

Impact of Medical Education Technology Workshops in a Rural Medical College of Bihar: A Questionnaire Study

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Abstract

Background: An evaluation study on the impact of medical teacher's training workshop on concept and comprehension of the trained medical teachers was designed at Mata Gujri Medical College, Kishanganj, Bihar. The study comprised of different components of medical teachers training (namely: Group dynamics, principles of adult learning viz., andragogy, teaching learning process, large group and small group teaching, and integrated teaching). The study was carried out with the aim to find out the effectiveness of workshop in changing knowledge and attitude toward medical teaching.

Materials and Methods: Pre-designed and pre-tested semi-structured questionnaire was distributed to all of the participant medical teachers of MGM Medical College before the start of the workshop. Instruction was provided during 3 days workshop with 12 h interactive sessions. The Same questionnaire was again applied on the completion of the workshop to all medical teachers. The questionnaire also included the participant medical teachers' opinion about the details of the program and its impact upon them.

Results: Using standardized questionnaires, the participants rated the quality of the workshop highly. Using comparative studies with pre- and post-workshop questionnaire the knowledge of the participants regarding medical education technology comprehension and skills was also found to have significantly improved, as analysis by paired Student's *t*-test showed significant statistical difference.

Conclusion: This workshop showed that the medical teachers' training had a positive impact on their teaching skill and attitude, and it was also highly appreciated by them. This workshop showed that there was a significant change in knowledge and attitude of trained teachers towards different aspects of medical students teaching - learning process. The results show that it is a suitable and effective educational intervention and need to be applied to all the medical teachers in all medical colleges in phased manner by organizing regular and frequent workshops in future.

Key words: Medical education, Technology, Workshop

INTRODUCTION

In recent years, the number of students in medical colleges have grossly increased and *vis a vis* number of medical colleges also. This is due to the fact that the

doctor patient ratio in our country is much below the desired level which needs to be improved as advocated by WHO and other authorities. However, only the number of doctors does not suffice but the quality of the doctors should also be at par or above the desired level. For this we should induct most sophisticated and well-researched modern scientific methods in our medical education and to our medical teachers. As in other branches of knowledge there are ear-marked degrees and diplomas related to education which are essential before entering the teaching profession, no such thing exists in medical schools. Hence, the teachers a though vastly learned are not acquainted with the science of medical education and

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teaching methods. Therefore is the need of continuing medical education in the form of medical education technology (MET) workshop.

A major part in teaching medical subjects to students is hour long lecture which is convenient way to transmit large amounts of information to large numbers of students, although not necessarily an effective one.¹ The importance of taking notes during lecture has also been of a considerable significance. King (1992) noted that when this is being done the students tended to engage more actively with their notes rather than concentrating on the subject and trying to comprehend, as recorded by Burns and Sinfield.² There are different modules in a lecture. The teacher may have spent hours carefully planning how the lecture content will gradually develop allowing a sophisticated picture to unfurl about the subject. However, many students fail to make the connection between lectures in the module, even fewer across the modules.³ Again, 50-60 min is a long time for an audience to sit and listen to one person talk. A number of studies suggest that the maximum and optimum attention span for a student might be as little as 10 min and as much as 20 min.⁴ While with practice this can also be improved, but very few people are at their best for the full lecture. In most textbooks on communication and presentation techniques, there is reference to research that states, "93% of communication is non-verbal." While this is a glorious oversimplification of research by Mehrabian (1972), the fact remains that good non-verbal communication is so much more than the words presented.⁵ The outlook of the teachers toward the student is also important just as the students' attitude towards the teacher, lecture and the process of learning. Students generally view the lecture positively.⁶ They tend to like the fact that they get the lecturer's expertise mainlined directly into them. This does not necessarily mean that students do very much well with lecture notes, rather often take the quite naïve view that simply attending the lecture is going to be enough for learning. The same workers also have the view that students were less positive about working with others because they were afraid of diluting the quality of information gained during the lecture or that less - able students would hang on to their learning and in return give nothing back.⁶ Some other workers found that students enjoy the opportunity to reflect, consolidate knowledge, or work on a problem with others.^{7,8}

In medical education, one agenda often pushed is the need for a greater degree of interaction within lectures. Fundamentally, when well-integrated into the lecture, such activities give students the opportunity to consolidate their knowledge and the chance to give them a break from note

taking for a few minutes. Huxham found that students viewed these opportunities for interaction positively and were able to recall much more from the topic they have learnt.⁹ Furthermore, there may be direct evidence that some not so common activities may lead to better academic performance. Alimer *et al.* found that students who regularly completed "1 min papers" at the end of the class showed an average increase of 10% in their grades when compared to those who did not.¹⁰

All these above discussion show that there are large varieties of facets in medical education which need to be learnt separately and formally. Simply self-generated ideas and personal experience are not enough to make a good teacher even if he/she is a vastly learned person in his/her subject. Therefore, there is definitely a need for medical education workshops in medical colleges. However, there is also a need to know how far the existing workshops are useful and acceptable and hence our venture in this study to do the job.

MATERIALS AND METHODS

Two sets of pre-designed and pre-tested semi-structured questionnaires were prepared. One set is testing the knowledge of the participant teachers regarding the topics taught during the medical education workshop. The second set comprised of questions in Likert scale regarding how the workshop changed the attitude and activities of the teacher during actual application in the further teaching process. These questionnaires were distributed to all of the participant medical teachers of MGM Medical College, Kishanganj before the start of the workshop. During the 3 days of the workshop, lectures were given with audio-visual aids covering the various aspects of MET. The lectures were interspersed with various activities such as microteaching by the participants, role-playing skits, group activities and 12 h of exhaustive interpersonal, intragroup and intergroup interactions and discussions. Three months after this workshop the same questionnaires were again applied to all participant medical teachers. The data were analyzed not only on the effect of the workshop on the participant teachers, but each and every question given was also analyzed regarding its difficulty index and overall acceptability. The data were put on excel sheet, and the results were analyzed applying paired two-tailed Student's *t*-test using IBM SPSS 20.

RESULTS

The results obtained are depicted in the form of tables and graphs which are self-explanatory.

The impact of workshop on teacher’s knowledge of teaching methods according to their designations like Assistant Professor, Associate Professor and Professor (Figure 1). The means, the standard deviations have been also calculated which can be seen in Table 1.

The impact of workshop on teacher’s knowledge of teaching methods question-wise (20 questions) has been depicted in Figure 2. The means, the standard deviations have been also calculated which can be seen in Table 2.

DISCUSSION

The results show that the 3-day teaching method workshop did have some effects on teachers’ knowledge and attitude of teaching methods. The average marks for an Assistant Professor before the course was 45, that of an Associate professor was 46 and in case of a Professor it was 50. After the completion of the course the test marks became 50, 51 and 60 for Assistant Professor, Associate Professor, and Professor respectively. The *P* value of paired differences in a two-tailed Student’s *t*-test was 0.0001 in all three cases with designations of Assistant Professor (degree of freedom that is, *df* = 10), Associate Professor (*df* = 8) and Professor (*df* = 4). Therefore the differences between pre- and post-course test scores are highly statistically significant. Again when question-wise data were analyzed the results showed a rise in marks for most of the questions and for all the teachers during post-test scoring compared to the pre-

test scoring. The results were not statistically significant in the case of question numbers 9, 12, 15, 16 and 20. For all other questions, the paired differences were statistically significant. This raises the fact that not all questions are properly chosen in all cases of question setting and ambiguity in the questions might lead to confusion.

The primary aim of all MET workshops is to train medical teachers so as to bring about a change in the medical education system for betterment of teaching - learning mainly at the undergraduate level. The basic emphasis is that teaching should be interactive, and the teachers should become a facilitator to develop active learning by students.¹¹ Several medical schools in India have accepted a certificate course as a criterion for academic promotions.¹² The process of faculty development deals with the sensitization and training of teachers in carrying out their professional tasks, which lead to improvement in the quality of teaching.¹³ The workshops are usually planned to present new methods and information to encourage in the teacher-participants more favorable attitude towards medical education.¹⁴

However, the true effectivity of the MET workshops should be evidence-based. Some workers have reported that short-term educational workshops are effective methods for influencing medical teachers.¹⁵ The impact of the training on actual teaching is not always quantitatively assessed.¹⁶ Nagdeo and Chari made a quantitative assessment and found just as our studies have revealed that the MET program workshops do enhance the efficiency and teaching the knowledge of the medical teachers.

CONCLUSION

In our short study in a limited setup, it has been found that the 3 days basic MET workshop increases the teachers’ knowledge regarding medical education. After the course, the teachers are sensitized to new teaching methods and undertake these methods in implementing

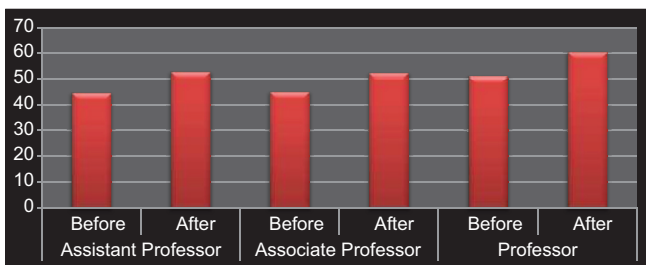


Figure 1: Impact of workshop on teacher’s knowledge of teaching methods designation-wise

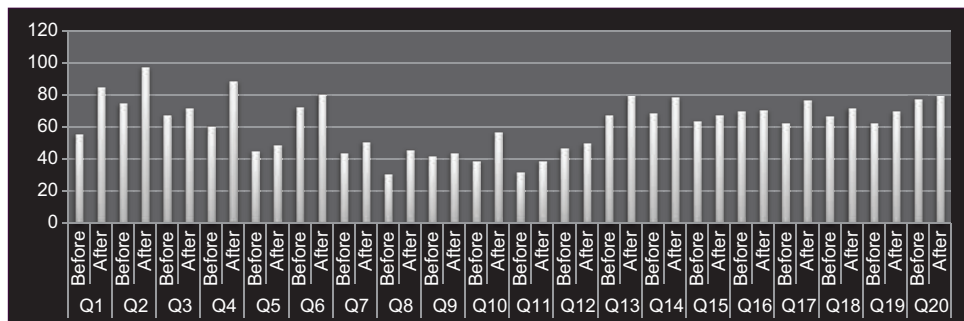


Figure 2: Impact of workshop on teacher’s knowledge of teaching methods question-wise

Table 1: Mean, SD, SEM, 95% CI and level of significance regarding impact of workshop on teacher's knowledge of teaching methods designation-wise

Designation	Paired differences					t value	Degree of freedom	P value (two-tailed)
	Mean	SD	SEM	95% CI of the difference				
				Lower	Upper			
Assistant Professor	-8.18182	1.94001	0.58493	-9.48513	-6.87850	-13.988	10	0.0001
Associate Professor	-7.33333	1.80278	0.60093	-8.71907	-5.94760	-12.203	8	0.0001
Professor	-9.40000	1.51658	0.67823	-11.28308	-7.51692	-13.860	4	0.0001

SD: Standard deviation, SEM: Standard error of mean, CI: Confidence interval

Table 2: Mean, SD, SEM, 95% CI and level of significance regarding impact of workshop on teacher's knowledge of teaching methods question-wise

Questions	Paired differences					t value	Degree of freedom	P value (two-tailed)
	Mean	SD	SEM	95% CI of the difference				
				Lower	Upper			
Q.1	-1.16	0.62	0.13	-1.42	-0.90	-9.29	24	0.0001
Q.2	-0.92	0.49	0.10	-1.12	-0.72	-9.33	24	0.0001
Q.3	-0.16	0.37	0.07	-0.31	-0.01	-2.14	24	0.043
Q.4	-1.12	0.67	0.13	-1.39	-0.85	-8.41	24	0.000
Q.5	-0.16	0.37	0.07	-0.31	-0.01	-2.14	24	0.043
Q.6	-0.32	0.48	0.09	-0.52	-0.12	-3.36	24	0.003
Q.7	-0.28	0.62	0.12	-0.53	-0.03	-2.28	24	0.032
Q.8	-0.60	0.96	0.19	-0.10	-0.20	-3.13	24	0.005
Q.9	-0.08	0.28	0.06	-0.19	0.03	-1.44	24	0.161
Q.10	-0.72	0.84	0.16	-1.07	-0.37	-4.27	24	0.000
Q.11	-0.28	0.54	0.11	-0.50	-0.06	-2.59	24	0.016
Q.12	0.01	0.82	0.16	-0.33	0.34	0.01	24	1.000
Q.13	-0.48	0.59	0.12	-0.72	-0.24	-4.10	24	0.000
Q.14	-0.40	0.50	0.10	-0.61	-0.20	-4.00	24	0.001
Q.15	-0.17	0.56	0.12	-0.41	0.07	-1.45	23	0.162
Q.16	-0.04	0.54	0.11	-0.26	0.18	-0.37	24	0.714
Q.17	-0.56	0.58	0.12	-0.80	-0.32	-4.80	24	0.000
Q.18	-0.20	0.41	0.08	-0.37	-0.03	-2.45	24	0.022
Q.19	-0.28	0.54	0.11	-0.50	-0.06	-2.59	24	0.016
Q.20	-0.08	0.28	0.06	-0.019	0.03	-1.445	24	0.161

SD: Standard deviation, SEM: Standard error of mean, CI: Confidence interval

newer teaching - learning and assessment method to students. This is a pilot study and needs further studies on a larger infrastructure and resources, preferably multicentric to come to more conclusive evidence regarding the effectivity of these workshops. This also does by no way means that the present frameworks of MET workshops are full and final, as they also need to be periodically reassessed as new researches and findings crop up.

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