

Original Article

Assessing the Impact of Faculty Development Fellowship in Shiraz University of Medical Sciences

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Abstract

Background: Changing concepts of education have led many medical schools to design educational programs to enhance teaching skills, as traditional approaches cannot fulfill the current students' needs. The educational development of medical faculty members has recently received impetus in Iran and the Eastern Mediterranean region. The aim of this study was to investigate whether participation in a faculty development program reinforced new teaching skills.

Methods: A teacher-training program was designed at Shiraz University of Medical Sciences to help medical instructors improve their teaching skills. The program, imparted in workshop format, covered effective teaching methods, feedback, knowledge assessment, and time management. Program sessions lasted four hours, four days each week for one month. Instruction was in the form of lectures, group discussions, case simulations, video presentations, and role-playing. All participants in the study (n = 219) belonged to the academic staff of Shiraz University of Medical Sciences.

Results: The participants highly rated the quality of the program. They felt that the educational intervention was appropriate and had a positive impact on their knowledge ($P < 0.001$). Assessment of the effectiveness of the program in strengthening the participants' teaching ability showed that students noticed significant improvements in the participants' teaching abilities ($P < 0.05$).

Conclusion: Our faculty development program appears to have a significant positive effect on medical teachers' competencies, and we suggest that our educational intervention is effective in achieving its aims. Further research should investigate whether this faculty development program actually results in improved teaching performance.

Keywords: Assessment, empowerment, faculty, program evaluation

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Introduction

The educational development of faculty members is a process by which an institution assists its teaching staff to enhance their performance in teaching and educational research in order to prepare them for multiple roles.¹

Despite numerous publications describing program development, there is a paucity of published research that demonstrates the effectiveness of educational interventions. Most studies on this issue have relied on indirect measures such as surveys of learners' satisfaction or self-assessment by participants.²⁻⁴ A recent survey of internal medicine programs has found that 74% had ongoing or occasional faculty development, reflecting a belief that faculty development programs increase the effectiveness of teaching.⁵ Therefore, since 2008, the Education Development Center of Shiraz University of Medical Sciences has designed a variety of faculty development programs, including workshops and short courses. These programs have targeted basic science and clinical academic staff.

This study aims to evaluate the effectiveness of a workshop program, and to provide valid recommendations for designing future programs to improve teaching skills in faculty members.

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Materials and Methods

In 2008, the Education Development Center of Shiraz University of Medical Sciences started to develop a series of faculty empowerment workshops for randomly selected academic staff as one-month medical education programs, four times per academic year. There were no selection preferences of baseline characteristics in participants and nonparticipants. A core group of faculty provided half-day sessions. The content of the sessions was based on expert opinion and needs analyses. The methods of instruction used in the program consisted of learner-centered lectures, with small-group discussions and a problem-based approach.

The program was evaluated in several phases using triangulation of data and multi-item assessments as described. The impact of participation on teaching and professional abilities was assessed in four outcome levels as defined by Kirkpatrick.⁶ Secondly, educational instruction was assessed by a self-administered questionnaire and assessment of the learning environment by the Dundee Ready Education Environment Measure (DREEM) questionnaire.⁷ We summarized the reports of each phase across different assessment methods, compiled the results, and generated the final evaluation.

The Kirkpatrick evaluation model tailored to our program was used to assess the outcomes. We asked participants to evaluate their satisfaction with the program contents (first outcome level) at the end of each week. At the end of the program, a summative evaluation of the whole program (instructors, curriculum, and facilities) was performed with a questionnaire addressing the strengths and

Table 1. Mean faculty rating score before and after the program (Max score = 20).

| Group | Mean score | Standard deviation | P-value |
|-----------------------------|------------|--------------------|---------|
| Intervention group (n = 71) | | | |
| Before the course | 17.49 | 1.48 | < 0.001 |
| After the course | 18.16 | 1.26 | |
| Control group (n = 67) | | | |
| Before the course | 17.49 | 1.47 | = 0.077 |
| After the course | 17.80 | 1.21 | |

weaknesses of the fellowship program. Analysis of the responses to the open-ended questions were analyzed by grouping similar comments for each question.

The changes in the participants' knowledge were studied with a 20 question (each worth 1 point) instructor-administered questionnaire that corresponded to an understanding of design knowledge at the beginning and end of the program. The same test was administered as a delayed post-test to assess the retention of cognitive knowledge up to 6 months later. The test was comprised of the essential elements taught during the program. All three sets of tests were scored independently by two raters that had been trained by the evaluators.

We compared participants' scores (intervention group) with the scores of an equal number of randomly selected nonparticipants (control group) in both pre- and post-tests using paired *t*-tests. $P = 0.05$ was considered significant.

On the third level, participants' behavioral changes were measured. For this purpose, their teaching style as evaluated by undergraduate and postgraduate trainees (students and residents) was compared before and after they attended the program. The faculty evaluation is a part of routine medical school procedure. Trainees in each teaching course rate every lecture using a five point scale (1 = low and 5 = high) assessing lecture quality.

The program's long-term impact on the learners' career (fourth level) was not evaluated because data collection proved to be complex.

Participants anonymously completed a self-administered 20-item questionnaire for the quality level of entire course and program instructors. This questionnaire was scored on a scale of 1 (very weak) to 5 (excellent). To document the influence of the educational atmosphere, participants also completed a DREEM questionnaire tailored to our program. The validity and reliability of this 43-item questionnaire was verified previously, and all items scored on a Likert scale from 0 (strongly disagree) to 4 (strongly agree). This modified questionnaire has a maximum score of 172, which indicated the ideal educational environment according to the registrar.

Results

From 2008 to 2010, a total of 219 persons (36% of all faculty members of Shiraz University of Medical Sciences) attended the program. Of the 49 basic science and 170 clinical science teachers, 54.3% (119 persons) had less than five years' teaching experience, and 45.7% (100 persons) had more than five years' experience.

Nearly 85% of the participants believed that the program had a good level of scientific content and addressed their learning needs, and 82% indicated that the program provided them with new practical teaching methods. DREEM questionnaire yielded a mean score of 144.02 (83.7%) out of a possible 172 across five educa-

tional subscales. This was evidence of the excellent educational atmosphere during the program sessions.

The mean score on the perception of learning subscale was $39.92 + 7.44$ from 48 (teaching highly thought of) and mean score on the course organizer subscale was $34.68 + 6.66$ from 40 (model course organizer). On the perception of atmosphere, the mean score was $25.66 + 5.62$ from 32 (good feeling overall). On the academic self-perception subscale, the mean score was $21.24 + 4.30$ from 24 (confident), and on the social self-perception subscale, the mean score was $22.58 + 3.77$ from 28 (very good socially).

Most (87%) participants rated the overall course quality as good, and 12% rated the quality as moderate. For most participants (80%) the program increased their motivation to achieve teaching and communication skills. Some of their free comments on the program strength noted good communication between them and instructors, the program objectives were clear, and that group work and interactions were satisfactory. Individual sessions were well rated. A total of 82% of participants indicated the level of teaching by the program instructors was good, and 13% felt the teaching level was moderate.

Our comparison of the baseline characteristic in participants and nonparticipants detected no significant differences in the pretest scores between the control and intervention groups, which we considered equivalent before the intervention ($P = 0.77$). There was a significant increase in the participants' cognitive knowledge between the pretest (mean score $8.11 + 2.22$ from 20) and post-test (mean score $13.76 + 2.53$ from 20). The mean posttest score increased significantly in the intervention group ($P < 0.001$), which showed the positive impact of the intervention. Despite a decrease in the score in the delayed post-test (mean $10.06 + 2.62$ from 20; $P < 0.001$), there was still significant retention of cognitive knowledge from the pretest level to the 6-month post-test ($P < 0.05$).

A comparison of the post-test scores in the intervention and control groups showed that the difference ($7.61 + 3.18$) between groups was statistically significant ($P < 0.001$).

The participants' evaluation of teaching effectiveness is shown in Table 1.

To assess behavioral changes and the application of learning in the workplace, we compared participants' and nonparticipants' ratings by their under- and postgraduate trainees before and after the program. A total of 180 trainees rated 71 participants in the intervention group and 67 in the control group. There was no significant difference between the two groups before the intervention ($P = 0.98$).

Discussion

Little has been published on the outcomes of faculty development programs. The literature commonly reports the outcomes as short-term gains in knowledge, changes in attitudes, satisfaction

with the program, and self-reports of behavior change.^{8,9} Many of these published studies, however, lack a control group, a shortcoming that may call their findings into question.⁸ Some previous studies also did not make use of mixed modeling.

This triangular analysis has shown that the program achieved many of its stated educational objectives. Most (87%) participants rated the overall course quality as good. The mean trainee rating for faculty members who took the course (18.16) was significantly higher ($P < 0.001$) than their rating before the course (17.49). No such improvement was seen in the control group rating ($P = 0.08$), indicating the positive impact of the program on the participants' teaching skills (Table 1).

The educational environment of our program was rated favorably by participants in a tailored DREEM questionnaire. This result suggests that better preparation of teaching sessions, appropriate feedback from instructors, and the creation of a suitable environment can improve the quality of teacher training programs.

The results of our study support the findings of previous studies that have examined faculty development programs.^{2,7,10} Our findings are important because we included a comparison group and a multi-item triangular design to increase the validity and reliability of the findings, and thus the generalizability of results.

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The dome of a traditional drinking water reservoir (Ab anbar) with six windcatchers, Shahdad, 96 Km from Kerman, Kerman Province, Iran (Photo by S. Borzabadi Msc, 2012).