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***A MACRO VIEW ON HUMAN RESOURCES FOR
HEALTH IN TURKEY***

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*A macro view on human resources
for health in Turkey*

This study aims to make an assessment of the current status of human resources for health in Turkey and to bring a new perspective to key issues in the development of human resources for health within the framework of a macro approach. Although a number of issues are covered in human resources for health (HRH) studies which need to be handled carefully, this study focuses on the number of health personnel, health personnel efficiency, geographic distribution, education and financing of health personnel, and migration.

Vision macroéconomique des ressources humaines du système de santé en Turquie

Cette étude cherche à évaluer la situation actuelle des personnels de santé en Turquie et à présenter, par une approche macroéconomique, les principales perspectives de développement des ressources humaines du système de santé. Certains aspects sont abordés par les études sur les ressources humaines en santé (RHS) et sont à prendre en compte, néanmoins, ce travail porte plus particulièrement sur les effectifs du personnel de santé, sur leur domaine de compétence,, sur leur répartition géographique, sur le déroulement de leurs études, leur niveau de revenu, et leurs migrations.

1- Introduction

In recent years, efforts have been made to increase the performance of health care systems worldwide. These efforts mainly focus on financing, stewardship, fund raising and service delivery, which are the primary functions of health care systems in general. The main pillar of a health care system is human resources and studies indicate that efforts aimed at improving human resources have created positive impacts on the performance of the key functions of health care systems (1).

Human resources for health are described as “the heart of the national health care systems”, “the most effective part of health care services” and “a critical component of health policies” (2). According to the World Health Organization, a health labor force refers to individuals, who protect and promote the health status of societies (3). As is evident from the above description, the health labor force is the most important resource in delivery of health care services and it determines the quality of services offered in health care facilities and feasibility and sustainability of health policies to a large extent.

Though critically important for health care systems, the subject of the health labor force has been under international discussion for only a very short time (4). The World Health Organization described the early 2000s as the era of human resources for health and emphasized developing and implementing health labor force policies. The World Health Organization recognizes health force labor issues as a global healthand their actions to address the under-supply of health care personnel, imbalanced geographical distribution and labor force migrationhave obligated countries to develop strict policies, as well (5).

In our country one of the objectives of the Health Transformation Program (HTP), which was first implemented in 2003 by the Ministry of Health, is to “build a well-trained and skilled health labor force of higher work motivation”. The HTP launched a

process to address long-standing problems in Turkish human resources for health.

This process, designed by the Ministry of Health, was designed to include a series of actions such as identifying policies and strategies to address the problems of human resources for health and to empower the technical, administrative and educational capacity of the health labor force. As the first step towards the success of the plan, analyses were made to assess the existing status of health care human resources in Turkey (6).

The analysis is a basic step in the process of strategic planning for health labor force. An analysis of status of existing human resources for health enables the development of goals, targets and strategies for the future and an assessment of present performance. This study, which aims to assess the existing status of human resources for health in Turkey from a macro perspective, also is designed to identify the factors that substantially effect the efficiency and effectiveness of the health labor workforce in Turkey. For this purpose, issues related to human resources for health in Turkey will be discussed.

2. Existing Status of Human Resources for Health

2.1. Supply and Level of Human Resources for Health

According to the World Health Organization's estimates, 59 million health care personnel are employed worldwide and the health care sector, a labor-intensive sector, has the greatest number of personnel in all countries compared to other sectors (3).

In contrast, Turkey has five hundred thousand persons employed in the health care sector as of 2008. Table 1 presents the employment figures for some selected health professions. According to these data in 2008 there were 113,151 physicians in Turkey with more than half of the physicians employed by the

Ministry of Health. More than two- third of about one hundred thousand nurses works in facilities affiliated with the Ministry of Health. As of 2008, most of 24,778 pharmacists and 19,959 dentists were employed in the private sector. About half of the physicians consist of specialists (7).

Table 1
Number of People Employed in Selected Health Professions

	Ministry of health	University	Private	Other*	Total
Physician total	63536	23973	22598	3044	112151
Specialist physician	25886	11562	18786	739	56973
General practitioner	29899	147	3812	1905	35763
Medical resident	7751	12264	-	400	20415
Nurse	70011	14153	15735	-	99910
Midwife	43600	494	3579	-	47673
Dentist	5425	577	13957	-	19959
Pharmacist	1192	181	23405	-	24778
Health officer	55901	5378	17149	-	78428

Source: Health Statistics Yearbook 2008, School of Public Health, MOH, 2010;65.

Numeric counts of human resources for health (HRH) are not sufficient to determine if health care personnel in the country are in short supply. For this reason HRH levels are best used for comparisons. The HRH levels refers to the proportion of health care personnel in different categories by the size of the country's population in a given time period (6).

Using the method explained above, it was found in 2008 there were 15.8 physicians per 10.000 population and 14 nurses per 10.000 population in Turkey. In contrast, in the World Health Organization Regional Office for Europe the number of physicians per 10.000 population is 33.8 and 31.5 in the European Union Member States. The numbers of nurses in the afore-mentioned populations are 67.9 and 74.2 respectively. It is clear that the number of health care personnel, and especially the per capita number of nurses and physicians in Turkey, is quite

low if compared to the density of health care personnel in other countries in the region. According to this comparison, the number of physicians per 10.000 population in Turkey is half that of other countries while the number of nurses per 10.000 population is about one-sixth of other countries (8).

Low numbers and density of health care personnel is critical for countries. Research indicates that there is a relation between an increase in the number of health care personnel and a decrease in mortality ratios (8). In addition, a 1-unit increase in the number of midwives and nurses, and physicians per 1000 population led to 2,4 % and 1 % increase in the immunization ratios respectively (6).

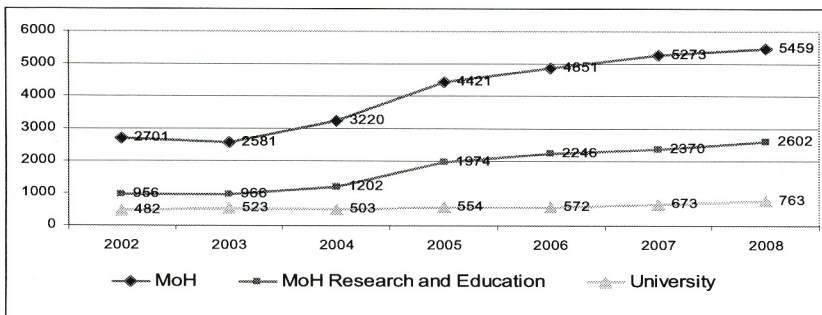
In general, countries use the number of health care personnel per population for both planning and assessing the available health labor force. Methods of labor force planning such as per capita labor force, target service planning and planning by health care services demand and health needs are used in health labor force plans and projections. For public health, in particular, detailed analysis of health status-related targets, availability of regular and high-quality health statistics, analysis for shortfalls in reaching targets, periodic field surveys and “planning by health needs” are required. These methods account for a community’s features and socioeconomic variability. Using these methods allows researchers and planners to specify future needs for the health labor force and allows planning through the use of statistical models. This is the preferred model for both developed and developing countries, even though it might be more expensive and require long-time preparation. Comparing the supply and density of human resources for health with other countries is an acceptable method. However, it does not include factors on demand side, which affect the adequacy of health labor force level. Therefore, the supply of health care personnel might be considered adequate if it manages to meet demand for health care services in a country although the level of human resources for health seems to be low (6).

2.2. HRH efficiency and performance

Beyond comparisons with other countries, the level where health service demand meets health service supply is the other method used to assess the level of human health resources in Turkey. It contains a variety of indicators such as the number of patients and consultations per physician. These indicators also measure efficiency and performance of human resources for health (6).

Figure 1 demonstrates total hospital visits per physician in the Ministry of Health-affiliated general hospitals and training and research hospitals in addition to the university hospitals.

Figure 1
Total Visits per Physician by Hospitals Type



Source: Mollahaliloğlu S., Human Resource for Health: Overall View, presentation, 2010

According to these data, the Ministry of Health-affiliated general hospitals have the highest number of hospital visits per physician. In training and research hospitals, the number of patients per physician is two times as high as the number of patients per physician at university hospitals (7).

The average number of patients per physician indicates the level of health service use which has continuously risen in recent years. The number of total visits per capita and total hospital visits per capita are the other indicators of health service use.

Comparing 2002 and 2008 figures, the number of total hospital visits per person was respectively 1.8 and 3.8. In the same years, the number of total visits per person (visits to all health care facilities) was found to be 2.6 and 6.3 respectively (7). This means that not only the number of patients per person, but also the number of visits to health care facilities per person, has increased. This increase should be considered a reflection of the increase in the utilization of health care services and workload per health care staff member and must be carefully handled in macro planning.

2.3. Geographic Distribution of Human Resource for Health

Population per health labor force is another indicator of health labor force supply in Turkey and it is used to identify differences among geographical regions. Table 2, indicates the imbalance in the health labor force among provinces. The imbalanced distribution of labor force in Turkey is thought to be associated with socioeconomic and socio-cultural reasons. However, this imbalance has greatly diminished between 2002 and 2008 (9).

Table 2
Provincial Distribution Selected Health Care Personnel by Population

		Best Province	Worst Province	Proportion
Population per Specialist Physician	Dec.02	1.937	26.544	1 /13,7
	Dec.08	1.416	5.002	1 /3,5
Population per General Practitioner	Dec.02	1.000	8.295	1 /8,3
	Dec.08	1.596	4.491	1 /2,8
Population per Nurse-Midwife	Dec.02	264	2.090	1 /7,9
	Dec.08	310	1.110	1 /3,6

Source: Provincial Statistics of the Actively Employed and Planned Health Care Personnel, Directorate General of Personnel, MOH, 2002-2008.

The Ministry of Health generally encounters the problem of lower numbers health care personnel in development-priority provinces. To address this issue, the Ministry put the Obligatory Public Service for physicians into effect in 2005. For other health care personnel, the “Law on Recruiting Contracted Health Care

Personnel in Provinces with Personnel Undersupply” Number 4924, which came into effect in 2003, aims to ensure efficient and effective delivery of health care services in medical branches and settlement areas with personnel undersupply (10).

2.4. Education of Human Resources for Health

In Turkey, pregraduate education of health care personnel is given by universities, which are supervised by the HEC (Higher Education Council). High school education for health care personnel is given by occupational high schools of health, which are affiliated with the Ministry of Education. The Ministry of Health, on the other hand, acts a coordinator of education and employment of health care personnel as ordered by the Main Law on Health Care Services Numbered 3359 (11).

The goal of pregraduate health education is to train qualified health care personnel who are equipped with knowledge, skills and attitudes that are necessary to address society’s health needs. Pregraduate education is given in faculties, bachelor degree (4-year) academies, associate degree (2-year) higher schools and Occupational Health High Schools in Turkey. Postgraduate education is given in master and doctorate degree programs and through medical residency training programs at universities (12). The Higher Education Council (HEC) carries out some strategic studies in order to train an adequate number and quality of health care personnel, the most significant resource in delivery of health care services. To increase the number of qualified staff available, the HEC raised student quotas at universities which has resulted in an increased number of students in faculties (13).

Table 3 demonstrates the trends in the number of medical and nursing faculty students in 2001-2008 periods.

Table 3
Trends in the Number of Students and Lecturers in Medical and Nursing Schools in Turkey by Years

	Faculty of Medicine				Nursing			
	N	RE	G	S/L	N	RE	G	S/L
2001-2002	40	4.801	4755	4,7		3883	2289	27,3
2005-2006	46	4957	4532	4,1	78	4035	3648	27,8
2006-2007	47	5117	4842	3,9	78	4361	3872	26,3
2007-2008	49	5253	4753	3,7	80	5824	4113	26,7
2008-2009	56	6665	-	3,8	84	6570	-	29,1

N=Number, G=Graduates, RE= Recently Enrolled, S/L= Student/Lecturer

Source: HEC Higher Education Council Statistics (2001-2009), www.osym.gov.tr

According to the table, student quota in medical faculties, which was 4801 in 2001, was raised to 6655 in 2008. As the total number of students in medical faculties increased over the years, the number of lecturers also increased by about 73 %, which resulted in less students per lecturer in medical faculties. There were 4.7 students per lecturer in 2001 and the number declined to 3.8 in 2008. In nursing faculties, on the other hand, the number of students per lecturer increased due to two-fold increase in the number of students and a smaller increase in the number of lecturers in nursing faculties (14).

Table 4 demonstrates the number of medical faculties, medical faculty lecturers and medical faculty students in 2007 in Turkey and some European countries. According to this table, the number of students per lecturer in medical faculties is quite low as compared to other countries. When Turkey is compared to other countries with similar demographic status, the number of lecturers in medical faculties in Turkey appears to be adequate. However, there are problems due to the distribution and organization of the lecturers (11).

Table 4
Number of Medical Faculties, Lecturers and Students in Turkey and Some European Countries, 2007

	Country Population (Million)	Number of Medical Faculties	Number of Lecturers	Number of Students	Number of Students Per Lecturer
Germany	82.6	36	3.550	79.866	22,5
Spain	41.9	28	2.500	36.049	14,4
Italy	58	39	12.583	148.157	11,8
France	60	44	5.847	62.921	10,8
Turkey	70.5	52	9.238	33.782	3,6

Source: Health at a Glance in Turkey, School of Public Health, Ankara, MoH, 2007, s.227.

An accreditation system to ensure the quality of pregraduate education in occupational health high schools was launched under the Regulation on Academic Assessment and Quality Improvement in Higher Education Facilities, developed by the Higher Education Council. The Regulation came into effect in September 2005. This Regulation aims to improve the quality of academic and administrative services in higher education facilities in Turkey and to initiate international collaboration in quality assurance in line with the goals of the Bologna Process. The Bologna Process, with a part of the process of harmonization with the European Union, aims to make higher education systems in different countries comparable and harmonized while preserving their local characteristics. This will make academic transfer between countries or higher education systems easier and mobility, employment and qualifications of students and lecturers will be facilitated (15).

2.5. Financing and Wages

The fact that density of human resources for health is high means that expenditures such as salaries, wages and premiums are also high. According to the World Health Organization estimates, the worldwide shortage of health care personnel is 4.3 million and if the shortage were ended, a supplementary fund of 311 billion

USD would be required per year, which indicates the size of personnel expenditures in health care services (3).

Although comprehensive studies on the wages of health care personnel are not available, it is estimated that, in many countries, the cost of personnel expenditures (salaries, supplementary payments and others) constitutes 65-80 % of the expenditures in health care systems (16). According to data generated from these estimates, the proportion of salaries and wages to total expenditures in health care system is 80 % in high-income countries, while the percentage is 55-70 % in low-income countries with limited resources (17). A survey which was conducted by the World Health Organization, found out that 49.4 % of worldwide health expenditure is allocated for the payments of health care personnel in the public and private sectors. This analysis presented data for 43 countries and found that the European region's personnel expenditures of 73.4 % were the highest (18). In Turkey, personnel expenditures is 51.3 % (6).

The health labor force expenditures of the Ministry of Health, which employs the greatest number of personnel in Turkey, are financed by both the general budget and revolving funds. Basic salaries are financed by the general budget and premiums are paid from revolving funds (6). These payments are made depending on service delivery conditions and criteria, which are identified for health care facilities by the Ministry for Health. The payment amounts are determined by a regulation issued by the Ministry of Health upon the approval of the Ministry of Finance. The payment thresholds are determined by considering various factors, such as position title, task, working conditions and duration, contributions to service, performance, medical consultations, anesthesia, invasive procedures and serving in high-risk departments (19). In this context, separate schemes of revolving fund payment apply to primary health care facilities, secondary health care facilities and training hospitals.

In Turkey, the basic salary of a full-time physician was 1.259 TL (961 USD) per month and the revolving fund payment was 995 TL (760 USD) per month at the primary health care level in 2007, while the basic salary was 1.414 TL (1.087 USD) per month and the revolving fund payment was 1.130 TL (868 USD) per month at primary health care level in 2008. Table 5 shows the basic salaries and revolving fund payment of nurses in primary health care level. It is interesting to note that nurses, who undertake heaviest workload at the primary health care level, receive only one-third of revolving funds compared to physicians (20).

Table 5
Salary and Revolving Funds for Personnel in Primary Health Care Level, 2007-2008

Branches		2007	2008
General Practitioner	Net Salary (TL)	1.259	1.414
	PBP Revenue (TL)	995	1.130
Nurse Midwife-Health Officer	Net Salary (TL)	888	1.079
	PBP Revenue (TL)	365	411

Source: Studies on Annual Income of Health Personnel, School of Public Health, MoH, Ankara, 2008.

*1USD=1,3098 TL for 2007 and 1USD=1,3011 TL for 2008.

In provinces that have adopted the family medicine system, a family physician's gross salary was 6.336 TL (4.870 USD) per month in 2008. After expenditures made to purchase services are taken into account, a family physician is paid about five thousand TL (3.843 USD) per. However, it is thought that the basic salaries of family physicians might decline slightly as the number of provinces under the family medicine system increases and the system becomes standard. A family health officer, defined in Turkey as nurse, midwife or health officer assistant to a family physician, who practiced with a family physician, was paid 1.731 TL (1.330 USD) basic salary in 2008. Though these remuneration levels are not satisfactory to many health care

personnel, it can be seen that improvements have been made, especially in the salaries of general practitioners, over the years. As seen in the Table 6, health care personnel in the secondary health care level have different salaries from those in the primary care level. For example, while a nurse in the primary health care level received 411 TL (316 USD) per month revolving fund payment, a nurse in the secondary health care level received 796 TL (612 USD) per month in revolving fund payment in 2008. Similarly, both the basic salary and revolving fund payment of a specialist physician is much higher than that of a general practitioner in primary and secondary health care level (20). The gap between payments encourages health care personnel to practice in the secondary health care level facilities and creates adverse effects on both primary health care level and preventive health care services.

Table 6
Salary and Revolving Funds for Personnel in Secondary and Tertiary Health Care Level, 2007-2008

		2007	2008
Specialist Physician	Net Salary (TL)	1.567	1.636
	PBP Revenue (TL)	4.744	4.851
General Practitioner	Net Salary (TL)	1.328	1.474
	PBP Revenue (TL)	2.522	2.529
Nurse	Net Salary (TL)	915	1.031
	PBP Revenue (TL)	672	796

Source: Studies on Annual Income of Health Personnel, School of Public Health, MoH, Ankara, 2008.

*1USD=1,3098 TL for 2007 and 1USD=1,3011 TL for 2008.

2.6. Migration of Health Care Personnel

Migration of health care personnel and its impact on the health labor force has been under discussion at the World Health Organization since 2004. At the 58th Assembly of the World Health Organization, the Executive Board resolved to implement

a code to establish high standards in the migration of health care personnel. The resolution was also adopted by the Regional Committee in 2007. The code implementation plan was drafted in 2008 and submitted in the 62nd Assembly held in 2009. In 2008, the Tallinn Charter also discussed the international recruitment of health care human resources, advocated that such recruitment had to be managed by ethical principles, international cooperation and a coding system and so the World Health Organization's code implementation was supported (5).

In 2008, the European Commission issued a green paper on the health labor force and launched a debate amongst all stakeholders on the problems of health human resources. Through the adoption of the Green Paper, the EU aims to enhance the visibility of health labor force problems, to collaborate with health managers with experience in such problems and to establish a strong basis in order to find solutions to these problems. On the topic of the migration of health human resources, the EU, by means of the Green Paper, developed a guideline for human resources employment in developed countries, introduces the follow-up methods and supports the WHO-developed global coding system (21).

As for migration, Turkey is a country of both immigration and emigration. However, accurate and complete information on emigration from and immigration to Turkey is not available since Turkey does not have a routine data collection system for international migration (22). The United Nations state that Turkey was ranked 30th for total migration in 2005 (23). Another report, which was prepared by the Ankara Chamber of Commerce (ATO), states that Turkey is ranked 24th out of 34 countries whose qualified labor force emigrates to other countries, and that Turkey loses 59 of every 100 well-trained citizens. Yet for highly skilled workers, emigration from Turkey to other countries is usually for work and is limited to short time periods (24).

Migration statistics for the health sector are not easily accessed and often policy-makers do not regard the migration of health care personnel as a severe problem. However, in the 2005 ATO report, it was found that there were 3,600 Turkish physicians living in the USA and only 90 of them came back to Turkey. According to the report, there are 1,150 physicians who are registered into the Turkish Physician's Association in the USA. The majority of these physicians are respected and oftentimes famous professionals who are employed by well-known establishments, such as Harvard, Cornell, Yale and John Hopkins, and carry out significant research worldwide (24).

3- Problems of Human Resources for Health

Considering the current status of human resources for health in Turkey, it is clear that improvements have been made in employing an adequate number of qualified health care personnel. However these improvements are not yet satisfactory. There is an undersupply of nurses, especially in comparison to physicians especially and as the use of health care services increases, a larger number of health care personnel with higher qualifications will be required.

To address the inequitable geographical distribution of health care personnel, efforts have been intensified in order to diminish inter-regional and inter-provincial imbalances. These efforts include obligatory public service, financial incentives and deployment of personnel in deprived areas. Although the gap between the best province and the worst province has been greatly diminished, the problem still remains.

Legal shortfalls in the job descriptions of non-physician health care personnel are one of the principal problems for the health labor force in Turkey. A number of health professions, such as emergency medical technicians and dental prosthesis technicians, which are internationally recognized, are not legally defined professions in Turkey, and thus personnel with these

qualifications can not be used to help close the health human resources gap (11). In Turkey, only medicine, dentistry, pharmacy and nursing professions have specific laws regulating their qualifications and job standards and the lack of laws of other health professions leads to uncertainty in job descriptions.

As for wages, salaries of health care personnel vary on the level of health care services. Making improvements in salaries of health employees, especially in the primary health care level, is important to empower preventive health care services. In this context, the salaries of family physicians, who are assigned in provinces under the family medicine system, have improved. Yet it should be kept in mind that delivery of health care services is a team work and salaries of the allied health care personnel should be improved, as well.

University education in Turkey has made major progress in both quantity of graduates and the quality of skills in recent years. However, no data and projections are available on the number of students to be admitted to higher education and the branches to be studied. In the context of international comparison of universities, only one Turkish university has recently been ranked on the list of top 500 world universities. Unfortunately this university was ranked at the bottom of the list of 500, which indicates that Turkey needs to improve university education so that it can build the health care infrastructure and become competitive in international rankings of university education.

Finally, it is not possible to access complete and accurate information on migrating health care personnel in Turkey, which leads to uncertainty in assessing the number of health care personnel that are already employed and those available to be employed in the Turkish health care sector. Dealing with this issue and removing the uncertainty through further studies is critical for developing strategic plans about human resources for health.

4- Results and Recommendations

Assessments of the number, quality, availability, remuneration and education of existing and future members of the health care labor force is critical for health sector planning since the health labor force is the most significant resource in health. This study was conducted in order to make assessment of the current labor force in health, as it is the most significant element of the health care system in Turkey, and to develop a macro-level approach to important aspects of health care services. This assessment concluded that the health labor force is not adequate in terms of both quantity and quality.

The most important problem facing the Turkish health system is the insufficient health workforce and uneven geographic distribution, despite great progress after implementation of the Health Transformation Program implementation. The differences between the pay rates of doctors and auxiliary health staff is another factor that has recently recieved increased attention from health policy planners. In addition, the payment disparity between primary and secondary health care level facilities encourages health care personnel to practice in hospitals and it adversely impacts both the primary health care level and preventive health care services. At present, Turkey has no data or projections on the impact of migration on the number of health personnel available. However, it is recognized that in and out migration can effect the health labor force and that this is an area where further research in Turkey is needed.

Based on the findings of this research, it is recommended that the Turkish Ministry of Health create a comprehensive Human Resources for Health framework that is consistent with overall national health policies. This framework should be designed to identify and addressany current and future issues related to health workforce number, quality, and availability. A strategic document of this sort can systematically analyze in a comprehensive manner the problems and issues that might be

created through the implementation of national health policies. In addition, the current in-depth collaboration with relevant stakeholders should be continued, and even possibly expanded, in order to address the issues and barriers identified by this study.

References

1. Beaglehole R and Dal Poz, M. R. Public health workforce: challenges and policy issues. *Human Resources for Health* 2003;1:4. <http://www.human-resources-health.com/content/1/1/4>, 10.02.2010.
2. Hongoro C. and McPake B. How to bridge the gap in human resources for health, *Lancet*, 2004; 364:1451-1456.
3. World Health Organization (WHO). World Health Report. 2006 p1-10. www.who.int 10.02.2010.
4. Dubois, C.A., McKee, M. and Nolte, E. Human resources for health in Europe. England: Open University Press; 2006 pxxi.
5. World Health Organization (WHO), Health Workforce Policies in the WHO European Region. Resolution of 59. Regional Committee Meeting. 2009 www.who.int, 10.02.2010
6. Republic of Turkey Ministry of Health. Analysis of the Existing Status in Human Resource for Health, School of Public Health, Ankara: Yücel Publishing House; 2007 p4-20
7. Republic of Turkey Ministry of Health. Health Statistics Yearbook 2008. School of Public Health, Ankara.
8. World Health Organization (WHO), (2007) European health for all Database (HFA-DB). Regional Office for Europe, www.who.int 02.02.2010.
9. Republic of Turkey Ministry of Health. Provincial Statistics on the Actively Employed and Planned Health Care Personnel (2002-2009). Directorate General of Personnel, Ankara.
10. Law Dated 2003 and Numbered 4924 on Recruiting Contracted Health Care Personnel in Less Preferred Places.
11. Republic of Turkey Ministry of Health. Health at a Glance in Turkey, School of Public Health, Ankara: Bölük Publishing House; 2007: 210-225
12. Republic of Turkey Ministry of Health. Workshop on Human Resources for Health and Policy Development, School of Public Health, Ankara: Yücel Publishing House; 2007: 1-16.
13. OECD, World Bank, OECD Health System Reviews: Turkey, OECD Publishing: 2008 p103. http://www.hm.saglik.gov.tr/pdf/kitaplar/200902201441250.OECD_Kitap.pdf
14. Higher Education Council (HEC), (2001-2009), Higher Education Council Statistics, SSPC Publications, www.osym.gov.tr 02.02.2010.

15. Arslan, M. M. and Bahadır, H Bologna Süreci Ve Türkiye, Sosyal Bilimler Araştırmaları Dergisi. 2007: 2:222-229.
16. Kolehmainen-Aiken RL: Decentralization and human resources: implications and impact. Human Resources for Health Development Journal 1997; 2(1);1-14.
17. Mukosha B C. Expenditure ceilings, human resources and health: The case for Zambia. Churches Health Association of Zambia. Civil Society for Poverty Reduction (Zambia) and Wemos (Netherlands): 2006:12.
18. Zurn P, Dal Poz MR, Stilwell B, Adams O.Imbalance in the health workforce. Human Resources for Health. 2004: 2:13. <http://www.human-resources-health.com/content/2/1/13>. 10.02.2010.
19. Regulation Dated 2006 and Numbered 26166 on Making Supplementary Payment from Revolving Funds to the Personnel in the Affiliated Units of the Ministry of Health
20. Republic of Turkey, Ministry of Health, Studies on Annual Income of Health Care Personnel, School of Public Health, Ankara, 2008.
21. Commission of the European Communities. Green Paper on the European Workforce for Health, Brussels. 2008. <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2008:0725:FIN:EN:PDF>. 02.02.2010.
22. State Planning Organization. 8th Five-Year Development Plan; Population. Demographical Structure. Specialty Report on Migration. Ankara: 2001: 29-31.
23. United Nations, Trends in Total Migration Stock; The 2005 Revision. New York. http://www.un.org/esa/population/publications/migration/UN_Migrant_Stock_Documentation_2005.pdf 02.02.2010.
24. Sağırılı M. Eğitim Ve İnsan Kaynağı Yönünden Türk Beyin Göçü: Geri Dönen Türk Akademisyenler Üzerine Alan Araştırması. Doktora Tezi. İstanbul Üniversitesi Sosyal Bilimler Enstitüsü. İstanbul: 2006.