

## Qualitative and Quantitative Evaluation of Clinical Education in Medical Schools of Iran: A Cross Sectional Study

Mohammadi A, MD, MPH<sup>1</sup>; Mojtahedzadeh R, MD, MPH<sup>2</sup>; Enzevaei A, MD<sup>2</sup>

<sup>1</sup> Faculty member, Tehran University of Medical Sciences

<sup>2</sup> Member, Educational Development Center, Tehran University of Medical Sciences

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### Abstract

**Background and Purpose:** Future generalists require in depth exposure to primary care practice and the opportunity to work with successful generalist role models. Changes in hospital practice, patient availability, increased student numbers and their expectations and a redefinition of expected learning outcomes are changing the emphasis of clinical teaching away from traditional inpatient settings towards ambulatory care. In this study we evaluated the quality and quantity of clinical training in medical schools of Iran, and ranked the schools according to each category of criteria.

**Methods:** In the first step an expert committee devised the criteria and indicators for evaluation of the quality and quantity of clinical education and the weights were determined with the consensus developing techniques among the expert committee members. The questionnaire was developed and after data collection the schools' scores were calculated according to the scoring instructions and the final analysis was performed.

**Results:** Regarding the quantitative criteria, i.e. the number and facilities of the clinics, Tehran Medical School, and according to the qualitative criteria, i.e. the quality of clinical training at each school, Sanandaj Medical School gained the first ranks. This is while the presence of residents in these schools is not alike.

**Conclusion:** Quantity and quality of clinical training in a medical school are not necessarily congruent. It seems that some factors like the presence of residents in teaching clinics can influence the students' training.

**Key words:** CLINICAL EDUCATION, QUALITY, QUANTITY, OUTPATIENT EDUCATION, CLINICAL TRAINING

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### Introduction

Medical education is embracing generalist training and moving students from the traditional inpatient wards to the ambulatory medicine setting (1). Future generalists require in depth

exposure to primary care practice and the opportunity to work with successful generalist role model (2). Each clinical encounter with a patient offers a rich source of learning opportunities. Indeed the process, by which clinical skills are woven together, creating an effective clinical encounter, lies at the heart of good practice (3).

Well-documented changes in hospital practice, patient availability, increased student numbers and their expectations and a redefinition of expected learning outcomes

**Corresponding author:** Aeen Mohammadi\*, M.D, M.P.H  
\* 7th floor, Secretariat for Education and Student Affairs,  
Ministry of Health and Medical Education, Simaye Iran  
St., Falamak Jonoobi Ave, Shahrake Ghods, Tehran, Iran,  
postal code: 1467664961  
Tel: +98 (021)88364236  
E-mail: [aeen\\_mohammadi@tums.ac.ir](mailto:aeen_mohammadi@tums.ac.ir)

are changing the emphasis of clinical teaching away from traditional inpatient settings towards ambulatory care (1, 3, 4, 5). In traditional hospital-based approach to medical education, students spend most of their time listening to lectures, attending tutorials and attending to patients admitted to hospital wards as inpatient. They may never see a general practitioner in action in a health center. This approach has been criticized in terms of the atypical and specialized view of medicine given to those who experience it. Students experience only a narrow view of medical needs and health care problems, as only a small proportion of them are seen in the hospital inpatient setting (6). Since inpatients tend to be more representative of subspecialty conditions or be more critically ill, they become less representative of routine medical practice (5, 7). This has led to a reassessment of the educational value of training medical students primarily on hospital-based wards (5). New training initiatives in ambulatory medicine have been developed in medicine (8), and the principal sites for most of this training are primary care office, clinics, and the health maintenance organizations (5).

The primary hypothesis posed here is that the outpatient setting is less effective and appropriate than inpatient training for acquiring clinical skills. Different studies have evaluated the effectiveness of outpatient setting on clinical education of medical students. They have shown no difference between inpatient and outpatient teaching in the skills of questioning, role modeling, emphasizing general principles and concept comprehension (8). Furthermore in another study students rated similarly their acquired clinical experiences and gained similar scores at Objective Structured Clinical Examination (OSCE) in both settings (9). Students and trainees in different courses have valued highly the outpatient training (10), and experiences in ambulatory care have been reported as enjoyable and profitable to patients, staff and students. Students have been described as having better relationships with patients and teachers.

Some researchers have found ambulatory care experience effective in improving both students' knowledge and skill, and preferable to inpatient experience (4).

One of the main parts of ambulatory care is the outpatient clinic. A scheduled outpatient clinic is staffed by one or more doctors including a consultant, trainees, nursing staff, and possibly other health care colleagues. There is usually a large number of patients attending with common clinical problems appropriate for undergraduate teaching. In this setting, opportunities exist for students to see patients independently, observe decision-making and the selection of appropriate investigations, and be supervised in communication and examination skills and attempt simple practical procedures. As there is sufficient number of appropriate patients for similar condition to be seen by all students, if sufficient rooms are available for students to see patients at their own pace, effective, one-on-one tuition which is much valued by students may be possible (4). Besides some authors have stated that places like office for medical students to practice give them the opportunity to learn skills in ambulatory care, and faculty and staff can help learners understand how to provide quality care to outpatient and maximize the learning opportunities that are available to them in this setting (11).

In Iran, medical students study basic sciences for two year and third year medical students are provided with clinical courses. They begin hospital-based learning since the fourth year for 20 months as medical students (or externs) and for 18 months as interns. In the externship period the students learn about the diseases and clinical and para-clinical aspects of their diagnosis and practice examination, communication and clinical thinking skills. A considerable part of this period should be spent in the presence of the faculty and residents in the outpatient clinics. The aim of the internship period is to train the interns in order to develop their different practical skills specially decision-making, and enhance their self-confidence and thinking skills via making them encounter the patients independently and putting practical and clinical responsibilities on

them (12).

In this study we evaluated the quality and quantity of clinical training in medical schools of Iran, and ranked the schools according to each category of criteria.

### Methods and Materials

To devise the criteria and indicators for evaluation of the quantity and quality of clinical education in medical schools nationwide, we constituted an expert committee comprising the project executive members, specialists in medicine and medical education experts.

In quantitative category, “the number of teaching clinics” for medical students and interns, with the weight of 65% and their “equipment and facilities” with the weight of 35% were considered. Equipment and facilities of the clinics meant the number of beds used for physical examination (weight: 70%) and the existence of a special teaching class in the clinic (weight: 30%). The weights were determined with the consensus developing techniques among expert committee members.

In qualitative category the “quality of clinical training” of students and interns in the clinics was considered.

In order to quantify the quality of clinical training, the scores were calculated as follows:

For students’ clinical training:

1. There is no special clinic for this ward. (0 score)
2. There is a clinic for this ward, but students aren’t trained in it. (2 score)
3. There is a clinic for this ward, and students can be trained in it voluntarily. (5 score)
4. There is a clinic for this ward, and students must attend it. (10 score)

For the interns’ clinical training:

1. There is no special clinic for this ward. (0 score)
2. There is a clinic for this ward, but interns aren’t trained in it. (2 score)
3. There is a clinic for this ward, and the interns can be trained in it voluntarily. (5 score)
4. There is a clinic for this ward, and the interns must attend it, but they are not the first line in

visiting the patients. (10 score)

5. There is a clinic for this ward, and the interns are the first line in visiting the patients. (15 score)

These scores are multiplied by the number of the active days of each clinic per week. The mentioned process is repeated for all wards in each teaching hospital of the schools and then the scores of each hospital are summed up and the mean score is calculated for each medical school. The clinics that were considered in the study included: internal medicine, surgery, pediatrics, obstetrics and gynecology, cardiology, infectious diseases, dermatology, ophthalmology, otolaryngeal surgery, orthopedics, urology, psychiatry, and neurology.

We designed a questionnaire for data collection, and asked the schools to fulfill it in all the teaching clinics of their hospitals. In the next step an observer reviewed, checked, and completed the questionnaires and conducted some interviews with the students, interns and nursing staff of wards to approve the data. Then the schools’ scores were calculated according to gathered information and scoring instructions of the criteria. All the calculations were done simultaneously in two parallel groups and the results were compared and double-checked. This minimized the calculation errors. Quantitative criteria were standardized and converted to a 0 to 100 scale before being multiplied by their weights and summed up to reach the final score of the school.

### Results

In this study, 38 medical schools were evaluated in qualitative and quantitative fields. Regarding the quantitative criteria, i.e. the number and facilities of the clinics, Tehran Medical School gained the first rank with score of 100 out of 100 and the next two top ranked schools gained the scores of 72.02 and 53.3 out of 100 respectively. According to the qualitative criteria, i.e. the quality of clinical training at each school, Sanandaj Medical School gained the first rank with the score of 100 out of 100, and the next two top scores were 97.12 and 87.40 out of 100 respectively.

It is to say that the overall number of approved

residency programs in medical schools of Iran is 24, from which Tehran medical school (the oldest medical school of Iran, founded in 1934) provides 22 programs, and sanandaj medical school (founded in 1990) provides only one. The results are summarized in the table 1.

expand education in ambulatory medicine (5). As each clinical encounter with patient offers a rich source of learning opportunities (11), outpatient clinics, due to the large number of clients and the vast domain of cases they provide for medical students, are appropriate place to

**Table 1.** Comparison of the top ranked medical schools in qualitative and quantitative criteria of clinical training.

Medical school	Number of provided residency programs (out of 24)	Quantitative criteria		Qualitative criteria	
		Rank	Score	Score	Rank
Tehran	22	1	100	39.49	35
Shahid beheshti	21	2	72.02	56.33	19
Iran	18	3	53.3	47.89	30
Sanandaj	1	20	20.32	100	1
Hamadan	5	11	26.7	97.12	2
Arak	-	30	10.78	87.49	3

## Discussion

Future generalists require in depth exposure to primary care practice (1). Medical schools in both developed and developing countries are reviewing the curricula in order to establish whether they are producing doctors who can serve the health needs of the society in which they practice. Hospital-based education provides a more concentrated form of experience of diseases than what can be gained in the community, and some aspects of medicine can be best taught in the hospital context (6). But traditional inpatient approach to medical education can not provide medical students with a representative sample of cases that they will encounter in the future general practice, because inpatients tend to be more representative of subspecialty conditions (7). This approach gives a narrow and specialized view of medical needs and health care problems (6). On the other hand most diagnostic and management decisions are being made in outpatient settings, and inpatient wards provide treatment for only the most critically ill patients and are required only for very specialized procedure-oriented technology. Now, medical schools have recognized the need to

learn medicine practically. So, concentrating on the situation of the clinics regarding the quantity and quality of training is an important factor that can improve the level of medical education in medical schools, and can help the students get familiar with the different cases, which they will see, in their future practice.

With respect to the results of this study quantity and quality of clinical training in a medical school are not necessarily congruent, i.e. top ranked schools in the quantitative criteria of clinical training are not essentially ranked highly in the qualitative criteria, and vice versa.

To discuss the reason it is worth mentioning that as far as clinical training for medical students is concerned, there is no main difference between medical schools in the curriculum and management of clinics, but the presence of residents in some of them. Although residents can act as a good role model for students and interns in clinical practice, their presence can affect negatively the students' and interns' activities and therefore their clinical training in outpatient clinics.

As it is shown in table 1, Tehran Medical School, the oldest and greatest one in Iran, provides 22 programs and Arak Medical School, a new one

founded in 1986, provides no programs.

Therefore in outpatient clinics of some medical schools of Iran, residents play central role in patient management but in others interns visit patients as the first line and manage them under the supervision of a consultant doctor (a faculty staff). It seems that the existence of residents in an outpatient clinic can affect the clinical practice and learning of medical students.

As it is shown by our results, medical schools providing more residency-training programs have reached lower ranks and scores than those schools providing no or fewer residency-training programs. This can be because of the role of the interns in clinics, i.e. when residents are present in the clinics, they are usually the first line of visiting the patients, but in the absence of the resident role in the clinics or the ambulatory care settings, interns can be the first line, and despite the paucity of equipment and facilities in the clinics, this can cause greater exposure to the patients for the interns and students and provide them with more learning opportunities. This fact shows that clinical training in medical schools is deeply affected by the involvement of the medical students and interns in patient management and the presence of residency training programs in different specialties, so exclusive and special planning should be made to let the medical students and interns get involved in clinical practice.

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