Investigating Educational Needs of Faculty Members of Basic Sciences of Fa of Medicine: Educational and Personal Development Needs

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Abstract

Background and Purpose: The first step in educational planning is identification of educational needs. The increasing scientific movement, information explosion and technology development, especially in Medical Sciences remind the need to empower faculty members as specialized human power. In this regard, in this study initially a valid and reliable tool was designed to investigate educational needs of faculty members of basic sciences of IUMS faculty of Medicine to determine their educational needs and priorities to be considered in faculty development programs.

Methods: In this cross-sectional study, after reviewing the literature and job description of faculty members proposed by Iran Ministry of Health and Medical Education, an initial questionnaire including 3 parts and 76 questions was designed. In order to confirm face and content validity, the questionnaire was distributed among medical education experts (n=10). Then, it was revised accordingly and the final version including 3 parts and 68 questions was developed and distributed among the study participants (n=30) to confirm reliability. Afterwards, the final version was distributed among all the study participants to assess their educational needs.

Results: Face and content validity and reliability (Cronbach's alpha of 0.9) of the questionnaire were confirmed. The educational needs of faculty members of basic sciences were as follows: educational technology skills (3.72±0.16), student learning and development skills (3.37±0.16), educational softwares application (3.19±0.13), curriculum and educational planning, teaching and class management skills (3.09± 0.12), assessment and evaluation skills (3.05±0.13), and scientific writing skills (2.67±0.15). The mean average calculated for all the skills was 3.1±1.1 that indicates the need for professional development.

No significant relationship was found between age, gender, education, work experience, employment status, educational department, and educational needs of the study participants; however, a significant relationship was found between their academic rank and educational needs. The results indicate that instructors declared the highest educational needs to 4 areas of class management, curriculum and educational planning, scientific writing skills and assessment and evaluation skills; while, professors declared the lowest educational need to the mentioned areas. In addition, oral and face to face workshop presentation (58.1 percent), morning to noon presentation time (85.3 percent), emails for communication (40.3 percent), and blended teaching (35.5 percent) were considered as the most appropriate.

Conclusions: The results of this study show that faculty members need all aforementioned skills, especially in educational technology. At last, to consider their educational needs and priorities in planning and implementation of faculty development programs is recommended.

Keywords: Educational needs assessment, Basic sciences faculty members, School of medicine

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Introduction

According to the mission of educating experts, researchers and scholars, universities and higher education institutes play a crucial role in developing qualified, intellectual and morally competent workforce for the country. Faculty members are fundamental elements of higher education and their qualitative development has a significant impact on performance of universities as the core of higher education and major infrastructure of other sectors (1).

Information explosion and technology development, especially in medical sciences are vital issues that necessitate the empowerment of faculty members. Information explosion in the field of medical knowledge is vast, and its doubling time is decreased to 20 months (2). The importance of medical sciences to provide, maintain and promote community health and rapid developments in medical sciences in recent years have increased the need to consider faculty empowerment programs. In addition, usually in Iran post graduate students attend no formal teacher training course as a part of their curriculum of studies, and they usually start their teaching career with no specific training or experience (3).

In this regard, 1970s is a milestone in the development and promotion of education and enhancement of faculty members of medical sciences(4). Since 1980s, faculty development programs included seminars and workshops, the relationship between teacher and student was emphasized and gradually the terminology of faculty development was entered into the literature of medical education (5). For the first time in Iran, faculty development programs were established in Educational Development Centers (EDCs) and faculties of medicine. In 1989, after the establishment of Iran Ministry of Health and Medical Education and separation of Universities of Medical Sciences from Ministry of Higher Education, educational development centers were established in all Iranian universities of medical sciences who were supposed to present faculty development programs (3).

Faculty development programs will empower faculty members in their different roles as teachers, researchers, managers, and mentors. These programs, which are infrastructures of development in higher education, need continued attention and support from leaders and managers of higher education (6) and must emphasize individual, professional and organizational needs of individuals (7). To plan these programs, educational needs assessment, program designing, implementation and evaluation are required (6).

Needs assessment, provides a basis to determine curricular objectives and is an appropriate ground to organize major educational elements of a course based on prioritized needs of its audience (8). Needs assessment and identification of educational needs of faculty members, promotes quality of education and is the basis to design, implement and evaluate activities of educational systems (9). Investigating educational needs at all levels in order to revise curriculum, to increase its efficiency, to innovate, and to reorganize courses is a primary requirement (10).

In regard to the tasks of faculty members, Harden and Crosby suggested 6 areas and 12 main roles including: facilitator (learning facilitator, mentor), evaluator (student, curriculum) program designer (curriculum, course), resource facilitator (of instructional materials and study guides), information provider (lecturer, clinical teacher), and role model (teaching) (11). Moreover, Hasket et al. characterize a faculty member according to three areas of role effectiveness, efficiency and appropriateness (12).

In 2008, Iran Ministry of Health and Medical Education categorized various tasks of faculty members in areas of education, research,

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management and administrative activities, professional development, health care services, promotion of specialized activities outside the university, and familiarity with regulations associated with promotion (13).

To the best of our knowledge at the time of the study, literature indicated no evidence of the studies on the educational needs assessment of Basic Sciences faculty members of IUMS; however, the university Educational Development Center presented faculty development workshops. Considering the existing gap, this study attempts to provide necessary information to promote educational development of faculty members of basic sciences of faculty of Medicine of IUMS, according to their declared needs and priorities.

Methods

This cross-sectional needs assessment study was conducted in 2013 at Iran University of Medical Sciences. Participants of the study were faculty members of Basic Sciences, including 67 members from 13 educational departments including Medical Education, Parasitology, Pathology, Immunology, Histology and Embryology, Biochemistry and Nutrition, Genetics, Pharmacology, Medical Physics, Anatomy, Physiology, Religious studies, Microbiology and Virology.

For the purposes of the study, data were collected by a three-section questionnaire that was designed according to the similar studies and indices defined in the literature, and job description for faculty members proposed by Iran Ministry of Health and Medical Education (13). The three section questionnaire dealt with demographic data, needs assessment (62 questions) and means to present courses and workshops (4 questions). Also two open-ended questions were asked at the end of the questionnaire to record other educational needs and suggestions. The main questions of needs assessment section were rated on a 5-point Likert scale ranged from very low (1) to very high (5). Face and content validity of the questionnaire were confirmed by expert opinion (10 medical education experts). Reliability of the questionnaire was confirmed by Cronbach's alpha (alpha=0.90). After confirming the validity and reliability, questionnaires were distributed among faculty members in person, and the completed ones were gathered through follow-up contacts in about 2 months. Each questionnaire was given a code and to describe the data descriptively and inferentially, mean, standard deviation ,T-test, ANOVA (one-way variance analysis), Friedman and correlation analysis were calculated in SPSS software v.16. To assess the structural validity, exploratory factor analysis (EFA) was calculated and for data analysis, mean average of scores was considered as a criterion to make decisions on educational needs of the study participants; therefore, scores higher than 2.5 were considered as indicator of educational needs.

Results

From 67 distributed questionnaires, 62 (92.5 percent) were completed and returned. In exploratory factor analysis phase, KMO and Bartlett's tests indicated KMO=0.87 and significance level of Bartlett's Test < 0.01. Considering that KMO values more than 0.80, significance in Bartlett's test is the prerequisite for factor analysis and regarding the results of these tests, exploratory factor analysis was used for skills mentioned below (Table 1) that indicates 72.61% of educational needs of faculty members.

Factor loading greater than 0.5 indicates perfect relationship. Factor loadings of these seven skills are more than 0.7 that strongly implies the relationship of the skills for needs assessment. Sixth skill with factor loading of 0.93 is more relevant to needs assessment that was confirmed by the results of structural validity (Table 2). The questionnaire reliability was confirmed (Cronbach's alpha = 0.9).

Table 1. Factor analysis of investigating educational needs of faculty members questionnaire

Component	Proposed components		Extraction Sums of Squared Loadings		
	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	72.61	72.61	5.083	72.61	72.61
2	10.12	82.73	----------		
3	5.17	87.90			
4	4.43	92.33			
5	4.07	96.40			
6	1.83	98.23			
7	1.77	100			

Table 2. Factor loading matrix

Skill	Factor loading
1	0.85
2	0.87
3	0.85
4	0.78
5	0.87
6	0.93
7	0.78

Demographics of the participants of the study who completed 62 questionnaires were: 28 females (45.2 percent) and 34 males (54.8%). The mean age and SD was 51± 0.9 years. Average work experience was 20.3 years. Most faculty members had Ph.D. degree (91.9 percent), the other participants hold Master's degree (6.5%) and the least of them were GPs (1.6 percent). Academic rank of the study participants were instructor (9.67%), assistant professor (41.93%), associate professor (38.70%), and full professor (9.67%). The majority of the participants were full-time (67.7 percent), others were fixed-term (30.6 percent) or casual employees (6.1 percent) (Table 3).

Needs assessment scale was based on a 5-point Likert (very low, low, medium, high and very high). As a result, for each question, the lowest score was 1 and the highest score was 5. The average rate for each case was 2.5 and scores higher than 2.5 were considered as a benchmark. The mean and SD of scores according to the faculty priorities for different skills included educational technology skills (3.72±0.13), student learning and development (3.37±0.16), educational softwares application (3.19±0.13), curriculum and educational planning (3.09±0.12), classroom teaching and class management (3.09±0.12), assessment and evaluation (3.05±0.13), and academic writing skills (2.76±0.15) with overall mean average of 3.17±1.1 (Table 4), indicating an educational need for professional training in the aforementioned areas.

The most emphasized need of the study participants was to familiarity with new teaching and learning methods and the least emphasized needs were classroom teaching and class management. In curriculum and educational planning skills, familiarity with principles of new assessment methods was the most emphasized need and the familiarity with principles of curriculum and educational planning was the least emphasized one. In student learning and development skills, to teach creative thinking was the most emphasized and the least emphasized need was to non-verbal communication skills. In technology, the most emphasized need was learning to work with learning management systems (LMS) effectively and the least emphasized need was to become familiar with electronic content development softwares. In academic writing skills, the most emphasized need was learning how to avoid plagiarism and the least emphasized need was learning to prepare posters. In assessment and evaluation, the most emphasized need was to become empowered in designing and evaluation of teaching videos and the least emphasized one was to design multiple-choice tests. To apply educational softwares, the most emphasized need was to become familiar with qualitative data analysis softwares (MAX QDA-Atlas.ti,...) and the least emphasized one was basic ICDL (Computer Basics, Windows and Internet) (Table 5).

Table 3. Demographics of the study participants

Variable		Faculty members N=62	
		No.	%
Gender	Female	28	45.2
	Male	34	54.8
Age	31-40	4	6.2
	41-50	28	45.2
	51-60	24	38.7
	Over 60	6	9.7
Work experience	1-10	18	29
	11-20	17	27.4
	21-30	25	40.3
	Over 30	2	3.2
Academic rank	Full Professor	6	9.67
	Associate Professor	24	38.70
	Assistant Professor	26	41.93
	Instructor	6	9.67
Degree	Ph.D.	56	91.9
	Master's Degree	4	6.5
	GP	1	1.6
Employment status	Full-time	42	67.7
	Fixed-term	19	30.6
	Casual	1	1.6

There was no significant relationship between age, gender, education, work experience, employment, and educational needs of the studied faculty members; however, there was a significant relationship between academic rank and educational needs; therefore, most instructors and professors had the least emphasized needs to classroom teaching and class management, curriculum and educational planning, academic writing and assessment and evaluation skills (Table 6).

To present workshops and courses face to face (58.1 percent), to run workshops from morning to noon (85.3 percent), to share information about training programs via email (40.3 percent) and to participate in faculty development blended courses (face to face and electronic) (35.5 percent) were considered the most appropriate (Table 7).

Table 4. Priority of educational needs of the study participants

Skills	Mean	Mean Standard Error	Rank
Classroom Teaching and Class Management	3.09	±0.12	4
Curriculum and Educational Planning	3.09	±0.12	4
Student Learning and Development	3.37	±0.16	2
Educational Technology	3.72	±0.13	1
Academic Writing Skills	2.76	±0.15	6
Assessment and Evaluation	3.05	±0.13	5
Educational Softwares Application	3.19	±0.13	3
Total	3.17	±1.1	

Discussion

To plan educational development programs for faculty members and to increase quality of teaching and learning environments, identifying the educational needs of faculty members is essential. Scientifically, the first step to design a training program is to identify educational needs of the audience at the time of recruitment and annually on a regular basis.

The study results show that participants were mostly men (54.8 percent) with an average age of 51±0.9 years and work experience of 20.3 years, and mostly full-time members of the university (67.7%) which is consistent with studies at Yazd (14) and Isfahan (15) Universities of Medical Sciences; however, the results are inconsistent with other Iranian research in medical sciences (9).

In this study, the first priority was technology skills (3.72±0.16) that was different from needs indicated in other Iranian universities of medical sciences; for example, new teaching methods (Ilam University of Medical Sciences) (16), how to design and implement distance learning courses (Isfahan University of medical sciences), critical thinking (Yazd University of medical sciences), student development (Tehran University of Medical Sciences) (17), and new teaching methods by application of a

Table 5. Prioritizing educational needs of the study participants

Skill 1: Classroom Teaching and Class Management	**Priority**	**Mean Friedman Rating**
Modern Teaching-Learning Methods	First	9.8
Class Management	Last	6.3
Skill 2: Curriculum and Education	**Priority**	**Mean Friedman Rating**
Principles of New Assessment Methods	First	4.35
Principles of Curriculum Planning	Last	3.63
Skill 3: Student Learning and Development	**Priority**	**Mean Friedman Rating**
Creative Thinking Methods	First	6.20
Non-verbal Communication Skills	Last	4.61
Skill 4: Teaching Technology	**Priority**	**Mean Friedman Rating**
Efficient application of electronic learning management systems (LMS)	First	2.09
Electronic content software efficient application	Last	1.91
Skill 5: Academic Writing Skills	**Priority**	**Mean Friedman Rating**
Understanding how to avoid plagiarism	First	3.47
Poster preparation	Last	2.59
Skill 6: Assessment and Evaluation	**Priority**	**Mean Friedman Rating**
Video film design and evaluation	First	6.26
Multiple-choice questions design	Last	4.67
Skill 7: Software Application	**Priority**	**Mean Friedman Rating**
Qualitative data analysis softwares (MAX QDA-Atlas.Ti,…)	First	4.18
ICDL (Windows-Internet-Computer Basics)	Last	2.83

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standard lesson plan (Guilan University of Medical Sciences) (18).

In this study, the least emphasized need was academic writing skills (2.76±0.15), while in similar studies in other medical universities e.g. it was on how to prepare a lesson plan and Windows (Isfahan University of Medical Sciences), how to prepare a lesson plan (Yazd University of Medical Sciences) and teaching time management (Guilan University of Medical Sciences), public education and Windows (Tehran University of Medical Sciences) (Table 8) that do not seem consistent with the findings of this study, which may be due to the administered needs assessment questionnaire and/or differences in the study participants.

In this study, there was no significant relationship between age, gender, education, work experience, employment status, educational departments and educational needs of the participants. However, there was a significant relationship between academic rank and educational needs, instructors had the most emphasized and professors had the least emphasized educational needs to class management, designing lesson plans and teaching, assessment and evaluation and academic writing skills, which are not consistent with Sabzevari research who found a significant relationship between gender and work experience (9).

In regard to priority of the educational needs, the most emphasized priorities reported were technology, student development, curriculum and educational planning, classroom teaching and class management, assessment and evaluation and academic writing skills. Academic writing skills was the least emphasized priority that may be due to empowerment of faculty members in this area.

Conclusion

Educational Development Centers (EDCs) are assigned to implement faculty development workshops and courses in Iranian Medical Universities to empower faculty members. These programs must be based on

Table 6. Investigating the relationship between academic rank of the study participants and their need to specified skills

Skills	Mean square	Significance level	Significant relationship	Most Emphasized by	Least Emphasized by
Classroom Teaching and Class Management	2.52	0.05	+	Instructors	Professors
Curriculum and Educational Planning	3.37	0.01	+	Instructors	Professors
Student Learning and Development	4.1	0.06	–	Not specified	Not specified
Educational Technology	0.29	0.85	–	Not specified	Not specified
Academic Writing Skills	4.1	0.04	+	Instructors	Professors
Assessment and Evaluation	3.36	0.02	+	Instructors	Professors
Application of Educational Softwares	0.72	0.61	–	N/A	N/A

educational needs and priorities of this audience.

In this regard, to conduct similar studies to

Table 7. Frequency distribution of workshop presentation

Variable		Faculty members N=62	
		No.	%
Workshop presentation	Oral presentation and discussion	36	58.1
	Problem-solving sessions	21	33.9
	Informal discussions	2	3.2
	Neuter	3	4.8
Workshop presentation time	Morning	53	85.3
	Afternoon	9	14.5
Methods to receive information about educational programs	Poster	9	14.5
	Public advertisement	2	3.2
	Email	25	40.3
	SMS	13	21
	University website	13	21
Methods of course attendance	Electronic	5	8.1
	In person	20	32.3
	Problem solving meetings	1	1.6
	Informal sessions	6	9.7
	Modular courses	1	1.6
	Problem solving sessions	4	6.5
	Integrated problem solving sessions	2	3.2
	Blended	22	35.5
	Blended in service-training courses	1	1.6

Table 8. Needs assessment priorities

Researcher	Characteristics	Highest need	Lowest need
Hasan Alkhamis	Tehran University of Medical Sciences 2011	How to foster creativity in students	Teaching Methods/ Windows
Ata-Allah Asadi	Guilan University of Medical Sciences 2011	Teaching design and application of standard lesson plans	Teaching time-table
Saeed Mazloumi	Yazd University of Medical Sciences 2011	Critical thinking	How to prepare a lesson plan
Maryam Avijgan	Isfahan University of Medical Sciences 2010	How to design and implement distance courses	How to prepare a lesson plan-Windows
Sakineh Sabzevari	Iran Universities of Medical Sciences 2010	Modern teaching methods	-----
Alireza Mirzaee Karzan	Ilam University of Medical Sciences 2010	Modern teaching methods	-----
This study	Iran University of Medical Sciences 2013	Technology skills	Academic Writing skills

investigate educational needs of faculty members in other areas, such as management, research, promotion rules and regulations, specialized activities outside university, healthcare services, etc. must be taken into account.

Finally, to consider priorities and needs of faculty members in planning faculty empowerment programs in regard to their academic ranks and changing needs is absolutely necessary and to conduct periodic needs assessment studies is strongly recommended.

Conflict of Interest

The author declares no conflict of interest.

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