

Effects of “Teaching Method Workshop” on general surgery residents’ teaching skills

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ABSTRACT

Introduction: Residents have an important role as teachers and need to know about teaching, teaching methods and skills. In developed countries, “resident-as-teacher” programs have been implemented progressively; but there is little information about this theme in developing countries such as Iran. This study aimed to determine effects of “teaching method” workshop on surgical residents’ teaching skills in Isfahan University of Medical Sciences. **Materials and Methods:** In this quasi-experimental study, 18 residents in 1st, 2nd, and 3rd years of surgical residency in Isfahan University of Medical Sciences have attended in a 10-hour workshop. Two questionnaires (validity and reliability) was verified: Clinical teaching self-assessment and clinical teaching evaluation was completed before and after the intervention (“teaching method” workshop) by attending residents and rater interns, respectively. Paired-samples *T*-test was used to analyze collecting data. **Results:** After intervention, Self-assessment mean scores were increased in two categories: feedback from 3.34 to 3.94 ($P = 0.011$) and promoting self-directed learning from 3.53 to 4.02 ($P = 0.009$); whereas, there was no significant differences in evaluation mean scores. **Conclusion:** Statistical results from self-assessment and evaluation scores show little improvement in residents’ teaching skills after the intervention, but residents assessed the workshop as useful. Lack of motivation in interns and little reward for residents who attend in educational activities could be responsible for these results. So, to promote role of residents’ as teachers, we offer revision in residency curriculum and residents’ formal duties as well as designing educational programs in teaching theme based on our needs and resources.

Key words: Clinical teaching, resident, teaching skill

INTRODUCTION

Teaching is a professional endeavor and success in it, like

any other profession, necessitates the acquisition of certain skills. Many researchers have investigated teaching skills and efficient teacher’s characteristics.^[1-3]

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Although clinical teaching is different from teaching in all other fields (due to the clinical nature of the former), it follows the same fundamental principles and skills.^[4,5] Those who teach in the field of clinical training ought to be familiar with these principles and skills. In addition to the clinical professors at medical colleges, residents also contribute in teaching, especially at clinical settings. Residents are medical students’ first teachers of practical clinical skills^[6] and are often known as the leaders of the training team at clinical wards due to their frequent presence at therapeutic-educational centers.^[7] Research shows that around 20% of residents’ work time is allocated

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to teaching^[8-10] and in some cases, they are responsible for up to 70% of clinical teaching for students of medicine.^[11] On the other hand, studies have shown that participating in teaching other learners is an enjoyable experience for residents and it even aides them in their own learning.^[8] Although it is estimated that residents are responsible for 80% of teaching endeavor^[12] and have an important role in this regard, there is no formal teaching skills program in residency curriculum.^[13-15]

Teaching is a skill and it is an important competency for residents. As it is essential that the medical resident learn how to examine patients and take history, they should be educated in the fields of teaching to small groups, discussion facilitation, and giving structured feedback to learners. Residents should be able to pinpoint the learning opportunities and use it for being more effective on their own students.^[12] Medical residents must be eligible professors as the forerunners in clinical education.^[16]

In residency curriculums we do not teach residents how to teach; so, how can we expect them to do their best teaching?^[12] Residents are likely to demonstrate less efficiency and effectiveness in the field of teaching without getting the adequate instruction about teaching methods.^[17] In addition to teaching lower grade residents and medical students, residents are responsible for creating a positive learning environment. So, they ought to know the initial principles of teaching.^[9] Many studies indicate the positive effect of teaching skills training courses on improving the residents’ teaching skills.^[8,10,13,17,18]

Training courses like “residents-as-teacher Curricula” have been included and attended to in the residency curriculums in developed countries since a long time ago; however, there is not enough attention to these programs in developing countries.^[19] The already conducted studies in this field are scarce in Iran and quality of residents’ teaching skills has not been discussed as the pivotal point in them.^[20] On the other hand, active participation at residency training programs and research-therapeutic activities has been included in the formal explication of residents’ duties and gaining the passing score in periodical and final examinations has been stated as the condition for receiving the specialized doctoral degree.^[21] Unfortunately, despite the responsibility of residents for teaching all learners, there is no formal program for training and evaluation of residents’ teaching skills.^[7] With regard to the significance of this issue and the necessity for adopting certain measures in this vein, this study was conducted with the aim of identifying the effect of Teaching Method Workshop on general surgery residents’ teaching skills in Isfahan University of Medical Sciences. The results of this research could be utilized as the preliminary steps in clarifying the role of residents in clinical training and offering strategies for improving their teaching skills.

MATERIALS AND METHODS

All the 1st, 2nd, and 3rd year general surgery residents in Isfahan University of Medical Sciences in the educational

year of 2009-2010 were invited into this quasi-experimental study. The participating residents’ teaching skills were assessed both before and after the intervention (holding the 10-hour training workshop on teaching methods). The residents, who were absent for more than 4 hours during the Teaching Method Workshop sessions, were excluded from the study. In order to assess the residents’ teaching skills, the Clinical Teaching Self-assessment and the Clinical Teaching Evaluation Questionnaires were used. The important factors in residents’ teaching skills were extracted after going over the related literature in databases and the books pertinent to residents’ teaching skills and clinical teaching. A standard questionnaire for assessing the professors and residents’ teaching skills has been devised at the Indiana University School of Medicine^[22] which incorporates the important extracted factors. In order to use this questionnaire, the related author was corresponded with and she sent the final version of the questionnaire (SFDP, version 26). The two aforementioned questionnaires were prepared by using this questionnaire. Each of these questionnaires consisted of 26 items; the seven areas of clinical teaching, including the Learning Climate, Control of Session, Communication of Goals, Promoting Understanding and Retention, Evaluation, Feedback, and Promoting Self-Directed Learning were included in 25 items within the questionnaire and one of its items was related to the total effectiveness score.

The reliability and validity of the self-assessment and evaluation questionnaires were examined and verified as follows:

- Face validity: The compiled questionnaires alongside with the main questionnaire were given to experts in clinical teaching and some residents and interns. Their views were used in the final revision of the questionnaires.
- Content validity: The mentioned issues in the questionnaires were corresponded with the important factors related to residents’ training which had been extracted from scientific resources. At this stage, the experienced professors in clinical teaching were consulted with.
- Reliability: In order to identify the reliability of the “clinical teaching assessment” and “the clinical teaching self-assessment” questionnaires, two pilot studies were carried out in the Gynecology and Urology groups. The reliability of the questionnaires was approved of to be in turn as Alpha = 0.87 and Alpha = 0.95.

Before holding the workshop, the participating residents in the study filled out the clinical teaching self-assessment form. Assessing the residents was carried out by 26 interns at the end of the general surgery apprenticeship course by filling out the clinical teaching assessment forms.

The Teaching Method Workshop for the participating residents was held in two 5-hour sessions with one-week interval. The topics discussed in the workshop were as follows:

Effective factors on teaching-learning, the teaching method

of lecturing, working in small groups, procedure training, feedback, and assessment.

For discussing the issues in the workshop, diverse teaching methods were used, including Team member teaching design, small-group discussions, questioning and answering, and working in small groups for analyzing the scenarios relevant to teaching subject.

The participating residents filled out the clinical teaching self-assessment form within 3 weeks after the holding of the workshop. Assessing the intended teaching skills of residents was also carried out after holding the workshop by 33 interns (at the end of general surgery apprenticeship course) by filling out the clinical teaching assessment forms.

The results were inserted into the SPSS Software, version 11.5 and the mean scores were compared both before and after the intervention by the statistical test of Paired-samples *T*-test.

RESULTS

All 1st, 2nd, and 3rd grade general surgery residents (23 individuals) were invited for participation at the training workshop of “teaching methodology.” Among them, 18 participated at the workshop, two of whom were females. Among the participants, seven were at the 1st grade, six were at 2nd grade, and five were at 3rd grade of General Surgery Residency. Besides, 14 were married and four were single. The average age of the participating residents was 31.37 years (with the minimum age of 27 years and maximum age of 43 years), with the standard deviation of 4.34 years. The self-assessment scores of the residents who had filled out the self-assessment clinical teaching forms at two intervals of pre-test and post-test were used for comparing the score of self-assessment before and after the intervention.

The assessment scores of pre/post tests of the residents, who participated at the workshop and had been assessed at both intervals, were used for comparing the assessment score before and after the intervention; these scores had been extracted from 54 assessment forms of pre-test and 60 assessment forms of post-test (which had been filled out in turn by 26 and 33 interns).

Table 1 shows the comparison between pre and post mean scores of residents’ self-assessment.

Compared with the mean score of the pre-test, the mean score of the post-test clinical teaching self-assessment had increased in all areas and also by virtue of the total effectiveness of teaching and the mean of all scores. This increase is significant in areas of feedback and promotion of self-directed learning with regard to the stipulated amount of *P* for establishing the significant nature of differences in means ($P < 0.05$).

The comparison between pre and post residents’ teaching skills evaluation is presented in Table 2.

The mean score for clinical teaching evaluation had increased after the intervention in some categories. However, none of these changes were significant.

DISCUSSION

The results indicate the significant increase of the self-assessment mean scores after the intervention at the two areas of feedback and the promotion of self-directed learning. In all areas, the increase of means of scores is not significant after the intervention. The significant change in the post-test scores was observed in two areas of clinical teaching compared with the pre-test scores. This issue is also seen in previous studies; for instance, in a controlled, random study on the teaching skills of residents, the experiment

Table 1: Comparison of pre and post tests of clinical teaching self-assessment

Row	Categories	Mean score of clinical teaching self-assessment		<i>t</i>	<i>P</i>
		Pre-test	Post-test		
1	Learning Climate	4.22	4.23	-0.155	0.882
2	Control of Session	3.64	3.83	-1.145	0.270
3	Communication of Goals	3.44	3.66	-0.822	0.424
4	Promoting Understanding and Retention	3.64	3.81	-0.568	0.578
5	Evaluation	3.50	3.83	-1.433	0.172
6	feedback	3.34	3.94	-2.893	0.011
7	Promoting Self-Directed Learning	3.53	4.02	-2.995	0.009
8	Total effectiveness of teaching	3.75	3.92	-0.616	0.551
9	Mean of total scores	3.62	3.91	-1.971	0.067

Table 2: Comparison of pre and post tests of clinical teaching evaluation

Row	Areas related to teaching skills	Mean score of clinical teaching evaluation		<i>t</i>	<i>P</i>
		Pre-test	Post-test		
1	Learning Climate	3.82	3.44	1.672	0.132
2	Control of Session	3.59	3.35	0.977	0.350
3	Communication of Goals	3.37	3.13	0.706	0.495
4	Promoting Understanding and Retention	3.14	3.29	-0.587	0.569
5	Evaluation	3.23	3.04	0.505	0.623
6	feedback	3.26	3.32	-0.192	0.851
7	Promoting Self-Directed Learning	3.39	3.06	1.021	0.329
8	Total effectiveness of teaching	3.62	3.34	1.067	0.309
9	Mean of total scores	3.41	3.24	0.655	0.526

group was assessed before and after the intervention by using the 8-stage test of OSTE. In this study, the scores of residents had an increase in 6 stages of the 8 total stages (in the post-intervention test).^[23] In another study which assessed the teaching skills of residents at 6 stages of OSTE, the experiment group had gained better scores in 4 stages compared with the control group.^[24] Accordingly, the holding of the Teaching Method Workshop has led to an increase in the scores of clinical teaching self-assessment at two areas of feedback and promotion of self-directed learning among the general surgery residents. No significant difference was observed in the comparison of evaluation mean scores before and after the intervention. These reasons can be responsible in gaining such results:

- Residents had not enough knowledge about the principles of teaching skills prior to participation at the workshop. There is the likelihood that the residents’ perception about teaching skills was changed after participating at the workshop; in other words, it is possible that they had considered their performance as to be appropriate before the workshop and after gaining the relevant information, they had considered their post test assessment scores something near to their pretest one.
- While filling out the self-assessment form after the intervention, some residents pointed out that “we have not received any training during this period to assess” (around 3-week interval between holding the workshop to filling out the post-test forms). Perhaps, the problem is rooted in finding proper opportunities for training, since the general surgery resident can find 3 to 4 hours of free time during the week while having 3 to 4 full-time shifts weekly. This issue might be related to this conception that training occurs only at special conditions. For instance, a few individuals attend at a particular place and discuss about a pre-set topic. Meanwhile, teaching and learning opportunities can be created in any place or at any moment, even through the simple query which an intern is addressed by phone.
- One important issue is that there is no training in the field of teaching program for residents. The training programs for residents’ participation at teaching affairs. The training programs of residents are limited to some theoretical, weekly classes for interns. Even some professors believe that residents devote less time to teaching the learners than professors.
- There is no measure for training and assessing the teaching skills of the surgery residents within their list of duties or among the expectations of the educational systems of them.
- Except for personal interest and motivation, there is no factor for encouraging the residents to cooperate at educational affairs.
- It seems that some interns consider training to be limited to a certain time or place and do not consider the exchange of data at limited times as worthy enough. This issue can be due to the learning style of individuals who prefer

the traditional methods of getting the already prepared information and memorizing it. Nonetheless, every opportunity in clinical training, though short (like a short tea time for freshening up), can be turned into a learning opportunity which requires the dynamic collaboration of learners and teachers in creating such situations.

We faced some limitations in conducting this study such as:

- Limitation in the explored sample size (the participating residents). Although all the necessary measures were adopted for paving the way to have the utmost participation from the side of the residents, the number of residents who could participate decreased due to the working conditions of the surgery residents (shift and occurrence of emergency cases at the time of holding the workshop). Studies with lower number of residents participating at the intervention was reported in a review article of resident-as-teacher curricula.^[8]
- Lack of the possibility for administering the pre/post-test assessments with one group of evaluating interns due to the monthly cycle of intern groups. This issue was also observed in previous studies^[7,17] and the existence of such a limitation has been accepted scientifically.^[17]

By attending to the compiled data from reviewing the literature and the results of the present study, highlighting the educational role of residents requires the adoption of some measures, including:

- highlighting the educational role of residents requires the adoption of some measures, including the following:
- incorporating the teaching role of residents into their formal list of duties and allocating some points to this role in periodical and summative evaluation of residents or considering appropriate incentive for those residents who have a dynamic role in teaching all learners (based on a valid and reliable assessment system).
- establishing formal educational courses to teach teaching skills at each residency curriculum.
- compiling formal daily plan (by having flexibility with regard to the present conditions) for residents or interns with the aim of facilitating educational activities.
- in our country, the compilation of formal, educational programs of teaching skills for residents require the precise researches of conditions, demands, and available resources. The information gained out of these studies can be used for integrating the up-to-date knowledge of the world about teaching and its skills (especially at the area of clinical teaching) with the current demands and facilities in the country. It is hoped that a program be compiled on this basis, so that it would be helpful in fulfilling the unfulfilled requirements within the present educational residency curriculum.

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