Educational Research Article

Research priorities in medical education: A national study

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Abstract

BACKGROUND: One preliminary step to strengthen medical education research would be determining the research priorities. The aim of this study was to determine the research priorities of medical education in Iran in 2007-2008.

METHODS: This descriptive study was carried out in two phases. Phase one was performed in 3 stages and used Delphi technique among academic staffs of Isfahan University of Medical Sciences. The three stages included a brainstorming workshop for 140 faculty members and educational experts resulting in a list of research priorities, then, in the second and third stages 99 and 76 questionnaires were distributed among faculty members. In the second phase, the final questionnaires were mailed to educational research center managers of universities type I, II and III, and were distributed among 311 academic members and educational experts to rate the items on a numerical scale ranging from 1 to 10.

RESULTS: The most important research priorities included faculty members' development methods, faculty members' motives, satisfaction and welfare, criteria and procedures of faculty members' promotion, teaching methods and learning techniques, job descriptions and professional skills of graduates, quality management in education, second language, clinical education, science production in medicine, faculty evaluation and information technology.

CONCLUSIONS: This study shows the medial education research priorities in national level and in different types of medical universities in Iran. It is recommended that faculty members and research administrators consider the needs and requirements of education and plan the researches in education according to these priorities.

KEYWORDS: Medical Education, Research, Priority, Medical Sciences, University, Delphi Technique, Academic Member, Iran.

Medical universities in Iran are responsible for providing educational, research, and health services. They have to respond to the health needs of the Iranian society and modify their educational policies accordingly. Thus, planning for the desired educational research which is in line with their mission is very important. Educational research eventually tries to improve the practice of medicine by providing new evidence to be used by teachers and policy makers. It also provides evidence for educational bodies in their methods and approaches.[1-2] The importance of evidence for decision making has increased during recent years. In medicine, Evidence Based Medicine, and in medical education, Best Evidence Medical Education have been used to update educational policies and performances, and provide the opportunity for medical educators to monitor and standardize their existing programs within a quality-improvement framework.[3] Therefore, educational researches must be planned in a way to provide legitimate evidence for educational

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decision making, teaching-learning process, educational management and reform.[4] Unluckily, in most Asian countries, educational studies receive a slight budget and face some barriers such as poor socio-economic condition, cultural and religious conservatism, leadership crisis, lack of relevance, low training in research and information poverty. Moreover, research committees in universities do not include educational studies among their top priorities.[4] A number of solutions have been proposed to strengthen medical education researches, one of which is to determine medical education research priorities.

Prioritization of research areas is so important that Ministry of Health and Medical Education in Iran and also a large number of vice-chancelleries for research in Iranian universities have announced their lists.[5-7] Essential National Health Research (ENHR) also, with collaboration of all Iranian universities of medical sciences and other stakeholders explored the national health research priorities and reported that researches in education encompassed 6.8% of total applied researches.[8] Most of these priority subjects originate from individual or institutional opinions or the faculties' and administrators' interests, and are not based on an organized research. The scope of medical education research is broad and depends on the needs and mission of individual institutions.[9] Medical Education Research Center in Iran is a national center with the responsibility to develop and manage educational researches in medical sciences. In this regard, determining research priorities largely contributes to guide medical education researchers and also to motivate policymakers and academic administrators to focus more on educational needs. Based on these priorities, one can recognize the needs, present problems, provide possible solutions and justify the priority of financial support for research. Since the main funding for research in Iran is provided by governmental section, there is a need for accountability in this regard which can be provided by priority setting as the first step. The aim of this study

was to determine the research priorities of medical education in Iran.

Methods

This descriptive study was carried out during 2007-2008 in two main phases. In the first phase, the study population were the academic members of Isfahan University of Medical Sciences, while in phase two the faculty members of all universities as well as medical education experts participated in the study.

Delphi technique was adapted in phase one through three stages; each stage included forming small groups, distributing questionnaires and forming an expert panel. The Delphi method was used to involve a broad range of faculty members in all stages. The first stage was a brainstorming workshop in which 140 academic staffs, department heads, deans and their deputies on research and education, members of Education Development Offices at different schools, students of various educational levels, educational administrators of educational hospitals, and members of research committee in Medical Education Research Center were invited. Eighty nine people attended a one-day workshop on educational research. Having been briefed on educational research and its related areas, participants formed groups with 10-12 members each. The groups were benefited from supervision and guidance of one member of research committee. Finally, participants came out with a list of research priorities.

The topics were then refined and categorized and finally classified into different packages. A board of educational experts discussed the topics and categories in each package and a final set of topics was extracted. In the second stage, 99 participants received a questionnaire containing the finalized set of topics from the previous stage. These people, including workshop participants and deans and their deputies on research and education were asked to rate the topics from 1 (the least important) to 10 (the most important). The topics were identified and prioritized based on their averages;

then, the priorities were discussed by a board of experts and refined again, providing the content of the next questionnaire to be used in the 3rd stage of Delphi method. Seventy-six participants were asked to rate the items on this new questionnaire on a numerical scale ranging from 1 to 10. The obtained information was again analyzed and responses converged into a consensus position and became stable, therefore, final research priorities in the first phase were determined by the board of educational experts. These educational experts included seven persons holding the positions such as Director of Education Development Center, Manager of Medical Education Research Center, the University Vice-chancellor for Education, and four members of Research Council in Medical Education Research Center. It is worth to mention that these people hold at least a Master degree in Medical Education.

The second phase of the study was a cross-sectional survey in which academic staff and educational experts from all types (type I, II and III) of Iranian medical sciences universities were asked to rank the topics derived from phase one of the study. Experts and academic staff who were working for any Iranian medical university on permanent basis, on tenure track, on contract, the ones who had an educational managerial position or some position at Education Development Center, or were members of medical education board of experts were included in the study.

A total of 311 questionnaires were distributed among three types of medical sciences universities, from which thirty questionnaires were sent to medical education experts all over the country. Classification of medical universities in Iran are as follows: type I have the largest number of faculty members and students and they conduct the most undergraduate and postgraduates medical educational programs; type II have all of the above mentioned characteristics but at lower extents; and type III normally have very few undergraduate medical educational programs and no postgraduate ones in their system.[10] The questionnaires were sent to three universities of type I (n = 141),

three universities of type II (n = 90) and two universities of type III (n = 50). In order to access the universities' educational experts; first, necessary coordination were made with their EDCs (Education Development Centers) and consent letters were signed by EDC directors. Then, the questionnaires were sent to them and they were asked through an official letter to distribute the questionnaires among deans, education and research deputies of schools, the head of educational department, head of EDC, and education centers. The EDCs were also responsible to collect and return the filled questionnaires to Isfahan Medical Education Research Center by post with all costs paid. Data analysis was done by SPSS version 11.5. The results earned from the universities were merged with the viewpoints of medical education experts and the research topics earning top 25% priority rank were determined as top research priorities. Descriptive statistics was applied and mean and standard deviation were used for the analysis.

Results
In the first stage of the first phase of the study, 927 topics were developed which were decreased to 129 research topics after getting refined by medical education experts and faculty members. The most important research topics in this stage were faculty member evaluation and promotion. During the second stage, from 99 distributed questionnaires 86 one were collected. The response rate of the second stage of this phase was 85.5%. Among 129 research topics sent to them as a questionnaire, the topics with more priority included: clinical faculty evaluation, promoting faculty members' competency, faculty member's recruitment, faculty members' responsibilities and roles, validity and reliability of faculty members' evaluation methods, faculty development opportunities and faculty evaluation.

During the third stage of phase one, after refining the topics by medical education experts, 50 research topics were determined and the questionnaires containing these topics along with previous feedback were resent for

86 participants. The response rate at this stage was 81% and the questionnaire including these 50 topics was confirmed by educational experts to be used for the second phase of the study.

The response rate of the second phase in universities of type I, II and III was 75%, and 288 questionnaires out of 311 were collected. After the analysis, 12 research topics were determined as the highest priorities of medical education (table 1). The best obtained score was 8.73 out of 10. The most important research priorities included faculty members' development methods, faculty members' motives, satisfaction and welfare, the criteria and procedures of faculty members' promotion, teaching methods and learning techniques, job descriptions and professional skills of graduates, quality management in education (table 1). Moreover, research priorities were determined separately in universities of type I, II and III (table 1).

The topics earning the second top 25% of priority ranks included: brain drain from university, students' educational needs assessment for curriculum developing, the gap between theory and practice, training practical skills in laboratory and skill lab, student evaluation methods in clinical and theoretical courses, curriculum revision in different levels and different educational disciplines, medical ethics in education and research, satisfaction and motivation of medical students, nurturing creativity and critical thinking, course evaluation and program evaluation, educational facilities and resources, health centeredness in medical education (medical education based on the priority of health maintenance and promotion), and faculty members recruitment and preparation for responsibilities.

Discussion

The findings of this study showed the medial education research priorities in national level and also for universities of type I, II and III separately. The research priorities in different types of universities were a little different, because their educational situations as well as their needs are different. For example, the stu-

dents to faculty members ratio and educational facilities varies in these universities. Although type III universities do not have graduate studies, the number of researches done in the field of medical education in those universities is considerable and we had to pay attention to their viewpoints in setting the priorities in national level.

An important issue in the present study was that the most priorities were concerning faculty members. As in priorities setting the view points of faculty members were asked, they mostly stated their own needs. In addition, lack of training for faculty members as well as lack of supervision and evaluation on their performance in the one hand and failure to provide opportunities for their growth on the other hand, caused this situation. However, recognizing faculty members' problems, the factors causing these problems and proposing some interventions for solving these problems are among the most important studies in medical education. The problems concerning the methods and topics for faculty development programs in western countries have been discussed in other studies.[11-12] Medical sciences faculty members In Iran like many other countries do not receive formal training in teaching methods.[13] Thus, the Ministry of Health and Medical Education, and some other universities try to improve faculty members' attitude and skills in teaching and research as well as to enhance their knowledge and skills in academic professional practice through running a number of workshops and courses. A systemic review on faculty development programs between 1980-2002, showed that these kinds of programs were effective and valued by participants[11] but paying attention to relevant topics and using appropriate methods in faculty development were recommended.[14-16] A study in Iran showed the most important development programs according to faculty members' needs were information resources, clinical skills evaluation, and application of evaluation feed back in teaching.[17]

Faculty members' motives, satisfaction and welfare are also among the problems in Iranian

Table 1. The scores of medical education topics from the educational experts' viewpoints in Medical Universities according to their priorities

Subject	Total Mean	Standard Deviation	Priority in the country	Priority in Type 1 universities	Priority in Type 2 universities	Priority in Type 3 universities	Priority among Experts
The methods for promoting faculty members capabilities (educational needs, sabbaticals, scholarship, educational course, continuing the education, promotion opportunities)	8.736	1.736	1	1	4	2	3
Motivation, satisfaction, and welfare of faculty members	8.413	1.858	2	3	7	1	20
The process and criteria for faculty members' promotion (regulations, conditions, time line, evaluation method and …)	8.326	1.794	3	6	13	3	2
Teaching and learning methods in medical education	8.278	1.900	4	2	16	10	4
Task description and professional skills of graduates in responding to the needs of the society and health system	8.263	1.819	5	4	10	8	10
Quality management in medical education (monitoring, supervision, modifying the theoretical and clinical education programs)	8.261	1.765	6	5	6	6	9
Second language and medical education (English language, its application and education)	8.23	2.00	7	10	1	19	15
Clinical education (environment, facilities, resources, evaluation, educational hospitals management, organizing and …)	8.179	1.963	8	7	11	7	6
Scientific productivity in clinical medicine (applied researches in clinical medicine and science development)	8.148	1.981	9	14	2	18	5
Teacher evaluation (resources, methods, tools, procedures, and application)	8.145	2.070	10	12	8	15	1

Table 1. Continue

Subject	Total Mean	Standard Deviation	Priority in the country	Priority in Type 1 universities	Priority in Type 2 universities	Priority in Type 3 universities	Priority among Experts
Information technology in medical education (Library, information, internet, virtual education)	8.119	1.854	11	13	9	9	7
Selecting and evaluating university administrators in different levels	8.041	1.955	12	22	3	21	8
Brain drain from university	8.020	2.225	13	21	5	11	14
Students' educational needs assessment for curriculum developing	8.002	1.953	14	9	30	13	13
The gap between theory and practice (clinical)	7.909	2.150	15	17	17	5	43
Training practical skills in laboratory and skill lab	7.899	1.872	16	28	26	4	12
Student evaluation methods in clinical and theoretical courses (students and residents)	7.888	1.913	17	11	21	23	27
Curriculum revision in different levels and different educational disciplines	7.881	2.062	18	8	38	20	17
Medical ethics in education and research	7.875	2.009	19	16	12	34	21
Satisfaction and motivation of medical students	7.865	1.914	20	18	22	12	31
Nurturing creativity and critical thinking	7.798	2.015	21	26	15	31	11
Course evaluation and program evaluation	7.789	1.860	22	19	31	22	16
Educational facilities and resources (books, medical records, equipments, environment, and educational patient)	7.775	1.996	23	20	28	26	24
Health centeredness in medical education (medical education based on the priority of health maintenance and promotion)	7.723	2.176	24	15	25	36	36
Faculty members recruitment and preparation for responsibilities	7.695	2.175	25	29	14	38	19

universities. The role stressors such as role overload, role expectation conflicts, resource inadequacy, role stagnation, and role isolation were reported as high among Iranian faculty members.[10] A study showed faculties had the least satisfaction with their salary and rewards, promotion opportunities, physical condition and working environment.[18]

The problems concerning faculty members' promotion have been mentioned in other studies too. In a study performed in US, it was revealed that evaluation system and faculty compensation system were among the top items in which medical schools were most frequently making policy changes.[19] Some universities have developed criteria for faculty promotion and described the process for promotion and others have used E-forms for accurate evaluation. Despite these improvements, there is dissatisfaction with the appointments and promotions process in many medical academic centers.[20-25]

Major developments in medical education research areas in the international level, include basic research about the nature of educational expertise, physicians' professional practice assessment, problem based learning, continuing education and performance assessment.[26] However, research priorities in medical education have had an advancement based on periodical educational needs assessments during recent years. The trend of educational researches in South East Asia has shifted from competency based education, community oriented medical education, and self directed learning more toward continuous professional development and information communication technology.[27] A thematic review of medical education research literature in 4 famous medical education journals since 21st century showed the areas of applied curriculum and teaching issues such as curriculum evaluation, teaching strategies and techniques, skills and attitudes relevant to structure of profession, students' characteristics interaction with curricula, and performance and learning style differences, were most popular researches which community had been investing largely on

them.[28] Therefore, periodic studies are needed to determine research priorities.

In Iran, less attention has been paid to medical education researches. In addition, investigating the published researches shows that medical education research priorities in Iran are a little different from subjects published in Iranian scientific journals during 1979-1998.[29] This could be due to the reason that published articles are mainly the subjects of interest for authors and do not exactly show the priorities. However, national Iranian Medical Council in a report about scientific researches, has ranked research priorities and presented 26 subjects among which medical education and its related subjects were in the 13th position.[8] This little attention to medical education researches is not just for Iran. In a study by Tutarel on published papers, very few articles belonged to Asian context. Therefore, it seems that there is a big difference between developed and developing countries in medical education research priorities. In order to improve the quality of medical education and medical services, it is necessary to compensate for the information weakness.[30]

In order to achieve these research priorities, it is recommended that educational researchers, faculty members, health managers, service providers and policy makers join each other to cooperate in developing strategies and identifying priorities to guide educational researches toward future and adopt social accountability based on that.[31] Our policy-makers should revisit our universities' missions to assess nature, areas, and achievable goals of educational researches. Accordingly, research management can prioritize research areas and direct a wide range of research groups nationwide. The goal of determining research priorities is providing some indicators for helping in decision making, budget planning, and planning for future interventions. Therefore, it is recommended that managers and research administrators consider the needs and requirements mentioned by faculty members of different universities and try to guide medical education research projects accordingly.

The managers of Medical Education Development Centers in Iranian Medical Universities can take advantage of these priorities and introduce their needed subjects to faculty members, students and staff interested in research activities. Establishing expert committees in each university and determining research subjects and titles according to research priorities as well as providing a research map for improving the existing gaps can facilitate accessing evidence based educational information in each university. Although this study tried to have the participation of faculty members in different universities for determining the research priorities, medical students and other stakeholders had no role in this regard. This is while medical students are the main stakeholders of education and their views are important in educational planning and research. Moreover, medical students in Iran are engaged in researches in the field of medical education. Hence, it is recommended to plan future studies with the participation of medical students and other stakeholders, and determine research priorities every 3 to 5 years.

This study determined medical education research priorities in Iran. The priorities were more concerning faculty members' problems, job description and professional skills of graduates, quality management in education, and clinical education which have been confirmed by literature too. Therefore, it is expected to plan educational researches based on these priorities to respond to the needs of the society.

Acknowledgements

Conflict of Interests

Authors have no conflict of interests.

Authors' Contributions

MT carried out the design and coordinated the study, participated in all part of the study process and prepared the manuscript. NY provided assistance in the design of the study, coordinated and carried out the study and participated in manuscript preparation. TCh and AY provided assistance in data analysis and interpretation of data and read the manuscript critically. All authors have read and approved the content of the manuscript.

References

1. Harden RM. Approaches to research in medical education. Med Educ 1986; 20(6): 522-31.
2. Harden RM, Grant J, Buckley G, Hart IR. Best Evidence Medical Education. Adv Health Sci Educ Theory Pract 2000; 5(1): 71-90.
3. Dauphinee WD, Wood-Dauphinee S. The need for evidence in medical education: the development of best evidence medical education as an opportunity to inform, guide, and sustain medical education research. Acad Med 2004; 79(10): 925-30.
4. Majumder MA. Issues and priorities of medical education research in Asia. Ann Acad Med Singapore 2004; 33(2): 257-63.
5. Afarinesh. Medical Education Research Priorities of Ministry of Health were Determined [Online] 2007. [cited 2009 Jan 21]; Available from: URL: http://www.afarineshdaily.ir/afarinesh/News.aspx?NID=20500.
6. Vice Chancellery for Research. Research Priorities [Online] 2008. [cited 2008 Feb 10]; Available from: URL: http://research.mui.ac.ir.
7. Azizi F. Research priority setting of medical group. Journal of The Faculty of Medicine, Shahid Beheshti University of Medical Sciences 1995; 15: 3-11.
8. Owlia P, Baradaran Eftekhari M, Setareh Forouzan A, Bahreini F, Farahani M, Ghanei M. Health research priority setting in Iran: Introduction to a bottom up approach. J Res Med Sci 2011; 16(5): 691–8.

9. Amin Z, Eng KH. Basics in Medical Education. New Jersey: World Scientific Publishing Co; 2004.
10. Ahmady S, Changiz T, Masiello I, Brommels M. Organizational role stress among medical school faculty members in Iran: dealing with role conflict. BMC Med Educ 2007; 7: 14.
11. Steinert Y, Mann K, Centeno A, Dolmans D, Spencer J, Gelula M, et al. A systematic review of faculty development initiatives designed to improve teaching effectiveness in medical education: BEME Guide No. 8. Med Teach 2006; 28(6): 497-526.
12. Wilkerson L, Irby DM. Strategies for improving teaching practices: a comprehensive approach to faculty development. Acad Med 1998; 73(4): 387-96.
13. Elzubeir M, Rizk D. Evaluating the quality of teaching in medical education: are we using the evidence for both formative and summative purposes? Med Teach 2002; 24(3): 313-9.
14. Bulc M, Svab I, Radic S, de Sousa JC, Yaphe J. Faculty development for teachers of family medicine in Europe: reflections on 16 years' experience with the international Bled course. Eur J Gen Pract 2009; 15(2): 69-73.
15. Behar-Horenstein LS, Schneider-Mitchell G, Graff R. Faculty perceptions of a professional development seminar. J Dent Educ 2008; 72(4): 472-83.
16. Steinert Y. Faculty development in the new millennium: key challenges and future directions. Medical Teacher 2000; 22(1): 44-50.
17. Farhadian F, Tootoonchi M, Changiz T, Haghani F, Oveis Gharan SH. Faculty members' skills and educational needs concerning clinical teaching methods in Isfahan University of Medical Sciences. IJME 2007; 7(1): 109-18.
18. Teymouri M, Tootoonchi M, Salehi M, Hassanzadeh M. Job satisfaction among faculty mMembers of Isfahan University of Medical Sciences. IJME 2008; 7(2): 227-36.
19. Jones RF, Gold JS. Faculty appointment and tenure policies in medical schools: a 1997 status report. Acad Med 1998; 73(2): 212-9.
20. Thomas PA, Diener-West M, Canto MI, Martin DR, Post WS, Streiff MB. Results of an academic promotion and career path survey of faculty at the Johns Hopkins University School of Medicine. Acad Med 2004; 79(3): 258-64.
21. Kanter SL. Does the consistent application of criteria for faculty promotion lead to fair decisions? Acad Med 2008; 83(10): 891-2.
22. Feder ME, Madara JL. Evidence-based appointment and promotion of academic faculty at the University of Chicago. Acad Med 2008; 83(1): 85-95.
23. Howell LP, Poon B, Nesbitt TS, Anders TF. A web-based data repository and review system for faculty evaluation and promotion. Acad Med 2007; 82(7): 704-12.
24. Levinson W, Rothman AI, Phillipson E. Creative professional activity: an additional platform for promotion of faculty. Acad Med 2006; 81(6): 568-70.
25. Kevorkian CG, Rintala DH, Hart KA. Evaluation and promotion of the clinician-educator: the faculty viewpoint. Am J Phys Med Rehabil 2001; 80(1): 47-55.
26. Norman G. Research in medical education: three decades of progress. BMJ 2002; 324(7353): 1560-2.
27. Majumder AA, D'Souza U, Rahman S. Trends in medical education: challenges and directions for need-based reforms of medical training in South-East Asia. Indian J Med Sci 2004; 58(9): 369-80.
28. Regehr G. Trends in medical education research. Acad Med 2004; 79(10): 939-47.
29. Azizi F. Published researches in medical education in Iran. IJME 2001; 1(2): 3-6.
30. Tutarel O. Geographical distribution of publications in the field of medical education. BMC Med Educ 2002; 2: 3.
31. Wartman SA. Research in medical education: the challenge for the next decade. Acad Med 1994; 69(8): 608-14.