

Medical Education in Iran: An Exploration of Some Curriculum Issues

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Abstract: Background: Although Iran is a large and populous country, the state of medical education is poorly understood and under researched. However, it is apparent that, in recent years, calls for reform in medical education have not tended to lead to major changes. As a result, the curricula used are in danger of being perceived as dated and less effective than they should be.

Purpose: This exploratory study is designed to investigate the perspectives and experiences of a group of the most influential medical education course planners in Iran. Its aim is to investigate their views about the nature of the undergraduate medical curriculum in Iran and explore with them ways in which such curricula could be modernized and improved.

Methods: In-depth, semi-structured interviews were used to explore the perceptions of an elite group of medical education course planners who all work in prestigious universities in Tehran. Each of these 10 individuals was interviewed twice, over a period of several months, in order that an in-depth view of their perceptions could be unraveled.

Results: A deep concern about the lack of an innovative medical education curriculum in Iran emerged as the strongest theme from the interviews. There is widespread agreement that the current curriculum is too oriented towards the students passively learning facts. There is also a perceived lack of integration between the two-year basic science courses and clinical learning. Furthermore, participants feel that poor teaching facilities and overcrowding of students has provided an unsuitable learning environment. Both positive and negative attitudes toward educational strategies in curriculum development were demonstrated. Some of the barriers to curriculum change were also discussed.

Conclusions: There is a real need for major changes in the medical education curriculum in Iran. The results of this study suggest that a move towards a curriculum that engages students as active participants in a process of lifelong learning would be highly beneficial. As clinically qualified doctors they will face many challenges in the years ahead, and a modernized curriculum should help them to acquire the necessary knowledge and develop the clinical skills and problem solving abilities they will need.

In the academic year 1965-1966, Iran had six medical schools. Just before the revolution in 1979, this number had risen to 13. Now in 2006 there are 48 medical schools educating physicians to serve the country's 67 million inhabitants.¹ Thirty-eight of the schools are affiliated with government-controlled universities; the other medical schools are private. The private medical schools follow the curriculum which has been developed by the Ministry of Health and Medical Education (MoHME). The increased number of medical schools and medical students after the revolution has, to some extent, remedied Iran's shortage of physicians so that all rural areas now benefit from a health care system. Perhaps, most significantly, free medical education has provided the opportunity

for students from different social backgrounds to enter public medical schools through a national competitive examination. This has led to all rural and urban areas in Iran benefiting from doctors who originally come from that area. Unfortunately, this attention to improvements in the organization and provision of healthcare does not seem to have been matched by attention to the improvement of the undergraduate medical curriculum. The medical curriculum is generally suspected of deficiencies in content, methods of teaching, the examination system and the specification of educational outcomes.² This situation largely arises from the fact that the medical curriculum has not been revised since the revolution in 1979.

In 1988, the World Federation for Medical Education (WFME) generated the Edinburgh Declaration of 12 principles for reforming medical education.³ It can be argued that medical educators around the world had not taken seriously the importance of the future needs of populations worldwide prior to the Edinburgh Declaration. The importance of medical education reform in training and practice of future doctors has led to other recommendations being published by the World Summit on Medical Education.⁴ These recommendations, along with the principles of the Edinburgh declaration, have influenced curriculum development throughout the world and were echoed in the recommendations of the General Medical Council (GMC) for the reform of undergraduate medical education in the United Kingdom (UK).⁵

As a result of such recommendations, many medical schools across the world developed a new curriculum to produce medical graduates who will become committed to lifelong, self-directed learning. It also adopted a student-centered and problem oriented approach.⁶ Many medical schools in the United States (US), the UK and Europe, and even in Asian countries are currently using this approach which is becoming more widespread.⁷

The problem is that despite the emphasis placed by medical educators on the importance of the medical education reform, almost all Iranian medical schools are still offering courses based on the traditional system from the pre-revolutionary period. The traditional system follows a discipline-based approach, teacher-centered and hospital-based with no options or elective modules. Similarly, portfolio learning as a tool for promoting formative assessment and professional development has not been adopted in medical education in Iran. Communication skills training courses have no place within the current undergraduate medical curriculum in Iran. This is despite the fact that there is a large body of evidence indicating the importance of medical students' communication skills.⁸⁻⁹ There is also evidence that behaviors learned from communication skills training transfer into the clinical setting, and that such training is known to have long term effects on students' behaviour.¹⁰⁻¹³

Within this wider context the purpose of this study is to gain an understanding of some Iranian medical education course planners' perspective of the nature and the improvement of the undergraduate medical curriculum. Two questions occupy a crucial position throughout the study: (a) "What is the current state of the undergraduate medical curriculum in Iran?" and (b) "What barriers exist to the reform of undergraduate medical curriculum in Iran?"

Methods

A qualitative research design was employed due to the nature of the research questions. Qualitative approaches are ideal when a topic is poorly understood, and they can be used very effectively to shed light upon complex situations such as the one described in this paper.¹⁴ The particular focus upon the nature and development of the undergraduate medical curriculum in Iran, lent itself ideally to the use of an in-depth and holistic use of qualitative research methods.

Participants - A purposive sampling technique was employed in this investigation because it increased the range of data that could be discovered.¹⁵ In purposive sampling, the participants are selected according to the needs of the study based on judgments about which people or documents will be most helpful or productive.¹⁶ Participants in the study included informants from the 3 most prestigious government funded medical schools in Iran's capital, Tehran. Participants were identified by using known contacts and by snowball sampling, whereby participants are asked to identify others who have a good understanding of the question at hand. The criteria for inclusion included the extent of experience with medical curricula and course-planning, close cooperation with the MoHME regarding medical education issues, an understanding of innovations in medical education across the world, and a willingness to participate in the study. In this study, the purposive sample consisted of 10 medical course planners who had firsthand experience with the phenomenon under investigation. The participants were typical and expert, and their information is representative of the current state of medical education in Iran. Participants were full-time members of the academic staff who had position ranking from associate professor to full professor. All were Tehran-based physicians with different specialties. It should be noted that there are only approximately 20 people who met our criteria for this study, and we were able to recruit 10 of these individuals. Other medical schools in Iran typically follow Tehran medical schools as a model, particularly in the changing context of undergraduate medical curriculum. However, there is a great deal of centralized decision making regarding the undergraduate medical curriculum. In this respect, the MoHME is the major curriculum defining body for all public and private medical schools in Iran. Several of the participants were also in charge of improving medical education in the MoHME. Ideally, we would have interviewed all 20 of the curriculum planners who met our inclusion criteria, but some of them proved to be too busy and inaccessible. However, a measure of data saturation was achieved through the 10 interviews. A stage was reached where no new data was being identified,

and nothing was being added to what had already been elicited during the ongoing interviews.¹⁴ For this reason, we were content to work with the data from the interviews with these 10 key informants.

The data collection procedure: primary and second interviews - Two interviews with each participant were scheduled. The first author conducted interviews in the informant's choice of location, either at a hospital ward or in a hospital quiet room. All participants appeared to be relaxed, comfortable, and willing to talk about their perspective. In the first round of interviews which lasted 30-60 minutes, an in-depth interview guide designed to ensure consistent coverage across all interviews was used. The interview was grounded in the nature and development of the undergraduate medical curriculum. Areas covered included past changes, features of the course, and possibilities for improvement and barriers. The participants were asked broad questions and encouraged to respond in narrative form. For instance, "Can you tell me about your experience of the current position of undergraduate medical education", "Given that the curriculum has been running for 24 years, do you consider it to have been successful?", "What have the outcomes been?", "Do the current courses cover the need of learners?" and "Are you aware of any barriers that have repressed undergraduate medical curriculum reform? Subsequent questions were derived from the participants' responses. However, the aim was to allow participants to interpret their situation in their own words. Questions were worded to enable this information to emerge within the context of a conversational interview.

In the second part of this study, five months later, we conducted further interviews with the same participants. The purpose of the semi-structured second interview was to address any gaps of information that had been identified in the first interviews and to discuss and clarify preliminary findings with participants. Conducting two interviews with each participant also helped to enhance the trustworthiness of the study's data. In one sense this gives some kind of data triangulation. Although the interpretation of interview data always needs to be treated with care, this helped to minimize certain threats to the validity of the data.

Responses were audiotaped and then transcribed. "Spot checking" of transcripts was conducted in order to illuminate the accuracy of transcripts.¹⁷ Also, the transcribers were listening to the tapes' content as well as typing, resulting in a more accurate transcription. The categories, themes and quotes were translated into English for this article. In this study, MT and ST transcribed all interviews verbatim and then analyzed them in the

original language in order to increase the reliability of the translated materials obtained from the perspectives of informants from non-English speaking culture. We are aware of the current state of the art in cross language research which would include one more step-to "back translate" into Persian to ensure the accuracy of the translation. For this reason, we returned the transcripts in order to ensure the accuracy of translation. Content analysis of the sort used here involves identifying a range of themes within the transcripts and then reordering the text to reflect the themes.¹⁸ The aim of the analysis was to account for all of the different points of view discussed by the respondents and to try to avoid "researcher bias". An attempt was made to cut away dross,¹⁹ those aspects of the text that did not directly bear on the research topic.

Results

The six themes illuminating the questions raised in the introduction are curricular, educational climate in medical training, professional identity, learning strategies and methods, assessment and evaluation strategies, and barriers. The findings are described with commentary about the various points that arose.

Curricular - Several participants argued that medical students are still experiencing the transition from basic science to their clerkships as a significant change. This group of participants believed that this transition is a "practice shock" for medical students. The vast majority of participants claimed that the clinical modules are not based on the fundamental requirement of the community needs. Further concerns over the curriculum were illuminated by participants. For example, one of the participants described his concern over the current curriculum as follows:

I think the only trouble with the current medical curriculum is that...it is overcrowded and there is an overrepresentation of some subjects, and there is no significant link between basic science and clinical science. Students' knowledge is not structured properly.

There is an increasing concern about the current medical curriculum. Lack of integration between the 2 year pre-clinical basic science courses and subsequent clinical learning is a substantial issue within the universities' curricula. Interestingly, one of the participants described how interest in a community-oriented care system seems to be gradually waning among medical students:

... A sense of alienation of the clinical tutors towards health service delivery needs has

affected medical students' attitudes towards the social medicine modules. They have a negative attitude toward courses such as social medicine, health and health practice training. There are only a few faculty members who are very interested in teaching and promoting community based training. From the students' standpoints, however, any faculty member who wanted to show interest in community health issues would be considered as a foolish person. It would appear that he has been pushed from all directions and at all levels.

A few participants reported that the current curriculum is not underpinned by a set of values and beliefs concerning what the student should know and how they come to know it. The absence of such a model for curriculum content and the lack of use of Western models for developing curriculum content, combined with the absence of any innovation or modification, leads to failed community oriented care. This point has been highlighted within the medical curriculum after the revolution.

There is a growing tendency, however, to break down barriers or boundaries that exist within the medical curriculum. In brief, one of the participants described some activities to improve the current curricula as follows:

Because the university curriculum has always been traditional, that is, not many tangible changes have been observed. Some activities have occurred to improve the current medical education. For example, the centre for medical education was established in order to familiarize the clinical tutors with medical educational issues, by this I mean content, teaching and learning strategies, assessment processes and evolution processes. Skill based assessments such as the OSCE have been designed to measure the knowledge, skills and judgment of the medical students; Workshop classes were designed in order to familiarize clinical teachers and medical students with the foundation of medical research. Some universities have developed the skills lab beyond the qualities found in what are known as institutes for the training of skills. These activities contributed to the reform of the university curricula.

This finding leads us to argue that there are a number of areas of discontent with the current practice in medical education, predominantly for medical students in internship stages. This may be the product of a curriculum framework that is teacher-centered, discipline-based, not

integrated and too homogeneous.²⁰

Educational climate in medical training - Several participants stressed the importance of the educational climate in medical training, particularly the specific learning environment. They stated that teaching facilities in Iran are not at a suitable level. They also reported that although the number of medical students has dramatically increased, the educational teaching spaces have not progressively changed. Typical comments in interviews included:

Yes, it is very important because the level of usefulness of training depends largely on our facilities and conditions. We can only have good role modeling or effective doctor-patient relationships when we have a suitable setting. As you are aware, during this interview my office door was opened several times by people wanting to have a look at the laboratory results of the patients. We have to do ten jobs simultaneously. We live in this condition.

This simply illustrates that the current facilities do not provide a suitable learning environment for the work of medical teachers. This may be due to the overcrowding of the students and the patients in hospital, and also may be due to lack of a suitable clinical setting.

Professional identity - One of the most strongly articulated issues, from a majority of participants, was the fact that clinical teachers are not involved in curriculum development. Some participants reflected upon the lack of clear roles within their organization as being one of the barriers in optimizing quality improvement in general practice. This is because the curriculum committee has never asked them to be involved in the curriculum of Iranian medical students. It could be argued that the culture within the Ministry of Health has offered little support for medical teachers in their teaching role. For instance, a participant stated:

We have no actual role in updating the medical curriculum. This is a massive concern amongst clinical teachers. The contents of the university curriculum have been identified by the High Council Cultural Revolution, and we have no right to change them. However, clinical teachers can somewhat identify the educational strategies for their subjects although some departments never ask for a lesson plan.

This quote illustrates that the curriculum has been designed and planned at the top of the hierarchy, before being passed down to the lower level for implementation. This top-down approach, it could be argued, has

resulted in medical teachers without enough motivation for developing education in medicine. The majority of respondents said that they thought that their lack of motivation has affected medical students and has led to students themselves becoming de-motivated.

Learning strategies and methods - There were different perspectives among participants in terms of learning strategies and methods. Many participants reflected that the medical students' curriculum is traditional and actually has not changed since the revolution. Some participants stated that problems exist within the current curriculum. They believed that it is a content-oriented curriculum rather than a case-based curriculum.

... More or less all medical students courses are lecture based. New teaching methods such as problem-based learning, which are very important in the training of medical students, are not yet integrated within the curriculum of medical students.

From this quote, one could argue that some participants are aware that a teacher-centered approach is dominant within undergraduate medical education in Iran. It seems that emphasis is on teaching rather than learning, and students are not encouraged to take responsibility for learning decisions. However, one participant argued:

We had a series of formal courses in the afternoon, which were taught to us as theory. Sometimes our tutors brought the patient into the classroom and wrote his problems on the blackboard, and then students argued the solutions for this particular patient's problems. We had such teaching about 27 years ago.

There appears to be increased interest among medical teachers in the use of problem-based learning (PBL). While the concept of PBL is of great interest to Iranian medical teachers, it seems that they only have heard about it, and know less about the operation of problem-based learning or what actually a problem-based curriculum might look like. The majority of medical teachers claimed that PBL is a new methodology in medical education, and this is why they would like to learn what happens in a PBL tutorial process.

Nowadays dispute over the PBL is too great, but we actually need to know more about that. When we were medical students, our tutors were not able to run a PBL tutorial for us.

In contrast to this, one participant had a negative attitude towards using innovative methods:

Such methods will not work in our educational

system, because we can't change the educational process at the moment.

Some participants considered morning reporting where a case is presented and discussed an important case-based curriculum within undergraduate medical education. They reflect that the morning report has a major effect on the learning experience of medical students, as illustrated by this quote:

The many issues that are argued in the morning reports will be useful for medical students. In the morning reports, students review and plan patient management and they are even familiarized with non-medical issues and the social phenomena.

Although participants stated that they had limited skills for conducting innovative strategies, reflections made on innovations in medical education indicate that the participants had positive attitudes towards such strategies and therefore they are ready to attempt to implement a problem-based learning curriculum.

Assessment and evaluation strategies - Many participants stated that both formative and summative assessment is used in the overall assessment system. As noted by one of the participants:

Old methods are still used to measure the clinical skills of medical students. Oral examinations are used whereby students describe the condition of patients and then we ask some questions about the patients.

However, another participant had a different perspective:

Most of time, the medical students are being assessed when they are examining the patients. It shows whether students can do specified skills or not.

Some departments have employed the OSCE as a formative and summative assessment to measure specified skills of medical students. Despite medical teachers interest in the OSCE, they have expressed some concern regarding the process of an OSCE. For example:

It's a good system for assessing students' skills. But sometimes a lack of suitable space or an increased number of medical students act as barriers for the use of OSCEs in practice.

Another participant stated:

A typical OSCE has special conditions. We need

to include all criteria relating to an OSCE. Otherwise, it is not an OSCE. Developing the stations is very important. A real situation such as real patients or standardized patients should be considered in an OSCE.

The debate is more about the question of using the OSCE approach at all. The focus appears to be more on the ways in which such approaches were used. Sometimes respondents referred it for particular topics:

I think it assesses management techniques. I didn't see any difference between an OSCE and any other skill-based assessment.

Some respondents doubted the applicability of the OSCE approach to certain topics, particularly to the assessing of basic science such as biochemistry and physiology:

I think if you look at pure sessions such as biochemistry and physiology, I think you would find it more difficult to always drag in the ideas of the OSCE concept. More of the general things like basic science- are best done by other methods...

Barriers - Participants frequently expressed concern about the lack of proper infrastructure for teaching. Lack of space for teaching in the hospital was another frequent cause of concern and lack in the unity of members and the resources. Participants reported that their offices are multifunctional, both for examination and for private work. Existing space was often unsatisfactory, lacking the basic requirements of quietness, furniture and equipment.

Some participants stated that those responsible for overseeing educational programs in Iranian medical schools pay less attention to education issues. Educational managers are not familiar with the issues of medical education, and education might not be a top priority for them. This may contribute to the fact that medical oriented care issues are considered more important than the issues of medical education in Iran, as mentioned by a participant:

The medical schools must pay more attention to the health domain and after that focus on primary, secondary and tertiary prevention measures in order to promote health care outcomes. Therefore, neither budget nor time will remain for medical education.

Poor knowledge of research methodology is another

barrier to the development of medical education in Iran. Some participants stated that some clinicians are unaware of the research process necessary to develop, refine and expand a body of knowledge that is important to the medical profession. In this context, one reflected:

We need to solve our medical education based on research rather than gut feeling. Unfortunately, some clinicians are not familiar with the research methods that may help solving some of the current problems that exist within medical education.

Discussion

This study was undertaken to gain an understanding of the current nature of the undergraduate medical curriculum in Iran. In general, it seems that the interview respondents had a deep concern about the current position of undergraduate medical education. These concerns may stem from the great emphasis placed on competence-oriented medical education by bodies around the world.^{3, 4, 21-22}

Our findings illustrate the fact that less attention has been paid to curriculum development in Iran and standards are still far from satisfactory when compared to other countries such as the UK, US and some European countries such as the Netherlands. While the trend in medical education is towards integrating preclinical courses, by way of student-centered, problem-based, system-centered curricula, Iranian medical schools are still suffering from a non-competence based curriculum. Such an approach to the curriculum has also been reported by some Asian countries.²³⁻²⁴ In Iran, this may arise from the fact that medical teachers have an inadequate understanding of innovation in medical education. This approach to the curriculum does not equip doctors to meet the needs of the community which they will serve.²⁵

Our findings indicate that our respondents believe that several factors affect the Iranian medical education system. One of these is the lack of a proper space for teaching in the hospital. Therefore, attending to educational teaching facilities may encourage medical teachers to put their time into educational issues. Our findings are consistent with the work of Seabrook indicating inadequate resources to facilitate effective teaching.²⁶ In Iran, this could be due to the overcrowding of students and patients in hospital, and also may be due to lack of a proper building infrastructure for teaching in hospitals.

The failure to involve medical teachers in the development of the curriculum and the poor level of knowledge and familiarity with innovative teaching

and assessment methods in medical education amongst clinicians, has resulted in undergraduate medical education in Iran failing to make significant progress. There is a serious need to move forward with educational reforms in order to help provide communities with the doctors they need. Such findings are consistent with those from medical education in Asia, where collaboration between the medical department and other department is often non-existent.²⁷ In Iran, this could be due to the fact that the stakeholders, such as medical course planners, medical teachers and policymakers have clinical backgrounds, and they are only familiar with biomedical approaches to research. This has led medical teachers to pay less attention to projects that improve medical education. It could be argued that, since research training mostly concentrates on quantitative inquiry, quantitative approaches have been used to conduct educational research when qualitative approaches might be more appropriate.

In general, an unsupportive learning environment, limitation to the evidence, lack of opportunity for applying evidence based medicine skills, doctors' lack of awareness of research, time constraints and an overload in the number of students were perceived as the main barriers to improving medical education in Iran. Therefore, we argue that there is evidence of a real need for alterations to medical education, particularly in the curriculum, to provide an education system that enables students to prepare for medical careers where lifelong learning on the job is a clear requirement. Additionally, developing national standards based on the Institute for International Medical Education (IIME) guidelines²⁸⁻²⁹ may bring medical schools toward globalization and international standards. This may minimize the international agencies' concerns for the quality of health care and provide "a road towards competence-based medical education". This requires a relevant operational model for evaluation of the current undergraduate curriculum that comes from ample empirical evidence to support the proposed curriculum based on global minimum essential requirements.

Finally, a qualitative research investigation such as this inevitably has limitations associated with it. The study set out to provide deep insight into the thinking of key personnel within Iran. The goal of this study was the provision of rich descriptions of certain phenomena by those who had experienced them. The qualitative methodology used allowed us to explore in some depth the views of several key informants. However, sample size means that care should be exercised in generalizing our findings to other medical schools, both government and private, not included in the current study. Additionally, we have had to depend upon what participants were prepared to tell us in the interviews, and we had to make choices in

deciding whom to interview. It is possible that different informants would have given different responses. Also, the role of the interviewer may have influenced the data we collected, even though an attempt was made to minimize such effects.

References

1. Mohammadi A, Mojtahedzadeh R. Iranian medical schools: database and ranking. Tehran: Ministry of Health and Medical Education; 2003.
2. Tavakol M, Torabi S. Medical education in Iran: From ancient to present. Unpublished paper, 2005.
3. The Edinburgh declaration. *Med Educ.* 1988; 22: 481-2.
4. Walton HJ. World Federation for Medical Education: Proceedings of the World Summit on Medical Education. *Med Educ.* 1993; 28: 140-9.
5. Parsell GJ, Bligh J. The changing context of undergraduate medical education. *Postgrad Med J.* 1995; 71: 397-403.
6. Karle H. Global standards in medical education - an instrument in quality improvement. *Med Educ.* 2002; 36: 604-5.
7. Lam WW, Fielding R, Johnston JM, Tin KY, Leung GM. Identifying barriers to the adoption of evidence-based medicine practice in clinical clerks: a longitudinal focus group study. *Med Educ.* 2004; 38: 987-97.
8. Cushing AM, Jones A. Evaluation of a breaking bad news course for medical students. *Med Educ.* 1995; 29: 430-5.
9. Klein S, Tracy D, Kitchener HC, Walker LG. The effects of the participation of patients with cancer in teaching communication skills to medical undergraduates: a randomised study with follow-up after 2 years. *Eur J Cancer.* 2000; 36: 273-81.
10. Fallowfield L, Jenkins V, Farewell V, Solis-Trapala I. Enduring impact of communication skills training: results of a 12-month follow-up. *Br J Cancer.* 2003; 89: 1445-9.
11. Jenkins V, Fallowfield L. Can communication skills training alter physicians' beliefs and behavior in

- clinics? *J Clin Oncol*. 2002; 20: 765-9.
12. Wilkinson S, Bailey K, Aldridge J, Roberts A. A longitudinal evaluation of a communication skills programme. *Palliat Med*. 1999; 13: 341-8.
 13. Fallowfield L, Jenkins V, Farewell V, Saul J, Duffy A, Eves R. Efficacy of a Cancer Research UK communication skills training model for oncologists: a randomised controlled trial. *Lancet*. 2002; 359: 650-6.
 14. Polit DF, Beck CT. *Nursing research: principles and methods*. Philadelphia: Lippincott Williams & Wilkins; 2004.
 15. Lincoln YS, Guba EG. *Naturalistic inquiry*. Beverly Hills (CA): Sage Publications; 1985.
 16. Murphy E, Dingwall R. *Qualitative methods and health policy research*. New York: Aldin De Gruyter; 2003.
 17. MacLean LM, Meyer M, Estable A. Improving accuracy of transcripts in qualitative research. *Qual Health Res*. 2004; 14: 113-23.
 18. Sapsford R, Abbott P. *Research methods for nurses and the caring professions*. Buckingham: Open University Press; 1992.
 19. Field PA, Morse JM. *Nursing Research: the application of qualitative approaches*. London: Croom Helm; 1985.
 20. Tavakol M, Torabi S, Lyne OD, Zeinaloo AA. A quantitative survey of intern's knowledge of communication skills: an Iranian exploration. *BMC Med Educ*. 2005; 5: 6.
 21. General Medical Council, *Tomorrow's doctors. Recommendations on undergraduate medical education*. London: General Medical Council; 1993.
 22. Schwarz MR, Wojtczak A. Global minimum essential requirements: a road towards competence-oriented medical education. *Medical Teach*. 2002; 24: 125-9.
 23. Baozhi S, Yuhong Z. Medical curricula in China and the USA. *Medical Teach*. 2003; 25: 422-7.
 24. Alshehri MY. Medical curriculum in Saudi medical colleges: current and future perspectives. *Ann Saudi Med*. 2001; 21: 320-3.
 25. Harden RM, Sowden S, Dunn WR. Educational strategies in curriculum development: the SPICES model. *Med Educ*. 1984; 18: 284-97.
 26. Seabrook MA. Medical teachers' concerns about the clinical teaching context. *Med Educ*. 2003; 37: 213-22.
 27. Majumder MA. Issues and priorities of medical education research in Asia. *Ann Acad Med Singapore*. 2004; 33: 257-63.
 28. Schwarz MR, Wojtczak A. Global minimum essential requirements: a road towards competence-oriented medical education. *Med Teach*. 2002; 24: 125-9.
 29. Wojtczak A, Schwarz MR. Minimum essential requirements and standards in medical education. *Medical Teach*. 2000; 22: 555-9.

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