

Concise, intensive or longitudinal medical education courses, which is more effective in perceived self-efficacy and development of faculty members?

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Abstract

Background: Teachers' self-efficacy and development may be conceptualized as their beliefs in their own ability to plan, organize and carry out activities that are required to attain educational goals. In this study, we examined the effect of different medical education training courses (six-day, one-month short-term and six-month long-term courses) on perceived self-efficacy and development.

Methods: This before-after quasi-experimental study was performed on 39 faculty members of Tehran University of Medical Sciences who participated in faculty development courses in 2013. We used valid and reliable scales to measure their perceived self-efficacy and empowerment.

Results: The results revealed a significant increase in faculty members' perceived self-efficacy in pre and post-tests in one-month and six-month courses, but no significant difference was found in the six-day course ($p=0.004$, $p<0.001$ and $p=0.235$, respectively). These results were the same for perceived empowerment ($p<0.001$, $p<0.001$ and $p=0.716$ for one-month, six-month and six-day courses, respectively). A significant difference was detected in perceived self-efficacy and participant empowerment components based on the training course ($p=0.005$; Wilk's $\Lambda=0.345$, Partial $\eta^2=0.413$).

Conclusion: This study revealed that long-term courses were more effective than the short-term ones. Thus, longitudinal courses are recommended for more effectiveness.

Keywords: Self-Efficacy, Power (Psychology), Education, Medical, Faculty Development Programs.

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Introduction

Nowadays, there is more emphasis on faculty members' scientific and professional development. Faculty Development (FD) developers of universities design and conduct a range of activities to empower the performance of their academic members (1). Particularly, junior faculties are considered the main target group in FD programs, as they are the universities' essential human capital investment (2). Faculties should participate in educational FD programs in addition to their own professional carrier to enhance their teaching-learning process, research skills, understanding their students, commitment to the department

and university and satisfaction with their profession. In fact, acquired knowledge and skill would help the faculties to play their role as a teacher, manager, consulter and a researcher (3).

In 1995, Morley recognized empowerment as a combination of two elements: 1) development of strategies to enhance independence, selection, control, and responsibility in individuals, 2) provision of the individuals with opportunities to show their competence and learn new capabilities to expand and augment their function (4). In fact, empowerment is defined based on the perceptions and personal beliefs of the individuals and includes a process of internal

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motivation toward executing professional duties (5). According to the conducted studies, empowerment is a multidimensional process with five cognitive dimensions of self-effectiveness, self-determination, impact, meaning, and confidence (6,7). Self-effectiveness indicates that the individuals have the required capabilities and skills to undertake a profession successfully. Self-effectiveness or competence is a personal belief with which the person believes that he can fulfill the occupational duties successfully (8). Self-determination indicates that capable people feel that they are independent to perform their duties, can decide about their occupational activities, and have the required authority to determine the timing and speed of executing the tasks. Impact indicates that capable people feel that they play an important role in attaining the objectives of the organization, have control over occupational results and outcomes, can influence the ongoing matters, and can control limitations and obstacles (9). Meaning is an opportunity for the individuals to feel that they are following important and worthwhile occupational goals and their time and energy are valuable (6). Confidence is the feeling or belief that one can rely on him/herself. One of the important psychological aspects in empowerment of the personnel in organizations is self-efficacy. Believing in self-efficacy is the judgment of the people about their ability to organize and execute a series of activities. This belief has a fundamental role in function. The perception of self-efficacy helps with the determination of the tasks that people can accomplish with their knowledge and skills. These individuals are often certain of the successful execution of their tasks (that are usually successful too) (10). Teachers with high self-efficacy have a great impact on the learning of the learners and provide them with challenging situations. They spend more time on their learners, criticize them less, and help them more to solve their problems. Teachers with low self-efficacy become frustrated, anxious and depressed in challenging situa-

tions. It has been proved that self-efficacy of the teachers is an important factor in educational output indices like learners' academic achievement, motivation, and development of feeling of self-efficacy in the learners (10-13). Teachers with a stronger feeling of self-efficacy are more receptive to new ideas and are more willing to examine new ways to meet the needs of the learners. Such teachers are more committed to teaching and are more likely to continue this profession (14,15).

All the activities expected from universities including science discovery and production (research and development in basic sciences), interdisciplinary development (integration of ideas), science application (the use of science in the real world), and teaching are undertaken by faculty members (3). Workshops and seminars are considered the most common types of FD programs to enhance faculty members' skills are (16).

Tehran University of Medical Sciences (TUMS) also offers FD programs for faculty members that are mandatory for their promotion in the area of medical education. TADBIR (a Persian acronym meaning "faculty members development for up-to-date education") is a concise six-day course to cover the main concepts of medical education and is designed for faculty members with more than 10 years of work experience. One of the axes related to medical education is discussed on each day of this six-day course (Table 1).

Also, TUMS delivers a short-term medical education course designed for faculty members with less than 10 years of experience that is offered in two forms of intensive (one-month continuous) and longitudinal courses (a one-week block followed by one day every week for six months). During this course, faculty members become familiar with the principles of medical education more explicitly. The titles and subjects of this course are presented in Table 2.

Although universities frequently hold FD programs, to date, there is scarce evidence focusing on teacher self-efficacy and FD in

Table 1. Titles and Subjects of the Six-Day Course for Faculty Members of Tehran University of Medical Sciences

Day	Title	Subjects
1	Educational roles of a faculty members and the principles of teaching and learning	The roles of faculty members, teaching strategies, principles of learning theories
2	Methods of teaching and learning (part 1)	Teaching in the clinic, teaching in small groups, educational rounds, problem-based learning, monitoring and feedback
3	Methods of teaching and learning (part 2)	study guide, lecture, organizing an educational session
4	Assessment of the students	Student assessment system, multiple choice question design and analysis, structured oral examination, Objective Structured Clinical Exam (OSCE), work place based assessment
5	Educational planning and evaluation	Educational planning, program evaluation
6	Educational leadership	Principles of successful educational leadership

Table 2. Subjects of the Intensive and Longitudinal Medical Education Courses for Faculty Members of Tehran University of Medical Sciences

Session	Title
1	The roles of medical teachers
2	Teaching - Learning process (2 days)
3	Education objectives and educational strategies
4	Teaching methods (2 days)
5	Feedback
6	Research in education (2 days)
7	Educational scholarship
8	Student assessment (2 days)
9	Objective Structured Clinical Exam (OSCE)
10	Work place based assessments
11	Developing a proposal for educational development activities
12	Lesson/course plan and Curriculum development (2 days)
13	Journal club, morning report and clinical teaching (2 days)
14	E-learning in medical education
15	Program evaluation
16	Communication skills
17	Evidence based medical and Best evidence medical education
18	Ambulatory teaching
19	Principles of ICDL (International Computer Driving License)

higher education (16). In this study, we evaluated the effect of the three FD courses on the perceived self-efficacy and empowerment of the faculty members.

Methods

This before-after quasi-experimental study was conducted on 39 faculty members of TUMS who participated in TAD-BIR, one-month intensive, and six-month longitudinal FD courses in 2013.

The ethical principles of this study were approved by the Ethics Committee of Tehran University of Medical Sciences (license number: 15106)

We used the Teacher Self-efficacy Scale (TSS) presented by Schwarzer et al. (17). This questionnaire has 10 questions on a 4-point Likert scale. Moreover, the self-reporting scale of Short and Rinehart was used to assess the participants' empowerment (18). Empowerment Scale (ES) con-

tains 38 items and 5 subscales of efficacy, meaning, impact, autonomy and confidence and it is designed on a 5-point Likert scale from "completely disagree" to "completely agree".

First, an English language expert, an educationist skilled in English language, and a psychometric expert translated both scales from English to Persian. The translated versions were presented to a number of faculty members who were similar to the study population to ensure the clear understanding of the phrases and to determine its face validity. To address possible errors in translating the phrases, an English expert was requested to translate the scales back to English. The results indicated the correct translation of the scales to Persian. The internal consistency and construct validity of the questionnaires were evaluated through the Cronbach's alpha and explanatory factor analysis, respectively.

TADBIR was held in March 2013 with 12 participants, the one-month course was conducted in May 2013 with 15 participants, and the six-month course was held from March to August 2013 with 11 participants. The questionnaires were completed before and after holding the courses. We used Explanatory Factor Analysis, ANOVA, MANOVA, MANCOVA and paired t-test for analysis. IBM SPSS Statistics for Windows version 21.0 (IBM Corp., released 2012) was used for data analysis.

Results

A total of 39 faculty members participated in TADBIR, one-month intensive, and six-month longitudinal educational courses; of whom, 32 (12 in the 6-day, 11 in the one-month, and 9 in the six-month course) answered both pretest and posttest questionnaires (response rate=82%). No significant difference was observed in the scores of self-efficacy and empowerment between the two groups of female (n=22) and male (n=10) faculty members ($p=0.222$ and $p=0.157$, respectively). Moreover, no significant difference was observed in these scores between basic sciences (n=12) and clinical (n=20) faculty members ($p=0.066$ and $p=0.157$, respectively). For this reason, all groups were analyzed together in consequent analyses.

For explanatory factor analysis of the TSS and to perform principal component

analysis, the Bartlett test of sphericity was first conducted which indicated the appropriateness of the data for factor analysis ($KMO=0.75$, $p<0.001$). In factor analysis, only one factor was loaded that explained 52.7% of the total variance.

The Bartlett test of sphericity was used for explanatory factor analysis of the ES, and the result was significant ($KMO=0.8$, $p<0.001$).

To determine the hidden factors of the ES, three indices of Eigen value, amount of explained variance and scree plot were considered. To explore the factors concordant with and appropriate for the socio-cultural structure of the sample group, factor analysis with different solutions was performed for several times, and it was finally concluded that the 5-factor solution was more appropriate. The results showed that Eigen value of the five factors was greater than 1 and the total variance explained by these factors was 76.08%. The scree plot in Figure 2 shows that the explained variance by the factors one to five was considerable compared to other factors. We labeled these five factors according to their related items. Table 3 shows factors, item numbers, Eigen values and explained variances. In this analysis, we used Varimax rotation and the absolute coefficient value smaller than 0.35 was suppressed.

The Cronbach's alpha for TSS was 0.65. In addition, Cronbach's alpha for the com-

Table 3. Extracted Components and their Eigen Values and Explained Variances

Factors	Items	Eigen value	Variance (%)	Cumulative Variance (%)
Efficacy	15, 18, 24, 25, 27, 28, 30, 38, 39, 40, 41, 45, 46, 47	9.91	26.8	26.8
Meaning	19, 20, 21, 29, 32, 33, 36, 37, 43	8.26	22.3	49.14
Impact	11, 12, 16, 17, 35, 44	3.82	10.34	59.49
Autonomy	13, 26, 42	3.13	8.45	67.95
Confidency	23, 31, 34	3	8.12	76.08

Table 4. Comparison of the Mean and Standard Deviation of the Self-efficacy Scores of the Faculty Members in Medical Education Courses

Course	Test	Mean	SD	Dif	SD of Dif	p
Six-month	Pretest	3.40	0.23	-0.859	0.34	<0.001
	Posttest	4.26	0.26			
One-month	Pretest	3.69	0.28	-0.227	0.20	0.004
	Posttest	3.92	0.13			
Six-day	Pretest	3.53	0.27	-0.133	0.37	0.235
	Posttest	3.67	0.29			

ponents of empowerment scale (Efficacy, Meaning, Impact, Autonomy, Confidence and overall) were (0.82, 0.84, 0.64, 0.52, 0.44 and 0.92), respectively.

Table 4 shows the TSS scores of the faculty members before and after attending the three courses and their differences assessed by paired t-test. Significant differences were found comparing the mean self-efficacy pre and post test scores of the participants in both the longitudinal (six-month) and intensive (one month) courses ($p < 0.001$ and $p = 0.004$, respectively). No significant difference was found for concise TADBIR course ($p = 0.235$).

Table 5 presents the total score and scores of the components of the ES before and after the three courses and their differences. The total TS scores of both short-term lon-

gitudinal and intensive courses increased significantly (both $p < 0.001$). In the longitudinal course, all components increased significantly. However, in the intensive one-month course, there was a significant increase just for the components of “meaning” and “autonomy”. No significant difference was found for the total ES and its components scores for TADBIR course.

Since the participants attending the three courses were not similar, one-way ANOVA was used to explore the differences in their TSS and the ES' components scores before attending the course. Table 6 demonstrates the results of ANOVA. According to this table, none of the mentioned variables showed a significant difference among faculty members before entering the courses.

The same analysis was performed for the

Table 5. Comparison of the Mean and Standard Deviation of the Total Score of the Empowerment Scale and its Components in Medical Education Courses

Course	Factor	Test	Mean	SD	Dif	SD of Dif	T	p
Six- month	Overall	Pretest	3.92	0.41	-0.605	0.26	-6.860	<0.001
		Posttest	4.52	0.42				
	Efficacy	Pretest	4.28	0.50	-0.461	0.42	-3.289	0.011
		Posttest	4.74	0.26				
	Impact	Pretest	3.96	0.43	-0.467	0.15	-9.333	<0.001
		Posttest	4.42	0.43				
	Meaning	Pretest	3.74	1.02	-0.859	0.68	-3.819	0.005
		Posttest	4.60	0.45				
	Autonomy	Pretest	3.67	0.47	-0.666	0.34	-5.795	<0.001
		Posttest	4.33	0.34				
	Confidence	Pretest	3.54	0.64	-0.536	0.62	-2.612	0.031
		Posttest	4.07	0.90				
One-month	Overall	Pretest	4.06	0.26	-0.254	0.17	-5.052	<0.001
		Posttest	4.31	0.25				
	Efficacy	Pretest	4.31	0.37	0.0	0.38	0.0	0.999
		Posttest	4.31	0.52				
	Impact	Pretest	4.02	0.28	-0.636	0.44	-0.476	0.644
		Posttest	4.08	0.52				
	Meaning	Pretest	4.03	0.36	-0.348	0.35	-3.258	0.009
		Posttest	4.38	0.40				
	Autonomy	Pretest	3.95	0.32	-0.297	0.28	-3.535	0.005
		Posttest	4.25	0.33				
	Confidence	Pretest	3.91	0.39	0.758	0.63	0.402	0.696
		Posttest	3.83	0.70				
Six-Day	Overall	Pretest	3.78	0.47	0.054	0.50	0.374	0.716
		Posttest	3.73	0.63				
	Efficacy	Pretest	4.01	0.68	-0.042	0.37	-0.246	0.235
		Posttest	4.05	0.62				
	Impact	Pretest	3.73	0.47	0.067	0.62	0.372	0.717
		Posttest	3.67	0.77				
	Meaning	Pretest	3.74	0.51	-0.069	0.68	-0.354	0.730
		Posttest	3.81	0.76				
	Autonomy	Pretest	3.87	0.54	0.071	0.61	0.403	0.695
		Posttest	3.80	0.59				
	Confidence	Pretest	3.49	0.59	0.263	0.82	1.113	0.289
		Posttest	3.22	1.03				

Table 6. Comparison of Self-efficacy and the Components of the Empowerment Scale among Faculty Members before Attending the Courses

Source of Variability		Sum of Squares	Mean Square	p
Self-efficacy	Between Groups	0.424	0.212	0.064
	Within Groups	2.036	0.070	
	Total	2.460		
Efficacy	Between Groups	0.606	0.303	0.365
	Within Groups	8.425	0.291	
	Total	9.031		
Impact	Between Groups	0.513	0.257	0.219
	Within Groups	4.645	0.160	
	Total	5.159		
Meaning	Between Groups	0.623	0.312	0.493
	Within Groups	12.463	0.430	
	Total	13.086		
Autonomy	Between Groups	0.422	0.211	0.377
	Within Groups	6.055	0.209	
	Total	6.477		
Confidence	Between Groups	1.175	0.588	0.158
	Within Groups	8.644	0.298	
	Total	9.819		

scores after attending the courses. Accordingly, self-efficacy ($p < 0.001$) and the components of “efficacy” ($p = 0.017$), “impact” ($p = 0.27$), “meaning” ($p = 0.010$), and “autonomy” ($p = 0.020$) had a significant difference and “Confidence” ($p = 0.091$) had no significant difference. We used the Tukey post hoc test to investigate the reason for the significance, which revealed a significant difference in the TSS among all the three types of the courses. However, a significant difference was observed between TADBIR and longitudinal courses as for all the components of the ES.

Considering the educational course as an independent variable and the post test scores of TSS and the ES components as dependent variables in a general linear model (MANOVA), there was a statistically significant difference in TSS and ES components based on the training course ($F = 2.815$, $p = 0.005$; Wilk's $\Lambda = 0.345$, partial $\eta^2 = 0.413$).

The Tucky post hoc test showed a significant difference in TSS among the three types of the courses. However, a significant difference was observed between TADBIR and longitudinal courses in all ES components. Entering TSS and the ES components as covariates into the model (MANCOVA) showed a significant difference in TSS ($p < 0.001$) as well as “meaning” ($p = 0.078$) and “autonomy” ($p = 0.034$) com-

ponents, but no significant difference was detected in “Efficacy” ($p = 0.265$), “Impact” ($p = 0.333$) and “Confidence” ($p = 0.266$) components.

The statistical prerequisites were first evaluated and confirmed for all the above analyses.

Discussion

Workforce empowerment in educational organizations has a significant role in different aspects of development and progress in the society. On the other hand, the psychological feeling of capability has a great effect on job satisfaction and professional commitment of the personnel (19). Teacher self-efficacy is related to positive teaching behaviors (20). Literature has covered the advantages of teacher self-efficacy, but its development process and aspects is not clear (21). Educational courses and workshops are among the most common FD programs (16). Different studies have evaluated the effect of these training courses (22). In one study, the perceived self-efficacy of the faculty members of the Penn State College of Medicine was evaluated before and after a 9-month FD course (23). Faculty members perceived increasing and enhancing of their teaching skills, understanding promotion and tenure, career planning, decision making skills, grant-writing skills, communication skills, ac-

cessing information, selecting a mentor, and conflict management.

In another study in 2014, the FD program of newly hired faculty members was evaluated which included three required and two optional credit courses (42 hours each) covering topics such as teaching methodologies, curriculum design and development, assessment and evaluation, diversity in teaching and learning, professionalism and scholarly practice. Participants reported an increase in their confidence in the teaching skills (16).

In this study, we evaluated the effect of medical education courses on perceived self-efficacy and empowerment of the faculty members to examine the difference between concise, short-term intensive (one-month) and longitudinal (six-month) courses. According to the results, the faculty members showed a significant difference in self-efficacy on pretest and posttest of one-month and six-month courses, indicating that they were confident about the achievement of their tasks (which are often successful) (10). However, no significant difference was observed in self-efficacy during the concise six-day training course (TADBIR). In addition, the scores of "meaning" and "autonomy" showed significant differences in the pretest and posttest of the intensive one-month course while the longitudinal six-month course caused a significant increase in the score of empowerment and all its components. According to the conducted studies, empowerment is a multidimensional concept (6,7,24).

In general, the training courses had a significant effect on the empowerment of the faculty members, maybe because attending these courses helped them to realize the importance of educational activities and the significance of the required skills; and as a result, they felt empowered in decision-making, management of educational activities, and autonomy after acquiring the skills through attending the courses. However, the concise six-day course (TADBIR) did not have the expected effect on some com-

ponents. Some other studies have also found that longer training periods result in greater increases in teachers' self-efficacy (25).

Nonetheless, participants in TADBIR had a work experience of more than 10 years while most of the faculty members who participated in short-term courses were newly hired or had a less than 10 years of work experience. A study conducted in the University of California failed to show any significant relationship between work experience as a faculty member and perceived self-efficacy (26). However, the difference can be a reason for the obtained results as a confounding factor. Based on the Bandura's theory of self-efficacy, mastery teaching experience and skills during the first years of a faculty member's career would have a significant influence on development of his/her long-term self-efficacy (27). Moreover, we found no difference in perceived self-efficacy between men and women, which is similar to the findings of the California study (26).

Conclusion

In general, it seems that long-term longitudinal educational courses are more effective than intensive and concise ones. Therefore, to make effective changes, the necessary training should be offered in a longitudinal fashion during long-term courses. However, this study suffered some limitations like the low number of participants, differences in their participation in different courses, and lack of evaluation of the quality of the offered courses. Therefore, it is suggested to conduct studies with a better design to confirm the results of this study. It is also recommended to perform qualitative studies to determine the reasons for the obtained results.

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Conflict of Interests

The authors declare no competing interests.

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