

## Undergraduate medical education in Turkey–2010

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### Summary

**Aim:** The aim of the study was to determine the status of undergraduate medical education in Turkey through the answers given by the deans of medical faculties to the research questionnaire on Undergraduate Medical Education conducted by Turkish Medical Association.

**Material and Method:** This was a descriptive study. The questionnaires have been sent out to 65 medical faculties which were informed to enroll students.

**Results:** The number of the medical faculties in Turkey reaches to 74 including nine new faculties that will open in 2010. Fifty eight of the medical faculties belonged to state-owned universities and 16 of them belonged to privately owned foundations. The total number of the medical students in Turkey was 38 536 in 2009-2010 academic year. Average number of students per faculty member was 22.6 in basic sciences; 4.5 in clinical sciences and 3.5 in total.

The percentage of professors and associate professors with five years of experience who work full-time in medical faculties was 78.3%. Eighteen (32.1%) of 56 medical faculties adopted teacher-centered instructional model, four (7.1%) of them used student-centered model and 34 (60.7%) of them used a combination of both approaches.

System-based (integrated) curriculum was implemented in 47 (83.9%) of the medical faculties; five (8.9%) of them implemented discipline-based (traditional) and three (5.3%) faculties implemented problem-based curriculum. One (1.7%) faculty's curriculum was based on a combination of integrated and traditional curriculum types.

**Conclusions:** Increasing of the number of medical faculties is remarkable in the last two years. (*Turk Arch Ped* 2011; 46: 322-7)

**Key words:** Undergraduate medical education, Turkey

### Introduction

The Turkish Medical Association has been displaying the status of undergraduate medical education since 1997 with the reports it has published. Undergraduate Medical Education Reports which have been published every 2 years since 2000 shows the change in medical education in the context of students, faculty members, infrastructure and education programs. According to Füsün Sayek, one of the heads of the Turkish Medical Association Central Committee "This effort continues by putting the subjects of infrastructure problems in medical faculties, student numbers/education relations, change in medical education, the continuity of medical education or continuous professional development on the agenda, discussing these subjects and making them to be discussed and contributing" (1).

Studies to develop the quality of medical education have been conducted since the beginning of 1980's. In this process, Edinburgh Declaration (1988) and World Medical Education

Summit Recommendations (1993) can be considered as a milestone (Global Standards). The objective of medical education in Edinburgh Declaration was defined as raising physicians who will provide the development of health for all individuals. It is expected that physicians are raised as attentive listeners, observers, sensitive communicators and efficient clinicians (2).

The first medical faculty of the Turkish Republic is İstanbul University which was opened in 1933 (3). Medical education was started with a teacher-centered, discipline-based education program composed of lessons performed in classrooms using a classical education approach. With the opening of Hacettepe University Medical Faculty an approach using a teacher-centered, organ-system-based integrative education program composed of lessons performed in classrooms was started to be implemented. Dokuz Eylül University Medical Faculty structured its education program with an approach of student-centered, problem-based curriculum (4). The advantages and limitations of medical education programs, their content and

the adequacy expected from graduates were started to be discussed. Faculties started to use mixed approaches which included different approaches together in the scope of their objectives and possibilities instead of a single approach.

The first special unit which performed studies in the area of medical education among medical faculties is İstanbul Medical Faculty Medical Education Research Institute which was instituted in April 21st 1997 (5). The first department of medical education in medical faculties was opened in 1999 in Ege University Medical Faculty (4).

The number of medical faculties was 9 in 1970 and reached 47 in 2000. The number of students enrolled in medical faculties was 1917 in 1975 and this number increased to 5367 in 1983. While the ratio of faculty member/student was 6 in 1997, it became 3.5 in 2000.

The Core Education Program which reviews the education programs of medical faculties in Turkey and defines the subject titles of national medical education has a significant place in the process of development of medical education. The National Core Education Program Organization Study Group which was composed of the representatives of the medical faculties of Ankara, Dokuz Eylül, Gazi, Hacettepe, İstanbul (İstanbul and Cerrahpaşa) and Marmara Universities completed its studies in 2001 (6).

The objective of this study was to determine the status of and change in undergraduate medical education in Turkey referring to 2009-2010 Academic Year data given as response to the Turkish Medical Association Undergraduate Medical Education Research Questionnaire and Student Selection and Placement Center (ÖSYM) Guidelines.

## Material and Method

This study is a descriptive study. It was conducted in the academic year of 2009-2010. The questionnaire prepared by the Turkish Medical Association interrogates the year when the medical faculty was instituted, the first year when the first student was enrolled, curriculum-sample, population-based education practices, student numbers according to periods, properties of faculty members, full time/part-time working states of faculty members, state of teacher support from other faculties, faculty library, computer laboratory, anatomy laboratory (number of cadavers), multi-disciplinary laboratory characteristics, the status of the education hospital, hospital practices related to other hospitals, structure of the medical education, professional skill laboratory, known patient practices, study convention of education program committee, presence of departments, faculty member status of the departments, autopsy practices and the accordance of the education program to the National Core Education Program.

The questionnaire was sent out to 65 medical faculties except for 9 medical faculties which were newly instituted with the Cabinet Decision, but did not enroll students. The data received were used in analysis of medical education models, physical and technical infrastructure status and the status of departments of medical faculties. In addition to the responses received from the deanships ÖSYM guidelines were used in the study for student faculty entering base scores.

The development in medical education was evaluated by comparing the Turkish Medical Association Undergraduate Medical Education 2010 study data with the previous reports.

## Results

### 1-Numerical change in medical faculties, the distribution of student/faculty member

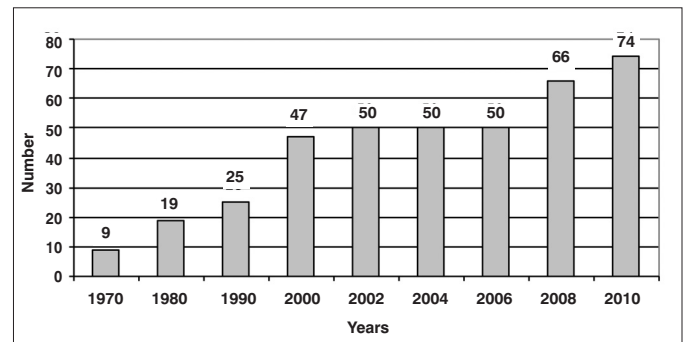
In Turkey, the number of medical faculties has increased 2 fold every 10 years since 1980's. With the newly instituted 9 medical faculties with the Cabinet Decision, the number of medical faculties became 74 in 2010 in Turkey. It is observed that many medical faculties were instituted between 1990 and 2000 and this increase slowed down in the period of 2002-2006 (Graphic 2). An increase was noted again after 2006.

58 of a total of 74 medical faculties including the newly founded ones belonged to state-owned universities and 16 of them belonged to privately owned foundations. Four of the 58 state-owned medical faculties do not enroll students. 46 of the 54 state-owned medical faculties educate their students in their own campuses and the students of 8 medical faculties study in other medical faculties. 6 of the 16 privately owned foundation faculties do not enroll students. 9 of the 10 privately owned foundation faculties educate their students in their own campuses. The students of one of them study in the campus of a state-owned university medical faculty.

Although Muğla University Medical Faculty has been founded, it has not enrolled students yet. When 64 medical faculties which enroll students are examined, the education language is Turkish in 47 state-owned medical faculties and English in two state-owned faculties. In 5 state-owned medical faculties, both Turkish and English education programs are implemented. The education language is English in 7 of the privately owned foundation faculties and Turkish in 3 of them. 30% of the medical education of 6 state-owned medical faculties which educates students in Turkish is performed in English due to legal arrangements.

Three state-owned universities (Hacettepe, İstanbul and Selçuk) have two medical faculties each.

The increase in the number of students enrolled to medical faculties especially after 2007 is notable. The trend to increase is observed to be continued in 2009 and 2010 (Graphic 2).



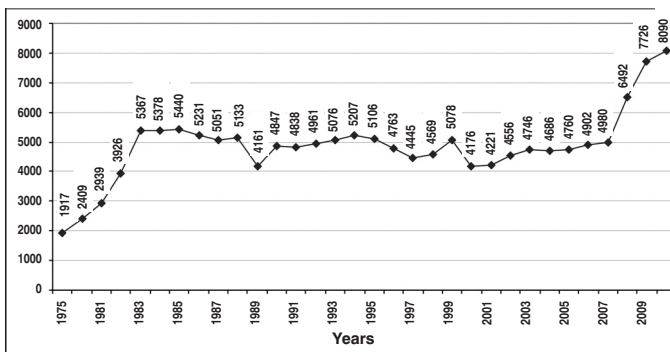
Reference: ÖSYM T.C. Ölçme, Seçme ve Yerleştirme Merkezi Sınav Arşivi (Measurement, Selection and Placement Center Test Archive) (7).

**Graphic 1. The numbers of medical faculties in Turkey according to years (1970-2010)**

The number of faculties is added up to 65 with 64 medical faculties enrolling students according to 2010 ÖSYM Preference Guide and Muğla University Medical faculty which was founded previously, but which does not enroll students. These 65 faculties are distributed in 46 provinces (8). 3 of the medical faculties founded with the Cabinet Decision are located in the provinces of Karabük, Kırşehir and Ordu. Three of the other 6 medical faculties are located in İstanbul, one is located in Ankara and one is located in Konya. With the medical faculties which will be founded the number of provinces containing medical faculty will reach 49. With the newly-founded faculties, there will be three state-owned, 11 privately owned foundation faculties in İstanbul, 5 state-owned faculties and 4 privately owned foundation faculties in Ankara and 2 state-owned faculty and one privately-owned foundation faculty in Konya. The provinces which contain two medical faculties within their province limits are Bolu and İzmir.

It is observed that students are enrolled in all medical faculties completely with the number determined for medical faculties. The number of medical faculty students is a total of 6492 for 2008, 7726 for 2009 and 8090 for 2010 (7).

When the distribution of the students by periods and



Reference: ÖSYM T.C. Ölçme, Seçme ve Yerleştirme Merkezi Sınav Arşivi (Measurement, Selection and Placement Center. Test Archive) (7).

**Graphic 2. The change in the number of students enrolled in medical faculties according to years (1975-2010)**

gender in the 2009-2010 academic year was examined according to the data of 55 medical faculties which educate their students in their own campuses, it was observed that 42.6% of a total of 38.536 students were female and 57.4% were male (Table 1).

It is observed that there are 4976 professors, 2781 associate professors, 2656 assistant professors and 370 academicians in medical faculties in the academic year of 2009-2010 (Table 2).

When the distribution of professors, associate professors, assistant professors and academicians was examined by clinical (internal and surgical) sciences, it was observed that 15.6% of the professors, 17.7% of the associate professors, 15.3% of the assistant professors and 24.8% of the academicians worked in basic medical sciences. Totally, 16.5% of the professors, associate professors, assistant professors and academicians worked in basic medical sciences.

When evaluating the responsibility of faculty members (professors, associate professors and assistant professors) related to education, total number of students per faculty member were calculated based on the 2009-2010 academic year for basic and clinic sciences faculty members. An average of 22.6 students is observed to be assigned per one faculty member in basic sciences, an average of 4.5 students is observed to be assigned per one faculty member in clinical sciences and an average of 3.5 students is observed to be assigned per one faculty member in general (Table 3).

When the number of students per one faculty member (professor, associate professor, assistant professor) in 2009-2010 academic year was examined, the lowest value was found to be 0.4 and the highest value was found to be 8.6. The ratio of student /faculty member between 1997 and 2010 is given in Table 4 (9).

When the change in academic titles of faculty members in years was examined, a total of 10413 faculty members were present in 2010 (Graphic 3). When the number of faculty members were examined, the number of professors was found to be increased by 10%, the number of associate professors was found to be increased by 12% and the

**Table 1. The distribution of the students in medical faculties in Turkey by periods and gender (2009-2010 academic year)**

Preparation		Period 1		Period 2		Period 3		Period 4		Period 5		Period 6		Total		General Total
F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	
608	837	3 911	4 860	3 025	3 780	2 458	3 087	2 202	3 199	2 066	3 231	2 157	3 115	16 427	22 109	38 536

**Table 2. The numbers of professors, associate professors, assistant professors and academicians by divisions in medical faculties in Turkey (2009-2010 academic year)**

	Basic Medical Sciences		Internal Medical Sciences		Surgical Medical Sciences		Total	
	F	M	F	M	F	M	F	M
<b>Professor</b>	332	461	857	1 484	253	1 589	1 442	3 534
<b>Associate Professor</b>	241	252	517	821	207	743	965	1 816
<b>Assistant Professor</b>	189	218	502	721	226	800	917	1 739
<b>Academician</b>	50	42	98	67	38	75	186	184

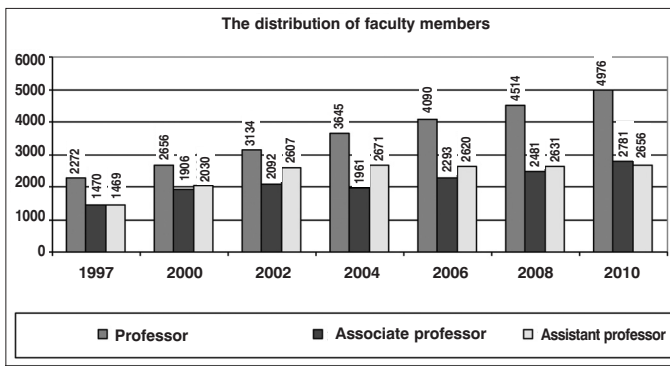
**Table 3. Total numbers of faculty members and students and the number of students per faculty member (2009-2010 academic year)**

The number of professors in basic	The number of professors in clinical sciences	The number of associate professors in basic sciences	The number of associate professors in clinical sciences	The number of assistant professors in basic sciences	The number of assistant professors in clinical sciences	Total number of faculty members in basic sciences	Total number of faculty members in clinical sciences	Faculty member (professor, associate professor, Assistant professor) Total	Total number of students	The number of students per one faculty member in basic sciences	The number of students per one faculty member in clinical sciences	The number of students per one faculty member in general
793	4 183	493	2 288	407	2 249	1 693	8 720	10 413	38 536	22.57	4.45	3.52

**Table 4. The ratios of student/faculty member in medical faculties in Turkey by years (1997-2010)**

Year	The number of students	Faculty members*	Student/faculty member ratio
1997	33 456	5 538	6 (1.9-11.8)
2000	31 648	6 592	4.5 (1.7-9)
2002	31 738	7 833	4.05 (1.8-7.5)
2004	31 942	8 277	3.85 (0.7-6.8)
2006	32 807	9 029	3.6 (1.2-6.8)
2008	33 871	9 626	3.5 (1.1-9.1)
2010	38 536	10 413	3.52 (0.39-8.6)

\*Total of professors, associate professors, assistant professors



**Graphic 3. The distribution of faculty members in Turkey by years (1997-2010)**

number of assistant professors was found to be increased by 1% in 2010 compared to 2008. The total number of professors, associate professors and assistant professors was found to be increased by 8% in 2010 compared to 2008. The total number of students was 38536 in 2010 (increased by 14% compared to 2008) (9).

While the number of students enrolled was 4092 in 2006, this number increased by 32% and reached 6492 in 2008. The number increased by 24% in 2010 compared to 2008 and reached 8090 (9).

While the total number of faculty members was 9029 in 2006, this number increased by 6% and reached 9626 in 2008. The number increased by 8% in 2010 compared to 2008 and reached 10413.

While the total number of professors in 2006 was 4090, this number increased by 3% in 2008 and reached 4514. In the same period, the number of associate professors increased from 2620 to 2631 (by 0.4%). The total number of professors increased by 10% in 2010 compared to 2008 and reached to 4976. The number of assistant professors increased by 0,9% in 2010 compared to 2008 and reached to 2656 (9).

In 12 state-owned and 5 privately owned foundation medical faculties, 100% of the faculty members work full-time. There are 22 state-owned and 2 privately owned foundation university medical faculties where 80% and more of the faculty members work full-time. There are 3 state-owned and one privately owned foundation university medical faculties where the rate of full-time working is lower than 60%. The lowest rate of full-time working for faculty members in medical faculties in Turkey is found to be 39.4% and the highest rate is found to be 100% (mean value 81.7%).

When the full-time working rates of professors and associate professors of 5 years are examined by years, it is observed that these rates are as follows: 81% in 1997, 76% in 2000, 73% in 2002, 75.8% in 2004, 74.2% in 2006, 72.6% in 2008 and 78.3% in 2010 (9).

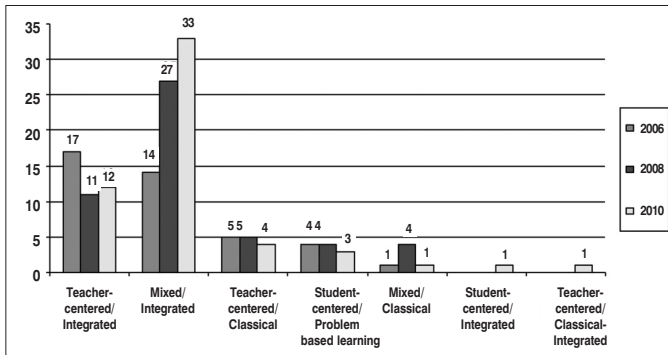
**2- Education samples in medical faculties**

In 34 of 55 medical faculties (61.8%) which enroll students to their own campuses, mixed education sample is used. In 17 (30.9%), teacher-centered and in 4 (7.2%) student-centered education sample is used. System-based (integrated) curriculum is used in 46 of the medical faculties (83.6%), discipline-based (classical) curriculum is used in 5 medical faculties (9%), problem-based curriculum is used in 3 medical faculties (5.4%) and integrated and classical education curriculum is used in one medical faculty (1.8%). It is reported that problem-based education constitutes less than 10% of the curriculum in 30 medical faculties and 10-25% in 8 medical faculties.

When the education programs practiced in medical faculties are examined (Graphic 4), it is observed that the system-based (integrated) education program is prominent in 2006, 2008 and 2010 (9).

Review of the education program is reported to be practiced in 54 of 55 medical faculties. The frequency of reviewing the education program in these faculties is defined to be once a year in 36 medical faculties.

47 of 55 medical faculties report that they rearrange their education program according to the National Core Education



**Graphic 4. The distribution of education samples/programs by years in Turkey (2006, 2008, 2010)**

Program. There are 6 medical faculties which do not pursue the National Core Education Program in their education program. Two faculties did not answer this question.

It is observed that population-based education is practiced in 35 medical faculties. 19 medical faculties which do not practice population-based education have been reported. One medical faculty did not answer this question.

### 3- Physical and technical infrastructure status in medical faculties

54 of 55 medical faculties which enroll students in their own campuses answered the questions related to the physical and technical infrastructure status in medical faculties and one medical faculty did not answer these questions.

In 31 of 54 medical faculties, the library is inside the campus of the medical faculty and is used mutually by the medical faculty and similar health sciences. In 16 medical faculties, the library is located inside the faculty campus and is used commonly by the medical and other faculties as a central library. In 7 of the medical faculties, the library is located outside the medical faculty campus. In three of the medical faculties, no library is present.

In 46 of 54 medical faculties which enroll students inside their own campuses, a computer laboratory is present for use of students.

It is observed that anatomy laboratories are present in 54 medical faculties. The number of cadavers range between 1 and 10 per faculty. 21 cadavers have been reported to be present in one medical faculty. There are 10 medical faculties which have no cadavers.

In 37 of 54 medical faculties, multidisciplinary laboratory is used. Basic sciences laboratory is present in 45 medical faculties and pathology laboratory is present in 44 medical faculties.

Professional skill laboratory is present in 47 medical faculties. It is reported that standard simulated patient practice is used in 31 of medical faculties.

There are education hospitals in 50 of 54 medical faculties and hospital emergency departments in 46 medical faculties. The hospital buildings belong to the medical faculty in 48 medical faculties. 20 medical faculties benefit from other hospitals for education.

### 4- The status of some departments in medical faculties

54 of 55 medical faculties which enroll students in their own campuses answered the questions related to the status of some departments in medical faculties and one faculty did not answer these questions.

33 of 54 medical faculties have a department of medical education. Coordinate structuring is present in 18 medical faculties. It has been reported that departments of medical education are planned to be founded in 14 medical faculties and 6 of these 14 medical faculties plan to found a department of medical education in one year.

A department of forensic medicine is present in 46 of the medical faculties and a department of medical history and ethics is present in 33 medical faculties.

24 of the medical faculties reported that they received education support from other universities or faculties.

## Discussion

An increase in the number of medical faculties from 50 to 66 (32%) occurred between the years of 2006 and 2008 and from 66 to 74 (12%) between the years of 2008 and 2010 (9). It is notable that the number of foundation university medical faculties increased with the increase in state-owned university medical faculties. The number of foundation university medical faculties increased from 9 in 2008 to 16 in 2010. Foundation university medical faculties are predominantly in the provinces of İstanbul and Ankara.

The number of students increased by 32% in 2008 compared to 2006. The increase in 2010 is by 24% compared to 2008 (9).

While the increase in the total number of faculty members was by 6% from 2006 to 2008, it was by 8% from 2008 to 2010. The number of professors increased by 3% from 2006 to 2008 and reached 4514, the increase in the number of associate professors in the same period occurred by 0.4%. The total number of professors increased by 10% in 2010 compared to 2008 and reached to 4976. The increase in the number of assistant professors increased by 0.9% in 2010 compared to 2008 and reached to 2656 (9). These disproportional increases in the numbers of faculty members and students is notable and it is clear that especially the increase in the number of assistant professors will lead to deficiencies in the numbers of faculty members in the short and moderate-term.

When education samples and education programs of the medical faculties are compared between 2006, 2008 and 2010, system-based (integrated) education programs have become predominant in the mixed education sample (9).

Yearly review of the education programs in 36 medical faculties will effect the quality of the education positively. Pursuing of the National Core Education Program when developing programs will provide the students to obtain a national level in terms of information, ability and attitude (6).

In medical education, increase in small group activities and initiating problem-based, task-based and output-based methods have caused student-centered practices to become widespread. Computer-based, "web"-based education has increased use and efficiency of education materials. Distance education constitutes the infrastructure of national-international mutual studies for sharing of information. 46 medical faculties have computer laboratory for use of students. This equipment and infrastructure offers education possibilities for students (11).

The number of cadavers are rather low and the number of students per cadaver is high. Cadavers should be provided for anatomy education which is a significant part of basic medical education and other methods supporting anatomy education should be used more widely in addition.

It would be more accurate to evaluate the transition from master/apprentice education to structured skill education in medical education beyond a technical development as a possibility for a humanist medical education and for integrating ethic values and human rights to medical faculty education. Professional ability education laboratories which were present in 37 medical faculties in 2008 will be founded in 47 medical faculties in 2010 and this will have great contribution to medical education (9).

Standard-simulated patient practices in medical education and in assessment and evaluation provide students to see and to criticize themselves and peers (11). "Standard/simulated" patient usage has been reported to be present in education and in assessment and evaluation in 31 of medical faculties.

While the number of medical faculties having an education and research hospital was 45 in 2008, this figure increased to 50 in 2010. While 43 medical faculties had an emergency department in 2008, this figure increased to 46 in 2010 (9).

A department of medical education was present in 32 faculties in 2008 and 8 medical faculties were planning to found one. The number of medical faculties which have a department of medical education in 2010 is 33 and 14 medical faculties report that they plan to found one (9).

In 2008 the number of medical faculties which had a department of forensic medicine was 42. In 2010, this figure increased to 46 (9). While the number of medical faculties which had a department of medical history and ethics was 23 in 2008, this figure increased to 33 in 2010 (9).

Although many medical faculties have been opened during the last ten years, some of these lack a clear objective, adequate sources and adequate clinical education and research utilities. Very significant developments have been obtained in medical education in recent years, but innovations are still needed to prepare physicians for information society (10).

## Conclusions

The most remarkable result is the significant increase in the number of medical faculties in the last two years.

Continuing efforts for improving medical education in medical faculties are promising. It is valuable that departments of medical education have been founded and are being planned to be founded in faculties which lack them. Increase in computer numbers and in possibilities for web access offered to students is important. Efforts to resolve infrastructure deficiencies in medical faculties are valuable.

The National Core Education Program contributes to medical education in many medical faculties. It is observed that medical education efforts continued since 1990 has come to a definite stage with student-centered practices and especially "good medicine" practices. Studies related to the clinical period and especially the internship period during which students

practice their 5-year aggregations should be intensified. It seems obligatory to evaluate the factors which determine the experiences during the clinical period and especially the effects of the examination for speciality in medicine. Evaluation of undergraduate medical education by self-assessments of medical faculties and by an objective structure on standards will improve and put medical education on the agenda.

The main mission of faculty members is education. In Turkey, mainly healthcare politics and especially performance practices force service function of faculty members to get ahead of the mission of education. Performing researches is an obligation for academic advancement for faculty members. In determination of the quality of education in faculties, the number of full-time faculty members is as determinative as the number of students per a faculty member. Again it should be emphasized that being present full-time in the faculty does not necessarily mean that that faculty member contributes more to medical education.

Ensuring students who are the actual subjects of medical education to participate in all processes in every stage of medical education will offer significant contributions in terms of improving the quality of medical education.

The Turkish Medical Association participates and supports the efforts for a medical faculty structure inside a scientific autonomous university where the students are in the center with an education program prioritizing public health, infrastructure problems are minimized, personal rights of the faculty members are improved.

## Conflict of interest: None declared.

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