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The effect of healthcare transformatıon ın a Turkısh medıcal school

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In Turkey there are 83 medical schools and the oldest six are regarded as the best institutions. Marmara University School of Medicine (MUSM) is one of the 6 leading institutions. MUSM Hospital was delivered to Turkish Ministry of Health (TMoH) for its operational management in 2010. In this study, we aim to assess the current status and trend of productivity and attractiveness of MUSM, by comparing them to other medical schools which are run independently from TMoH. The data between 2010 and 2016 were collected, and eight medical degree programs in 6 medical schools were included in the study. The numbers of publications, ranking in entrance exams and score of graduate students during residency entrance exam, were investigated for comparison. In the ranking of university entrance exams, MUSM ranked 8th in 2010 and dropped to 18th in 2016, while others except one remained stable. When the postgraduate exam for specialist in medicine results were taken into consideration, MUSM ranked 7th in 2008 and 37th in 2016, showing the same downhill slope; while others remained stable or even improved. The ranking of MUSM declined in exams after cooperation, while other medical programs in 5 schools kept their positions or even improved. High work load and low teaching times in pay-for-service system seem to have a negative impact on medical education.

Key words: Medical education, pay-for-service, health care reform.

INTRODUCTION

Graduate medical education is given in university medical schools in Turkey, independent of Turkish Ministry of Health (TMoH). However, postgraduate specialty training is also given in state run teaching hospitals. The quality of graduate or postgraduate medical training has not been measured in any of these institutions formally.

In Turkey, there are 83 medical schools distributed to different regions throughout the country. The oldest six medical schools are regarded as the best institutions for medical education. These schools are in three most populated cities in the country; three in Istanbul, two in Ankara and one in Izmir. Two schools have two programs in which the education is given in English and Turkish as parallel curriculums. In total, 8 graduate medical education programs are regarded as the most attractive ones for high school students who are willing to be professional physicians in Turkey.

Marmara University School of Medicine (MUSM) is one

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of these 6 leading institutions in Turkey that provides training both at graduate and postgraduate levels. The improving trend of scientific publications from MUSM which is believed to reflect the level of quality in medical education (Gulluoglu and Aktan, 2000) indirectly was previously reported. MUSM Hospital in which core graduate and postgraduate teaching procedures are run was delivered to TMoH for its operational management in 2010.

Hence they moved to a new and modern complex quite far from the city center, bringing disadvantages to students' social life. Since 2010, many university hospitals underwent the same operational transformation. University hospitals of other five medical schools mentioned are currently managed independently from TMoH and they are some of the few who kept themselves from this transformation. There are concerns about the governance of teaching hospitals by TMoH in which pay-for-service system is the basis for healthcare. In the beginning of this transformation, concerns on this system change such as drawbacks in medical education due to increased workload were expressed (Turkish Surgical Association, 2010).

The aim of this study is to assess the current status and trend of productivity and attractiveness of MUSM, by comparing them to those in other "Ivy League" medical schools which are run independently. Parameters such as number of publications, ranking in entrance exams and score of graduate students during residency entrance exam were looked at for comparison. A descriptive design was planned to conduct this benchmarking study.

MATERIALS AND METHODS

Design

This cross-sectional study was designed to be descriptive. The study variables of MUSM were compared to those of other institutions as benchmarking on year by year basis. The data between 2010 and 2016, in which the data retrieval started at the time which the operational change started, were collected. A number of scientific publications in the index institution were not compared to that of other institutions. The findings on this variable were compared to those on each year only in MUSM, to assess its trend within the institution.

Samples and subjects

Eight "doctor of medicine (M.D.) programs" in 6 medical schools were included in the study. These are Istanbul University Istanbul Faculty of Medicine (IsFM), Istanbul University Cerrahpasa Faculty of Medicine (CeFM) English program, CeFM Turkish program, Hacettepe University School of Medicine (HUSM) English program, HUSM Turkish program, Ege University School of Medicine (EUSM), and MUSM as the main index comparator. As indicated earlier, these schools and programs were selected due to their historical successes in academic parameters which were determined to be the variables of this study as well. The presence of operational relation with TMoH was one of our confounding factors; therefore, apart from MUSM, all 7 programs were independent.

Outcomes

Outcomes of the study were:

(1) High school students' entrance ranking to each medical school.
(2) Medical school graduates' entrance ranking for specialty posts in any listed vacancies in or out of their school; and
(3) The number of scientific publications in MUSM.

Data collection

The entrance to medical schools in Turkey is carried out once in a year with a centralized examination prepared by OSYM (Student Measuring, Selection and Placement Center). After the completion of a six year medical education, graduates take a postgraduate exam for specialist in medicine, which is also prepared and conducted by OSYM. The postgraduate exam is done twice a year, April and September. The minimum scores/points required for acceptance to medical schools were obtained from OSYM website (http://www.osym.gov.tr/TR,1006/2011-osys-yuksekogretim-programlarinin-merkezi-yerlestirmedeki-en-kucuk-ve-en-buyuk-puanlari-19082011.html). The minimum entrance points and the ranking are compared among subject schools. The postgraduate exam for specialist in medicine results are not regularly published in OSYM website. However, the results and ranking appear in the medical press. The average points and ranking for MUSM and other seven medical education programs were obtained in September 2008, April 2012, September 2012, September 2013, September 2015, and April 2016 (http://www.tipfak.com/tip-tercih-robotu/tip-fakulteleri-taban-puanlari). Scientific publications from Marmara University and MUSM were obtained by searching Science Citation Index (SCI) Expanded, Social Sciences Citation Index and PubMed, using "marmara univ, univ marmara" as key words for the years between 2010 and 2015. The publications were classified as original article, review, and meeting abstract. The scientific publications per academic staff were also calculated for the periods between 2010 and 2015. The number of academic staff in the school was obtained from official records.

RESULTS

Entrance ranking for medical school

In the ranking of university entrance exams, when the minimum points required were considered, MUSM ranked 8th in 2010. In the following years its ranked 11, 13, 19, 19, 18 and 18th until 2016 respectively, showing a downward slope (Figure 1). Rankings of MUSM and other medical faculties are given in Table 1.

Entrance ranking for specialty posts

When the postgraduate exam for specialist in medicine results were taken into consideration, MUSM ranked 7th in September 2008, 19th in April 2012, 23rd in September 2012, 9th in September 2013, 32nd in

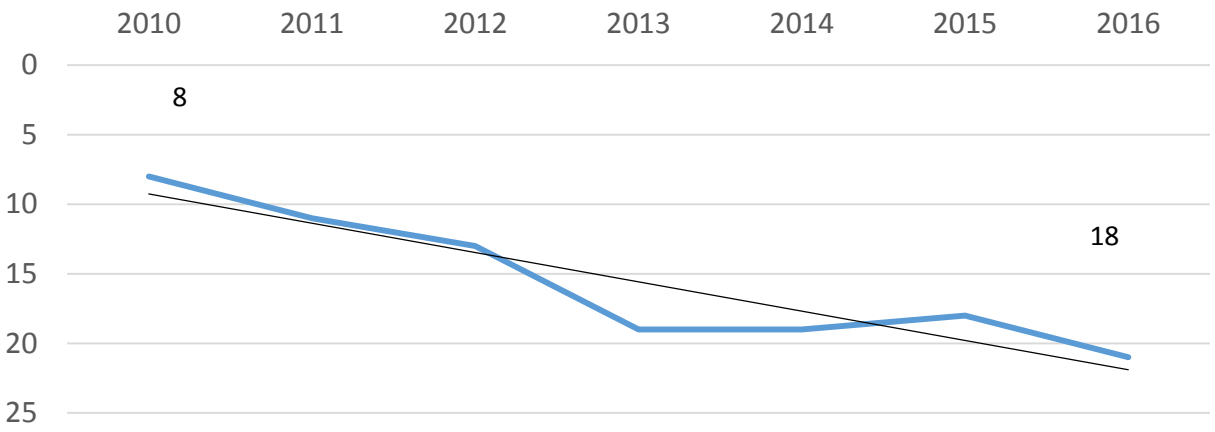

Figure 1. MUSM university entrance exam ranking.

Table 1. University entrance exam ranking among eight medical faculties.

Year	MUSM	IUSM	AUSM	EUSM	CMF(Eng)	CMF(Tur)	HUSM(Eng)	HUSM(Tur)
2010	8	6	8	9	5	7	3	4
2011	11	8	12	13	4	9	3	7
2012	13	10	14	15	6	10	7	8
2013	19	15	20	22	6	16	7	11
2014	19	16	18	22	3	14	7	10
2015	18	11	16	19	2	10	5	9
2016	18	11	12	17	2	6	4	5

September 2015, and 37th in April 2016; showing the same downhill slope as university entrance exam rankings (Figure 2). The ranking of MUSM and other seven medical education programs for the corresponding exams are given in Figure 3.

Scientific publications

The total number of scientific publications, number of original articles published, number of academic staff and the number of scientific publications per staff between 2010 and 2015 in MUSM is given in Table 2. There was a slight increase in the number of scientific publications from 2010 to 2015; however the number of original articles and number of publications per staff remained stable. The contribution of MUSM to the overall scientific publications of Marmara University also remained relatively similar, being 55, 50, 44, 54, 63, and 48%, respectively for the years 2010 to 2015.

DISCUSSION

In this observational study, MUSM's attractiveness and productivity were found to be decreased when compared to other medical schools in Turkey as well as to its past. Ranking of entrance to MUSM dropped from eighth in 2010 to 18th in 2016, whereas other schools' rankings were found to be relatively stable except one (EUSM).

The drop in two others (IUSM and AUSM) was not as significant as MUSM's during the same period. The ranking of entrance to postgraduate residency posts was also found to dramatically drop from 7th in 2010 to 37th in 2016 for MUSM graduates; whereas other schools' rankings did not change except one (HUSM-Tur) and this drop was seen only in one last exam. As one of the outcomes of this study, the publication number of MUSM was found to be increasing between 2010 and 2015; however the increase in publication to academic staff ratio was found to be less promising.

Turkey has changed in its health-care system in the past 13 years, one of the cornerstones of this transformation include handing over the management of medical schools' teaching hospitals to TMoH (Atun et al, 2013). Many university hospitals are financially and administratively run by the TMoH, and with a new law, all university hospitals will be in the same position regardless of their will. Currently, only 12 of the state university hospitals, all of them in big cities, out of 60,

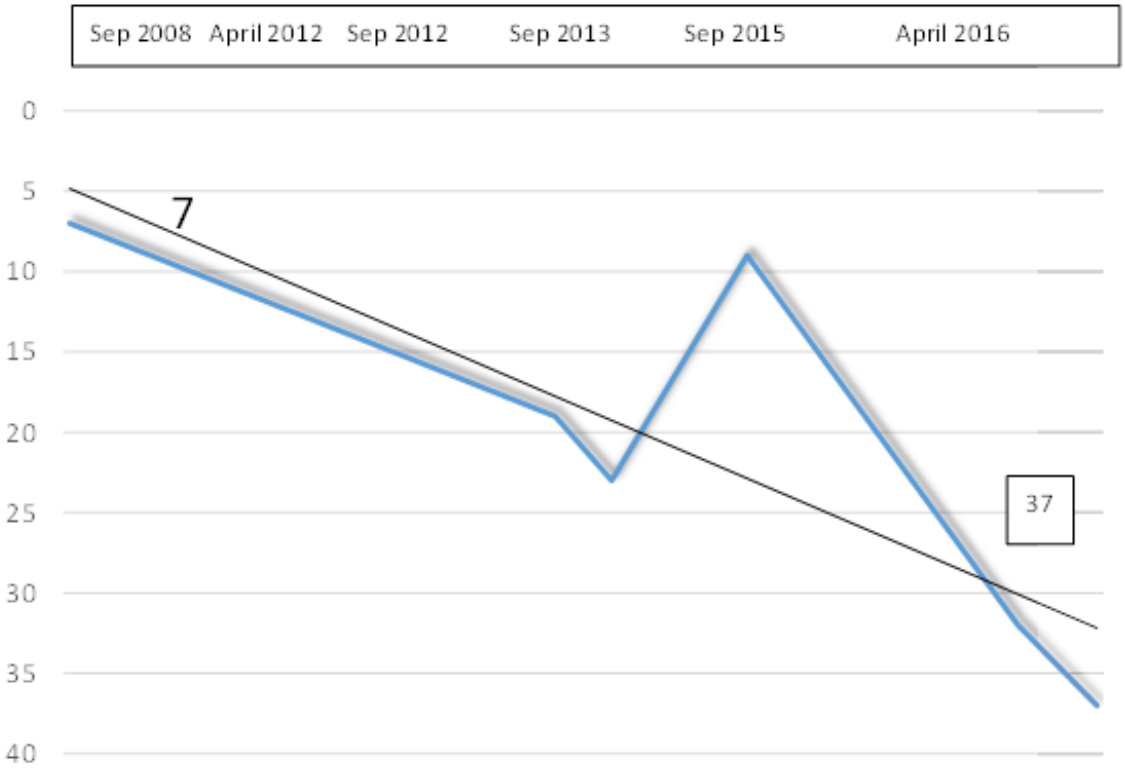

Figure 2. MUSM postgraduate exam for speciality in medicine ranking.

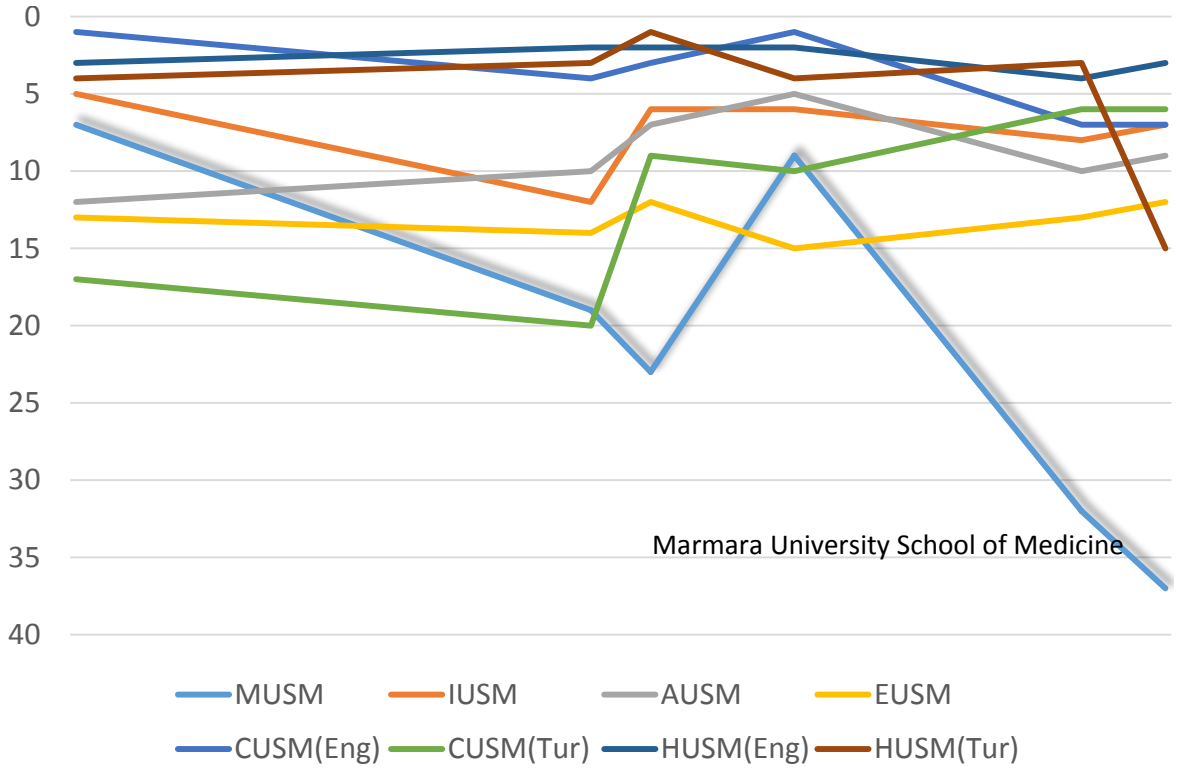

Figure 3. Postgraduate exam for speciality in medicine rankings of eight medical faculties.

Table 2. Total number of scientific publications, number of original articles published, number of academic staff and number of scientific publications per staff between 2010 and 2015 in MUSM.

Variable	2010	2011	2012	2013	2014	2015
Marmara University (Total published)	638	774	726	947	863	1051
MUSM (Total pubulished)	354	385	336	510	483	502
MUSM (Original article)	253	259	202	284	304	313
Number of academic staff	225	227	259	269	284	287
Pub/academic staff ratio	1.57	1.69	1.29	1.89	1.70	1.74

are not under the control of TMoH (5). However, top 6 are run independently from TMoH except MUSM, as it was chosen to compare it to others in the study.

As far we know, this is the only report comparing leading medical schools in Turkey as regards their attractiveness and success. Among these, the study aim to assess MUSM's position as the unique school which had changed its operating body compared to the rest of those with independent operational management. This in fact gave the opportunity to assess the operational management system as the confounding variable for all comparisons.

There are certain drawbacks in this study. All the medical schools' performances in Turkey were not analyzed for outcomes. Currently, there are 83 medical schools which provide medical education in Turkey, either private or state-governed. Therefore, the study assessment includes only a small scale of medical education in the country. However, it was believed that including only the top 8 medical education programs (in 6 schools), the analysis would provide a modest conclusion regarding the objectives. Another main drawback of this study is the lack of comparison of scientific publications among schools, which further prevented comment on this variable and its association with rankings. Furthermore potential confounding factors such as city of location, campus location and conditions, social life facilities which in fact influences student attractiveness, were likely overlooked.

MUSM is one of the three big state run medical faculties in Istanbul, Turkey. Ten years ago, MUSM was among the five most preferred medical faculties in Turkey. However, in recent years, there is a steep downward trend in the university entrance exams. At the same time, MUSM ranking in postgraduate exams for specialist in medicine has declined. However, other top medical programs maintained their ranks for both exams. These seven medical programs always ranked in the first twelve and kept their positions, while some of them even improved their results.

Among these, EUSM was an exception, but their results are improving in recent years in contrast to MUSM. On the other hand, MUSM ranking 8th in 2010 at university entrance exams declined to 18th in 2016. For postgraduate residency exams, MUSM ranked 7th in 2008 and 37th in 2016, reflecting a very significant decrease.

One of the major changes in MUSM has been the cooperation of the university with TMoH in 2010. Marmara University Hospital, at the same time, moved to a TMoH- owned hospital where financially it was managed by TMoH. This new hospital is quite distant from the center of the city. Other programs run in hospitals in three big cities in Turkey continued to operate by themselves and refused cooperation with TMoH.

In TMoH directed hospitals, due to fee-for-service system, workload is reported to be high and time spared for education seems less. In MoH-controlled hospitals, physicians are paid on a pay-for-service system which has increased the number of hospital visits to 8.5, which is well above the 6.6 Organisation for Economic Co-operation and Development (OECD) average (Doctor visits per capita by country, 2013; OECD Health Data, 2013; OECD Health Statistics, 2014).

The physician workload is high reaching 50 to 100 consultations a day and consultation lengths of less than ten minutes (Akman et al., 2017; WHO, 2008). Another potential effect of managerial change to fee-for-service in MUSM and similar schools include less time reservation for active teaching and learning due to leverage change in faculty members' motivation for income as well.

As the other seven medical programs continued to be operated as before and kept their ranks in exams, the cooperation of MUSM with TMoH seems to have a negative impact on medical education, hence its attractiveness and student success in residency exams. Besides, the effect of moving the hospital to a new and distant location makes it difficult to assess, although it cannot be excluded.

The number of academic staff slightly increased from 2010 to 2016 in MUSM. When the hospital moved to the new location, very few of the academic staff quit and they were replaced with new teaching staff. Although, the quality of the teaching staff cannot be assessed, the number of scientific publications may give a clue. There was a slight increase in the number of scientific publications from 2010 to 2015; while the Number of original articles and number of publications per staff remained stable.

The contribution of MUSM to the overall scientific

publications of Marmara University also remained relatively similar being 55, 50, 44, 54, 63, and 48%, respectively in the years 2010 to 2015. Therefore, poor academic performance may be excluded as one of the causal factors for MUSM's deterioration in its attractiveness and success in postgraduate residency exam.

This study was aimed to assess the impact of university-TMoH cooperation on medical education. The recent performance of MUSM was compared to other seven oldest state-run medical programs in three big cities of Turkey which have no cooperation with TMoH. While the ranking of MUSM declined in exams after cooperation, other medical programs in 5 schools kept their positions or even improved.

The high work load and low teaching times in pay-for-service system seem to have a negative impact on medical education.

CONFLICT OF INTERESTS

The authors have not declared any conflict of interests.

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