting dissertations. The need to impart teaching skills during postgraduation has gone unnoticed, hence Ramachandra Annual Postgraduate Teaching Skills (RAPTS), a teaching skills workshop, was conceptualized and implemented as postgraduate students serve as tutors/residents in the department to teach undergraduate medical students. This study is aimed to evaluate the effectiveness of the teaching skills workshop for postgraduates.

MATERIALS AND METHODS: One hundred and seventy-eight postgraduate students of pre- and paraclinical department underwent the training in medical education principles and participated in the feedback. RAPTS Workshop was implemented as per the six-step approach. The learning was evaluated through a pre- and posttest scores. Student feedback was also obtained on the process overall objectives and contents of the workshop. Force-field analysis was performed.

RESULTS: There was a significant learning by the postgraduates on various medical education principles as evidenced by significant improvement in the posttest scores ($P < 0.05$). Feedback regarding the general aspects of the workshop showed that 92% of the participants felt that the contents of the workshop suited their learning. Eighty-four percent of the participants opined that the presentations of the sessions were good and 91% felt that time management was good. Force-field analysis indicated that the factors favoring teaching skills workshop were higher.

CONCLUSION: This study has highlighted the importance of including teaching methodology training in the postgraduate curriculum that helps in grooming the future teachers in the right direction, in the right time. Competencies related to teaching skills based on medical education principles can be included in the postgraduate curriculum.

Keywords:

Education, medical graduate, teaching methods, workshop

Introduction

Competency-based medical education is student-centered, outcome-based method of medical education where the teacher needs to be aware of all the steps of the curriculum for which sufficient training needs to be provided by conducting Faculty development programs. Faculty development has been described as: “a

planned program, or set of programs, designed to prepare institutions and faculty members for their roles, with the goal of improving instructor’s knowledge and skills in the areas of teaching, research and administration.”^[1] In accordance with this definition, faculty development which is meant for the progress of the entire institution and faculty, should be inclusive of postgraduates who also

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function as residents and tutors. Moreover, since the primary objective of any faculty development program is centered around improving teaching skills, workshops on teaching methodologies should also include postgraduates who spend a considerable part of their time teaching undergraduates.

The postgraduate medical student is unique because they are students trying to acquire competence in their concerned specialty and also a resident doctor, at the same time having the additional responsibility of coaching undergraduate medical students.^[2] Often, postgraduates are entrusted with small-group teaching in tutorials, laboratory, or bedside teaching.^[3] Postgraduate medical curriculum is usually devoted to developing competencies in the specialty concerned, patient care, and submitting dissertations. Sensitizing the postgraduates on medical education principles is also the need of the hour as the undergraduate medical curriculum has undergone substantial revision in its methodology and is now competency-based undergraduate medical curriculum incorporating several innovative teaching-learning methods.^[4] The competency-based curriculum has given importance to Attitude, Ethics, and Communication which will run across years for undergraduates along with the subject-specific core competencies and skills.^[5,6] Postgraduate students who are also part of the team training the undergraduates have to be sensitized and trained on these principles of medical education. This need has gone unrecognized in the postgraduate curriculum. Ramachandra Annual Postgraduate Teaching Skills (RAPTS) Workshop, a teaching skills workshop, was conceptualized to train the medical postgraduates on medical education principles and skills.^[7] The Department of Physiology, SRMC and RI, conducts the annual RAPTS Workshop to create awareness among postgraduates about the various facets of medical teaching. This training program was initiated in the year 2014 and is being conducted successfully every year till date. This workshop included interactive

scientific sessions and group activity sessions on key medical education principles to promote teaching skills among postgraduate students. This workshop is the first of its kind to be undertaken by any medical college, targeting faculty development of postgraduates.

This study was aimed to evaluate the effectiveness of this teaching skills training workshop conducted for postgraduates using a mixed-method study, both quantitative and qualitative methods.

Materials and Methods

RAPTS – the annual teaching skills workshop, an empowerment for the medical postgraduates was conceptualized based on the literature search and needs assessment and followed the Kern’s six-step approach as given in Table 1.^[8]

This present evaluation study which is the sixth step in the six-step approach, included 1st-year postgraduate medical students pursuing basic medical sciences ($n = 178$). The study was conducted by the Department of Physiology under the guidance of Medical Education Unit (MEU) of Sri Ramachandra Medical College and Research institute, Chennai. Postgraduate students of basic medical sciences who attended the workshop RAPTS from the year of 2014 to 2018 were included for the study.

Study design and setting

The study design for this study is a within-subjects study design as all the postgraduate students who joined the pre- and paraclinical departments were enrolled for the teaching skills workshop... In within-subjects design, all the students were exposed to the same intervention (concept of teaching skills), so individual differences will not distort the results and the other advantage of within-subjects study design is that fewer participants are adequate to achieve the same power as between-subjects study design.

Table 1: Ramachandra annual postgraduate teaching skills workshop implementation based on the six-step approach

Six steps	RAPTS - steps
Problem identification	From literature search - inadequate teaching effectiveness by postgraduates/residents is lack of knowledge of the principles of adult learning and teaching techniques and importance of learning objectives ^[9]
Needs assessment	From literature review and discussion with faculty and administrative leaders (VC, deans, heads of the department, MEU members), the need to train the postgraduates on various medical education principles was envisaged
Goals and objectives	Teaching skills workshop to train the postgraduate students about the various facets of medical teaching
Educational strategies	Three day workshop with sessions on different medical education principles, E-learning, soft skills such as communication, feedback, mentoring and Microteaching session
Implementation	Implemented first in 2014 and conducted annually for the 1 st -year postgraduates of pre- and paraclinical departments
Evaluation and feedback	This present study was designed to evaluate the effectiveness of the workshop by applying quantitative and qualitative methods. Analysis of the feedback from the postgraduate students

RAPTS: Ramachandra Annual Postgraduate Teaching Skills, MEU: Medical education unit

Study participants and sampling

The convenient sampling technique was followed in this study where all the post graduate students served as study participants. We included all the students who had enrolled for postgraduation and were in their 1st year of study.

Description of the RAPTS workshop

The 3-day workshop consisted of interactive lectures and small-group training sessions on various concepts of medical education such as importance of learning objectives, adoption of various learning styles, the judicious use of teaching–learning methods, integration, E-learning, effective communication skills, mentoring, and timely student feedback. The interactive lectures were used to highlight various aspects of educational principles such as writing valid learning objectives and their suitable teaching–learning methods. Interactive lectures were comprehensively conducted to highlight the rationale in choosing diverse teaching methods or approaches such as large-group teaching, small-group discussions, integration in medicine and the appropriate use of media. Hands-on sessions were provided for preparation of learning objectives and teaching–learning methods. Microteaching sessions were conducted where the participants were able to have a self, peer, and senior faculty assessment. Microteaching was assessed on criteria such as preparation of content, presentation skills, time management, and the appropriate use of media.

Data Collection tool and technique

The learning outcomes were evaluated through a pre- and posttest questionnaire. Every question was analyzed individually since each represented a particular facet of learning. Evaluation of learning outcome helped the faculty to understand prior knowledge, improvement in learning, or areas requiring further learning. Student feedback was analyzed qualitatively. Force-field analysis was done to enumerate the forces driving movement toward our goal (driving forces) and hindering movement toward our goal (restraining forces).

Ethical consideration

Ethics clearance was obtained from the Institutional Ethics Committee (IEC-N1/16/NOV/56/85).

Statistical analysis

The categorical data were analyzed by Chi-square test and continuous data were analyzed by paired *t*-test. $P < 0.05$ was taken as statistically significant. R Software was used for data analysis.

Results

The 1st-year postgraduate students ($n = 178$) from pre- and paraclinical disciplines participated in the workshop and

answered the pre- and posttest questionnaire used for evaluating their learning outcomes. The participants of the study were all in their 1st year postgraduation, and during their medical under graduation, it is very unlikely for the students to have been exposed to the concepts of medical education. Hence, the baseline knowledge regarding principles of teaching and medical education is likely to be the same across all participants. The pretest and posttest questions were also framed based on medical education principles which were taught during this teaching skills workshop. We did not find any differences in the pretest and posttest scores between males and females and across different age groups, hence it is unlikely these factors will confound the study results.

Overall cumulative pretest and posttest scores of the postgraduate students on different aspects of medical education, before and after the workshop, were 4.19 ± 1.66 and 8.03 ± 0.83 , respectively. There was a significant ($P = 0.02$) difference between the overall pre- and posttest scores, suggesting a positive learning outcome, as shown in Figure 1. Evaluating the individual sessions revealed a significant ($P = 0.03$) improvement in understanding in the areas E learning (18.8%), integration (68.7%), learning objectives (75%), teaching–learning methods (65.7%), microteaching (50%), and audio-visual aids (56.2%), as given in Table 2.

Qualitative outcomes

The qualitative data from the questionnaire were transcribed word by word verbatim in a word document. The transcribed data were analyzed by deductive approach. The data were coded and then grouped into themes based on their similarities and differences such as factors that facilitated and inhibited their learning in this workshop.

Factors that facilitated your learning in this course

Participants expressed that the concept of the workshop was very unique and would enable them to teach better in the

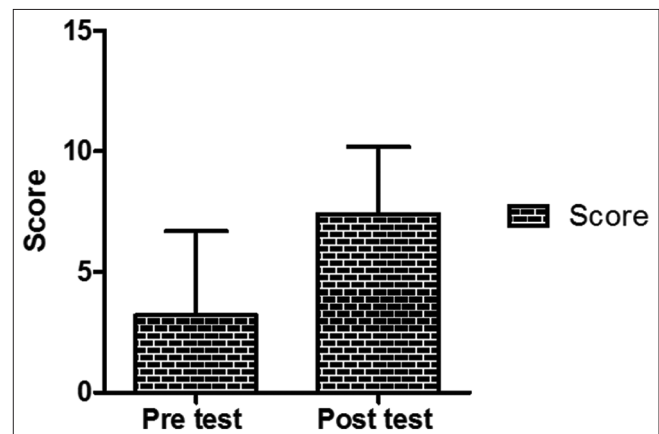


Figure 1: Comparison of cumulative pre- and posttest scores among the participants

Table 2: Comparison of pre- and posttest scores of postgraduate students

Variables	Percentage of correct answers (%)		Improvement (%)	P
	Pretest	Posttest		
Adult learning methods	12.5	28.1	15.6	0.24
E-learning	81.2	100	18.8	0.03
Integration	12.5	81.2	68.7	0.001
Learning objectives	9.4	84.4	75	0.001
Assessment	53.1	81.2	28.1	0.03
Teaching-learning methods	28.1	93.8	65.7	0.001
Microteaching	25	75	50	0.001
Learning cycle	59.4	81.2	21.8	0.1
Audio-visual aids	21.9	78.1	56.2	0.001

The results were expressed as percentage and $P < 0.05$ is considered as significant

future, using all the teaching skills that they have obtained during the course of the workshop. The participants were provided hands-on training with preparation of learning objectives and different kinds of teaching methods which they found to be helpful. The program on the whole was very well received by the doctors/postgraduates who had participated in the program.

Few of the comments by postgraduate students include:

"...I never knew these kinds of methods exist in teaching curriculum. I will try to implement while teaching."

"....all the sessions of the program helped me to understand the importance of teaching in medical college"

"...one of the excellent programs I have ever entered."

The concept of "microteaching," in particular, was well received by the students, wherein the participants' performance was videotaped and re-played to them in person, to facilitate self-assessment and self-improvement. Similarly, "problem-based learning" was also found to be beneficial for the participants as well.

"Microteaching was an excellent method which helped me a lot to learn about my skills"

"Microteaching session was very nice and its make me to learn about my own performance at the same time I get the feedback from the peers"

"...live video of my presentation was an eye-opening for my own self-assessment"

"...problem based learning method was amazing and would be a very good method for teacher as well as students"

Factors that inhibited your learning in the course

Few of the suggestions given by the participants for improvements include providing more interactive

sessions and small groups with group discussions, instead of lectures. The participants also preferred the session to be based on their own specialty, with set objectives, rather than being so general for all specialties together.

Feedback from the assessors of the microteaching sessions: microteaching session which was conducted toward the end of the workshop. The postgraduate students were sensitized regarding several aspects of preparation lesson plan, learning objectives etc., Hence the assessors of the microteaching session felt that the postgraduate students had applied the knowledge gained by them during workshop in preparation for the presentation in the microteaching session.

Feedback regarding the general aspects of the workshop showed that 92% of the participants felt that the contents of the workshop suited their learning. Eighty-four percent of the participants opined that the presentations of the sessions were good and 91% felt that time management was done well [Figure 2].

Force-field analysis [Figure 3] was done which is useful for deciding to continue this type of training for postgraduates by analyzing the forces for and against a change, and for communicating the reasoning for the decision to appropriate stakeholders.

Discussion

The present study aimed at evaluation of teaching skills workshop for medical postgraduates has highlighted the benefits of conducting such training programs for postgraduate students. The study showed that the students had developed good understanding regarding several concepts of medical education such as preparation of learning objectives, teaching-learning methods, and integration. This was evidenced in their microteaching session where the students incorporated the principles of medical education learned in the workshop in their presentations. Posttest scores were significantly higher than the pretest scores [Figure 1 and Table 2], which shows

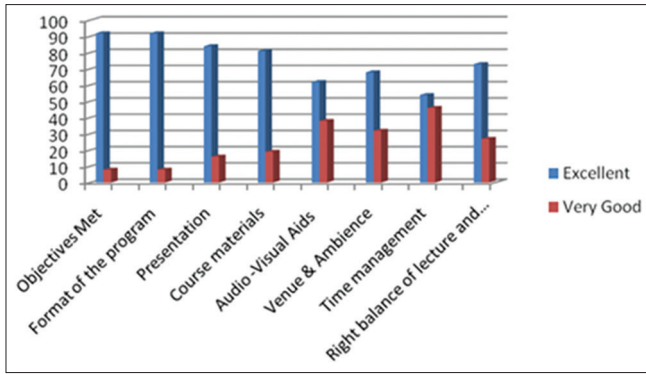


Figure 2: Feedback from the postgraduate students about the program

level 2 evaluation of Kirkpatrick’s model-Learning which has been achieved with this workshop.^[10] The favorable feedback from the postgraduate students regarding the workshop is the evidence for the level 1 evaluation of Kirkpatrick’s model-Reaction. Based on these two levels of evaluation, this workshop has been effective in imparting teaching skills to postgraduate students

Blended learning is one of the emerging trends where traditional teaching is combined with E-learning and undergraduate students have expressed a keen interest in having E-learning tools as a teaching-learning method.^[11,12] Sensitizing the postgraduate student on the role of technology is also crucial. Hence, a session on the role of technology in facilitating learning was included where synchronous and nonsynchronous forms of e-learning and the strategies to incorporate an e-learning culture in the learning environment were elaborated. The postgraduate students found it very useful.

Force-field analysis [Figure 3] highlighted that the factors favoring the workshop were higher than the factors hindering the workshop. The hindering factors listed for a three training workshop were requirement of infrastructure and assessors for microteaching sessions, being away from their parent department and its activities, not able to provide specialty specific examples (as the postgraduate students were from all the pre- and paraclinical departments). These obstacles can be overcome if training of teaching skills based on medical education principles becomes part of the postgraduate curriculum. Postgraduate medical curriculum is usually devoted to developing competencies in the specialty concerned, patient care, and submitting dissertations. Postgraduate curriculum has also been revised where objectives in the affective domain have been explicitly stated.^[13] Teaching skills of post graduate students can be honed by adding competencies related to principles of medical education in their curriculum.

Three forms of teaching have been known in medical education: “the sage on the stage”, “hanging around

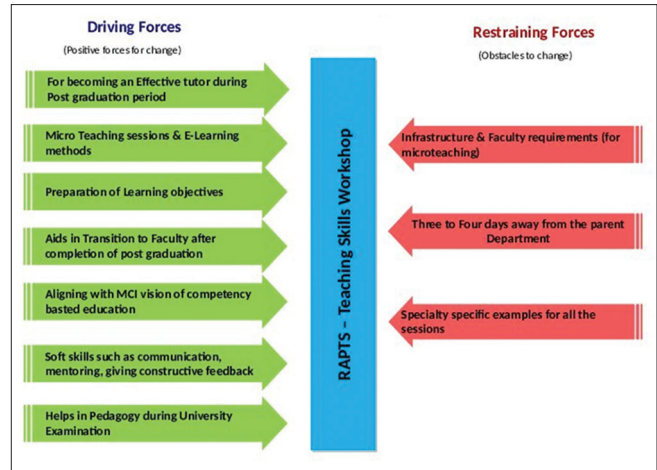


Figure 3: Force-field analysis

with the big boys,” and “teaching by humiliation.” Undergraduate students tend to consider senior faculty as “the sage on stage” not because they are unapproachable, but the seniority may be an inhibiting factor in fostering closer academic bonding. The postgraduates on the other hand can be considered as “the big boys” with whom undergraduate students may be more at ease during academic discussions.^[14] Because of the younger age of the resident, undergraduate students may be comfortable with them in bringing up their academic and nonacademic problems. Therefore, these kind of workshops for postgraduates will empower them with adequate and appropriate teaching and mentoring skills.^[15]

Developing teaching skills at the postgraduate level is advantageous compared to faculty development for qualified teachers, particularly mid or senior level faculty. Faculty development particularly with focus on curricular reforms has often been met with resistance at these levels due to many factors such as mind sets, difficulty in breaking old habits, or moving out of the comfort zones and fear of the unknown or newer work expectations.^[16] The postgraduate is a novice who can willingly learn the globally accepted concepts in medical education. They may not harbor fixed mindsets with regard to curricular reforms. Therefore, they are ideal candidates to absorb and put into practice the accepted principles of teaching methodologies.

A significant majority of postgraduates will be employed in teaching institutions immediately after qualification as faculty, hence needs to be adept with the revised competency-based undergraduate curriculum where several innovative medical education principles have been incorporated. Having knowledge of efficient teaching-learning methods is of prime importance to a newly recruited faculty since they are expected to interact

with students immediately after appointment. A medical postgraduate not only needs to acquire competencies for satisfactory patient care but is also obliged to train the next generation of competent practitioners to fulfill the continuous health demands of the society. Hence, imparting teaching skills in the postgraduate curriculum may be more effective in fetching long-term outcomes in faculty development.^[17]

Based on the need, feedback, and student learning outcomes, RAPTS now has been introduced as value added course for pre- and paraclinical postgraduates for 4 days from 2019 and for clinical postgraduates as a 1-day condensed program by MEU.

Limitations and future steps

Within-subjects study design was chosen over a randomized controlled trial as we wanted to include all the students in the same session and the sample size depended on the number of students who joined the institution. Nevertheless, the within-subjects design has statistical power to obtain valid results with fewer participants. The evaluation of level 3 (transfer of learning) and level 4 (impact on society) outcomes of Kirkpatrick's learning evaluation model was not done; it was beyond the scope of this study. A detailed qualitative analysis using focal group discussion (FGD) was not performed as the objective of this study was focused more on quantitative data. FGD and in-depth interviews can be conducted among the students and the faculty involved in this workshop as well as the faculty from the parent department in the future. Feedback from the students taught by the postgraduates who have undergone training can also be collected and analyzed to evaluate level 3 and level 4 outcomes.

Conclusion

RAPTS is an annual teaching skill workshop for postgraduates. Evaluation of this workshop and its results has highlighted the usefulness of conducting such workshops in training the Postgraduates in medical education. This study provides evidence for including competencies related to teaching methodologies in the curriculum of Postgraduates.

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Conflicts of interest

There are no conflicts of interest.

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