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ARTICLE

A SYSTEMATIC APPROACH FOR HEALTH WORKFORCE MANAGEMENT IN TURKEY

Cihat Öztürk, Deniz Efendioğlu*, Abdullah Yıldızbaşı
Department of Industrial Engineering, Ankara Yıldırım Beyazıt University, Ankara, TURKEY

ABSTRACT

Background: *The lack of planning for health workers in the world causes imbalances in health systems. The reason can be seen as the health workforce constitutes the basis for the health system. All the dynamics in the health system are moving with this basic structure. Well managing of human resources in health, requires consideration of population needs and expectations.* ***Methods:*** *Therefore, realistic and feasible planning of the workforce in the health system should be done with a systematic approach. This study focuses on five factors that influence workforce plans in health.* ***Results:*** *Five factors were evaluated at national and international level. In the planning of employees for the health system in Turkey, a framework on how to participate in the evaluation of these factors are presented. Evaluation of sub-headings of each factor on the framework presented some suggestions for planning a sustainable workforce in the health system in Turkey and various deductions are made.* ***Conclusions:*** *It is emphasized that an action plan should be developed for the management of a health workforce, and it is emphasized that the follow-up monitoring processes recommended for this action plan should be done with caution.*

KEY WORDS
Health care management; Health care workforce; Workforce Planning; System Framework

INTRODUCTION

Workforce planning in the health system has become a significant issue due to population growth, the emergence of different diseases, the increase in the number of diseases and migrations. Health personnel have to be properly planned so that patients can access the appropriate treatment in a suitable and timely manner. However, the diversity and number of occupational groups and professions involved in the health care system, the differences in patient needs and patient satisfaction which are dependent on a large scale of factors, are only a couple of the most significant challenges in workforce planning. Besides these difficulties, this status also brings some risks such as human life, increasing illness rates, inadequate health care work, lack of trained personnel for the right place and time, and misleading investments.

The health system possesses a rough structure, owing to its stochastic and dynamic structure, influenced by many external factors. For this reason, scenario analysis have to be implemented in workforce planning. It is necessary to examine at this point which factors influence the demand for labour and supply rather than forecasting the future.

Human resources planning in health is based on the development of strategies that will balance the supply of staff and the demand, besides training of health professionals taken a long time. As a result of unpredictable changes in the financial, political and clinical environment, the determination of what the best evaluation will be, and the best evidence can prevent dramatic errors that may occur in the future [1]. Thus, existing human resources are identified, future human resources needs are designed, and activities are defined to balance supply and demand.

Health manpower planning can be defined as a set of actions aimed at providing health workers with sufficient quality and quantity, uniform distribution, proper timing and correct employment for the health services offered and presented in the future. To be able to give the health services appropriately (everyone and as needed), the training of health human power to carry out these services;

- Equipping with the knowledge, skills and attitudes that can meet the needs of the modern health care,
- Dealing with the problems by cognizance of the team, according to the universal qualities and the facts of the country,
- Planning and employing in a balanced manner across the country.

Human power planning is a necessity to be provided for effective and efficient use of resources, waste prevention of resources and availability of health services. A substantial section of the planning work is taken place in the public sector, resulting from much expenditure was made by community in Turkey. In health manpower planning, it is expected that education and health authorities should make decisions about the distribution and duties of these personnel, as in what qualities and how many number of employees are needed. Unrealistic or inadequate planning reduces the productivity of the system, severely disrupts its operation, increases cost, and causes unbalanced distribution of resources. Therefore, when it is essential to handle with all this stuff, getting health care at the right time and in the right qualities becomes tough.

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***Corresponding Author**
Email:
defendioglu@ybu.edu.tr
Tel.: +90 312 906 2321

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Health workforce planning a significant topic for providing the general services of public and private health sector. In the meantime, topics are investigated, it is clearly seen that planning, decision making, scheduling, statistical analysis in various subjects, demand and forecasting studies draw attention. In developing and developed countries, to understand the trend of the general situation of the subjects a lot of case analysis are investigated. For example, Nta et. al. try to find the impact of digital health workforce registry for a Nigerian state, Gray et. al. make a survey study to identify the number and distribution of public health specialists in UK [2-3]. Chang et. al. [4] investigate planning and evaluation in health workforce development in the topic of pharmacy for Taiwan. Johnson et. al. [5] investigate potential attenuation of healthy worker biases in populations in which healthy women of reproductive age opt out the workforce to provide childcare in U.S. Scheffer et. al. [6] study for the state of the surgical workforce in Brazil and deal with the problem put frothing the descriptive statistic of data of Brazilian Federal Medical Board in 2014. AlBaker et. al. because of not having enough study on this topic they described the status of the licensed dentist workforce in their kingdom [7]. Jenner et. al. state that recent UK health policies have consistently stressed that the importance of basing local action on evidence and local intelligence. Therefore, a suitably skilled workforce are needed in the topic. They describe some steps by health observatories and other organizations to grow and train this new workforce [8]. Qi et. al. investigate this topic to explore the current situation and issues related to the development of the public health informatics workforce for different levels of disease control and prevention in China [9]. Similar studies are also done for the country of Romania, Ireland, Indonesia, Germany, Turkey, Italy and Serbia. The studies based above generally head the topic until present.

Due to the methods also, some classifications can be made. Kroezen et. al., Rees et. al., Milicevic et. al., Domagala and Klich, Btenburg, Carey, Humphries et. al. investigate various topics due to the utilizing the planning and estimation methods of different disciplines [10-16]. Vicarelli and Pavolini, Agartan, Barbazza, Boulton et. al., Gallagher and Eaton, Reichert and Tauchmann, Beck et. al., Gabrysch and Jaehn, Leider et. al., Stock et. al., Alyea et. al., Donelan et. al. generally deal within the topic of governance, management and policy of the countries in the topic of workforce health [17-28]. Especially, health reforms which is done in some country or not, generally constitutes the studies. General situation of workforce plan has been recently seen a promising topic due to investigated part. Except of these topics also education and training, creating system structure, performance management, data analysis is the other subjects' studies done in this area.

The area of which workforce kinds are used for the studies can take much attraction. Generally, physicians are used in these studies, but Singhal et. al. dentists, Humphries et. al. nurses, Domagala et. al. physicians are also observed within the studies based in this topic [14, 16, 29].

Also, for understanding the situation of interprofessional health workforce data Spetz et. al. examine progress toward of the main-data related recommendations of Nursing Institution and identify strategies that can achieve further gains in health workforce data collection [30].

When the studies are examined in detail, it is generally observed that the studies about this topic mainly are focused on special aspects of health workforce management. Dubois and Singh [37] describes evidence about the benefits and pitfalls of current approaches to human resources optimization in health care. Fritezen [38] identifies a number of current lines of productive research, focusing on the relationship between health policy reforms and the local institutional environments in which the workforce, both public and private, is deployed.

The structure of the rest of the study are as follows: Examination of criteria for planning of health care workers facing and the current status of Turkey is represented in the first chapter. A framework is presented for the proposed planning stages, based on the criteria set out in Chapter 3. According to the framework presented in the last section there are conclusions and recommendations for the planning of health care workers for Turkey.

MATERIALS AND METHODS

Health labour force planning methods and criteria

Various criteria must be applied in the process of making health-related workforce plans. These criteria provide significant clues as to the development of valuable strategies. Economic, social, demographic and labour measures are guiding the development of strategies in a fundamental sense. [Fig. 1] shows the measures that affect workforce planning in health. When these criteria are examined, it may be seen that the methods used in health workforce planning have to be used collectively rather than alone.

Health care workforce planning possess a significant place in health workforce planning. Data, such as distribution of health workforce by regions and institutions, number of annual graduates and capacities of educational institutions, numbers and capacities of health institutions can be collected under this heading. By analysing these data from the past to present, trends can be followed, and new strategies can be developed by making plans through these data.

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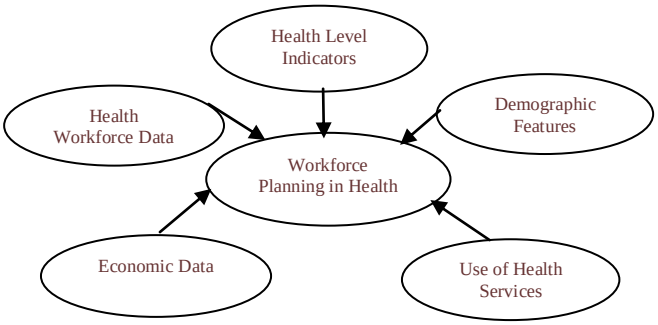

Fig. 1: Criteria affecting workforce planning in health.

Another indicator are demographic characteristics, includes population status by age and sex, geographical distribution of population, population densities and estimation of population changes in terms of birth, death and migration. In this respect, it is necessary to plan the health personnel, according to the population characteristics. It is important that the guidance of health personnel and the capacity constraints are taken into consideration through these data. In addition, the health level indicators belonging to the population possesses a substantial place in this program.

The necessary statistical data related to the health level can be utilized by examining the mortality rates, the rates of illnesses, fertility levels and nutritional characteristics according to regions, age and gender.

This data is used to evaluate the quality and quantity of the workforce in health and at the same time the necessary amount of labour is calculated. Economic data is another planning criterion. Indicators such as national income per capita, per capita health expenditures, unemployment rates, budget for health, social security system are significant for health workforce planning.

There are several reasons why labour planning in the health system may fail. Short and medium-term plans do not overlap with long-term plans. However, the fact that the general health policies are in contradiction with the plans made is one of the most important reasons of failure. The shortcomings of population planning, economic crises, frequent changes in governance, and the lack of information flow between institutions and organizations are affecting the workforce planning made in the worst way. In this respect, healthy planning should be done by considering the necessary factors for effective and realistic workforce planning and by producing permanent solutions instead of temporary solutions. Different approaches and methods can be used to plan health human resources [31].

Health workforce in Turkey

Studies on health workforce planning in Turkey began in the early years of the republic. Especially in the 1960s development plans, the breakthroughs towards the health workforce have gained momentum. In the development plan between 1963 and 1967, a target was set to increase the number of health personnel to 2,5 times of current health personnel. In the second development plan (1968-1972), the establishment of educational institutions aimed at raising the work force in health and the increase of the capacities, determination of staff and wage policies for the balanced distribution of health personnel throughout the country. Similar to the third development plan between 1973 and 1977, there is a balanced distribution of health personnel throughout the country. In this regard, incentives and planning for various incentives are included in the fifth development plan (1985-1989). Throughout the five-year development plans until 2018, there are plans for training of health personnel, balanced distribution within the country and workloads.

Here, also the biggest problems in workforce planning in the health field can be understood in Turkey in general is seen as one dorm balanced dispersal of the workforce. Although, there are various incentives and compulsory regulations in this issue, it cannot be said that the problem has been solved completely. Especially the living standards in the eastern regions are seen as one of the most important obstacles in this issue. Development along the eastern regions of Turkey will bring the solution of these problems.

Health workforce data and demographic characteristics

The number of physicians per 100,000 people belong to the years of 2002-2016 shown in [Fig. 2] for various regions in Turkey and mega-city İstanbul There is an increase in the number of physicians per 100,000 people for all regions. However; Istanbul, Western Anatolia and other regions outside the Aegean remains below the average of Turkey. What is notable in here is that the inadequacy of physicians in the south eastern province is clearly seen. In order to make a more accurate assessment for Turkey it is substantial to evaluate it, in terms of developing and developed countries according to the number of physicians.

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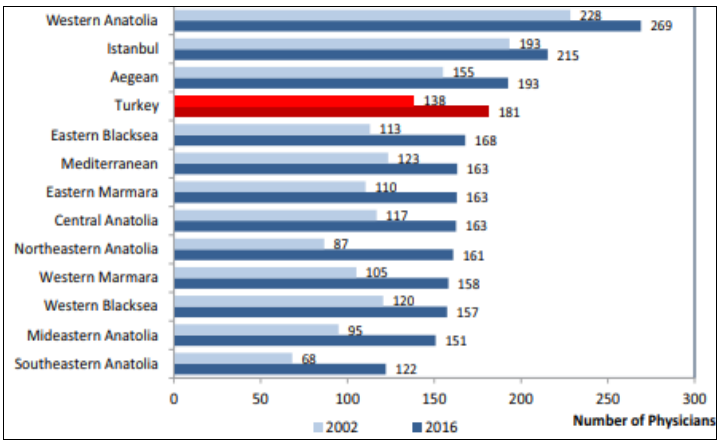

Fig. 2: Number of total physicians. [32]

Turkey is still largely going on with the shortage of physicians. It is necessary to increase the number of physicians in order to get the average of OECD. University hospitals play an important role at this point. The cities which do not have university hospitals will be able to balance regional distribution of physicians as well as increase the number of physicians and the number of patients per physician in developed countries by state support. Establishment of university hospitals is not enough to attract enough physicians. The Ministry of National Education should play a significant role in this planning process, which should be coordinated by all institutions and organizations. Students should be encouraged to become health personnel before university education and the physician should be ingratiated more from primary school.

In recent years, health care organizations with modern standards, begins with being opened city hospitals in Turkey is one of the important developments in improving the working conditions of the patient. However, if the number of physicians is not sufficient, it will not remove the problems in the health system altogether. The length of the patient's waiting period will lead to a decrease in the quality of service in these hospitals. The training of specialist physicians and health personnel in the field is important in terms of drawing these hospitals to a sufficient level in terms of health personnel. Although the number of faculty and medical students in the field of health increased in the last 15 years, the number of academicians and graduate students did not show similar increases. This situation is not sustainable. The key point here is to ensure that the students are directed to the academy to specialize and to provide human resources for the training of new specialists in the field.

Health level indicator

Health level indicators possess a significant place in long-term health workforce planning. Disease incidence rates are indicators that should be considered in order to train specialist physicians in the field of diseases according to their characteristics such as age and sex. This may lead to the development of different strategies among countries. Because diseases, birth and death rates in different regions may vary. For this reason, regional data related to health level should be well analysed and planned in this area. For example, the regions where the Mediterranean Anaemia disease is seen and the frequency of the disease are different in these regions. The training of health personnel related to this disease is essential in areas where the disease is seen intensely.

Compared with developed countries, it is seen that the Turkey does not possess enough physician. It is obvious that the physician's presence is very much in comparison with the population, especially when it is compared with the European countries. For this reason, specialized physicians in the field are needed. Especially, according to needs, specialized physicians in the field should be trained. Especially in paediatric diseases and internal parts, lateral branches are very popular and there is a specialist lack of specialists in the main branches.

Economic data

In the health sector, economic planning is also needed in labour force planning. Because planning is not possible if there is not a system that will feed the health workforce economically. The share allocated to health spending and the amount to human resources in this denominator is one of the factors that affect the labour force planning. Turkey has made significant progress in this regard between the years 1999-2009. However, one of the things that draws attention here is the shortage of current health expenditures in the private sector.

In [Fig. 3], the share in GDP of Turkey's current health expenditures are compared with other countries. Thus, the reason for the low share of health expenditures in Turkey, cannot be reached in less than a

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sufficient number of private health workforce and health undertakings. As in all sectors, private enterprises in certain business areas are more productive than the public sector. Therefore, the provision of stimulating environments for private health enterprises in Turkey, the loosening of restrictions in the health workforce planning will help a serious development in the health field since. It is only possible with private sector initiatives to provide better quality services by alleviating the health burden on the public. The private sector is also in a position to consider its place in the planning of health personnel considering that it provides very serious contributions to the pool of health personnel.

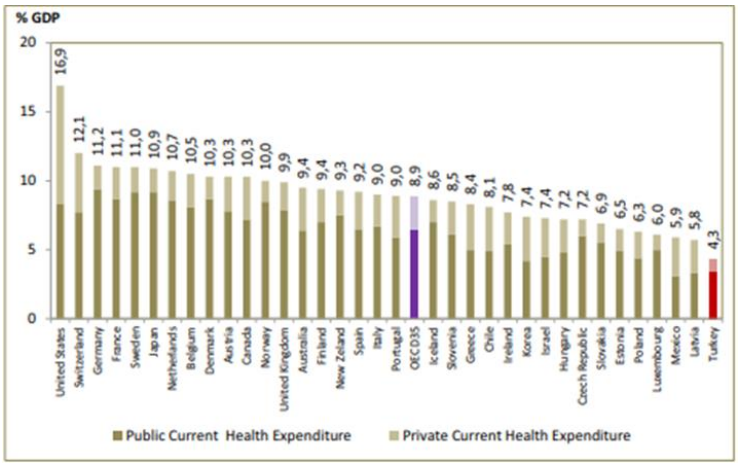

Fig. 3: International comparison of current health expenditure as a share of GDP, (%), 2016 [32].

Another issue that needs to be examined under the heading of economic data is the health insurance status of the people. All citizens of Turkey by the year 2012, has been in the General Health Insurance coverage. If Turkey's population is also taken into consideration from the scope of health insurance, the power held by the Social Security Agency, have reached significant size. The fact that the Social Security Institution also determines the repayment prices of drugs, medical devices and health services has made the institution an important force.

In the US public financing includes elderly and low-income people, the population with private health insurance under 65 is 65% [33]. In France, where the effect of complementary private health insurance is seen, the population with private health insurance is 92%, while in Canada it is 65% [34]. In Germany, where health services are similarly covered by state security, the proportion of private health insurance spending within total health spending is 10%. This rate is 14% for France and Canada [35]. 10.9% of the UK population has private health insurance and the proportion of private health insurance in total health expenditures is 15% [36].

Referring to the examples in the world, the Social Security Institution in Turkey, both in terms of scope as well as the share of total health expenditure is seen to have higher rates. The direct impact of the Social Security Institution on health policies is known, as it is a component of health care in our country. This power, which SGK has, is often discussed at the point of repayment procedures and amounts, especially for health services.

RESULTS

The world population is growing rapidly, not only increasing the expected life expectancy, but also increasing the world's elderly population. Along with these developments, demand for quality health care services is also increasing. The health sector is an existing sector with healthcare professionals. The quality, efficiency and efficiency of health services; is closely related to the quantity and quality of human power in health. It is only through strategic planning and studies that human resources in the health sector can respond quickly and readily to the needs of both demographic change and epidemiological change. In the study, there are five main factors that influence health workforce planning. Short, medium and long-term planning needs to be done considering all of these factors. In [Fig. 4] a general framework is drawn.

The first step is to evaluate health workforce data. The numerical status of the workforce in health, the number of annual graduates from the perspective of health personnel and the regional distribution of health personnel throughout the country, the educational institutions in the field of health and their capacities, the status of health institutions and employment capacities are the indicators that should be evaluated in the first stage. Because, if the current situation is not analysed before planning, it gives wrong results. In the second stage, there are evaluations in terms of demographic characteristics. The evaluation at this stage is based on the quality and quantity of the population of the health care personnel. Forecasts for the future have an important place here. Realistic approaches, especially in long-term planning, depend on the accuracy of the predictions. Health level indicators are in the third stage. This includes assessing the population for health. It is very important that there is information about the level of health of the community so that health personnel planning can be done. The orientation of the healthcare personnel

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from various angles depends on the analysis of the data. In the fourth stage, there is an assessment of the progress of health services in the community. The number and type of applications to health facilities, the status of utilization of health services, the attitudes and behaviours of the community towards health services, and the general complaints and dissatisfaction related to health services are evaluated at this stage. This information is included in the planning process related to the health personnel. At the latest stage, the health system is evaluated economically. Particularly, the share allocated to health in national income is of great importance at this point.

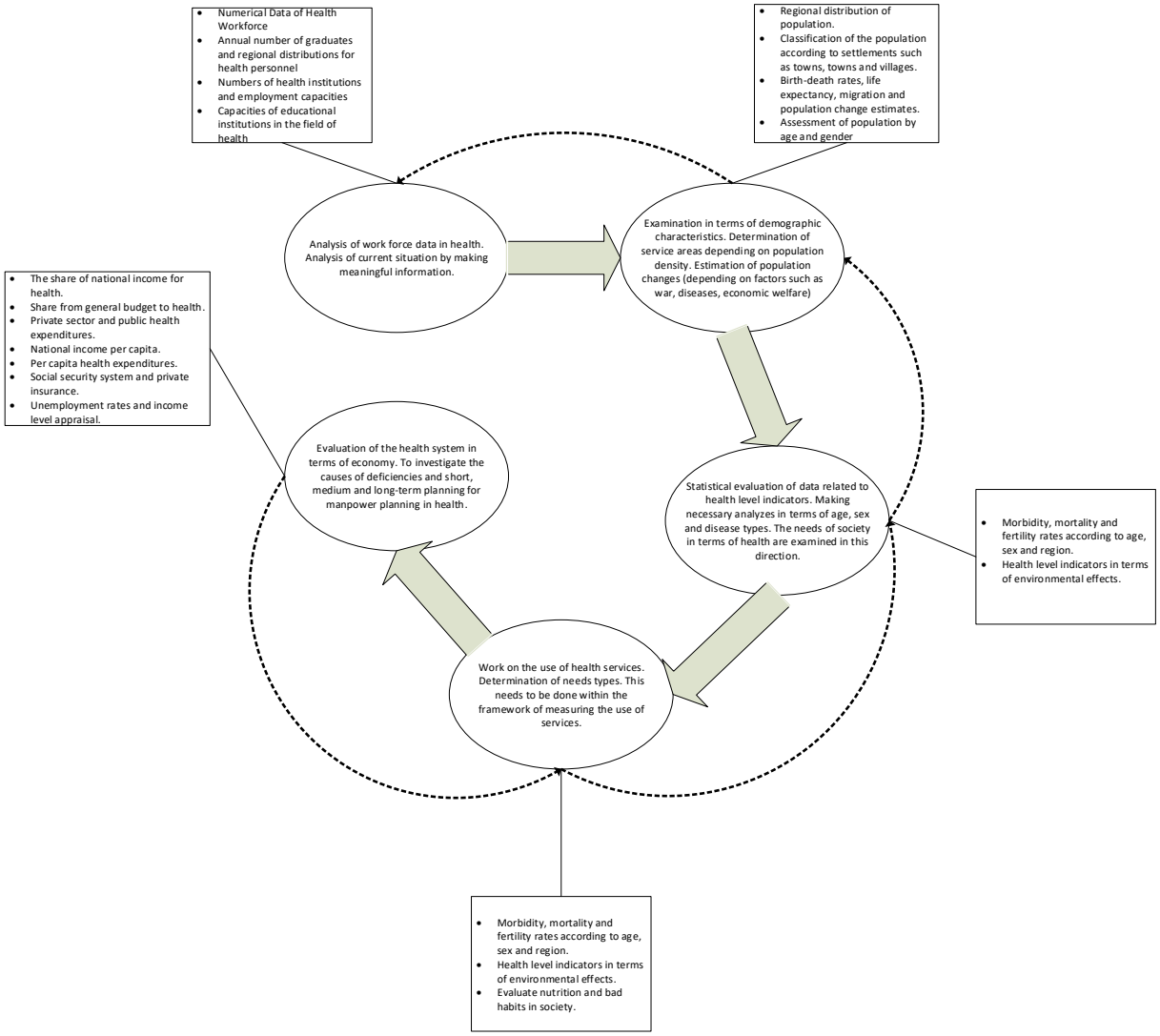

Fig. 4: A framework for health workforce planning.

The general social security system and the functioning of the private health insurance system are another important issue. The economic assessment of the health system has great importance in sustainable health workforce planning. Because the basis of the plans in the health system is the economic infrastructure. Economic infrastructure constitutes state health policies. In this framework, each indicator is evaluated, and the previous indicator is fed back and the health system is considered as a whole. As a result, some output is obtained. Taking these outputs into account, strategic, tactical and operational levels of planning for workforce planning in the health care system are planned.

In determining the general framework of Turkey is made on the basis of examination has been reached the following conclusions:

- Serious lack of work force in Turkey in terms of health are available. In order to overcome these deficiencies, it is necessary to reorganize the quotas of education institutions that provide health work force to provide work force supply and demand balance, and to improve the quality of education and education.
- There are imbalances in terms of regional distribution in terms of health workers. The distribution of sectoral employment among the regions needs to be more balanced.
- It is important to develop the professional qualities of health workers. Some training programs and the spread of well-to-do people across the country will help partially solve this problem. During and

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after the formal training process, the development of language skills and the work in this area should be supported with encouragement.

- Having a very small share of the private health care system in Turkey has captured the public domain. Accordingly, the quality of health services will start to fall after a certain point. The number and quality of health personnel should be developed in the field of private health insurance and economics. Besides, some changes in the social security system can be suggested.
- Turkey, in terms of the diversity of the healthcare profession, stay behind compared to other countries. There are more than 100 professions in different countries that need to be educated about health. It is necessary to diversify the professions in the field of health and to make them available.
- Only increasing employment is not enough for efficiency, and public-sector priorities should be set. The change in health needs to be analysed not only as numbers but also as qualifications.
- The number of patients per healthcare worker should be reduced and adapted to international standards.
- For the incentives that can be applied, first determine what the life threats threatened by age, sex, and region, and determine the disease burden. Incentive areas should be identified in this direction.
- The reputation of health care professionals should be increased. Increased prestige will provide improvements in the promotion of the profession.

CONCLUSION

Human health is the most important asset in the presentation of health services in a community. Health is thought to be the training, employment, planning and prominent topics of health human power to provide effective, efficient and high-quality health services. It is also thought that the distribution of health human power across the country should be considered. Failure to make macro (nationwide) plans for health human resources or inadequate planning and practices may lead to problems in the presentation of health care in the country, incomplete or unnecessary human power and imbalances.

Since 2002, engaged in a very substantial investment in the health sector, Turkey has started to reap the fruit of it in recent years. However, there are still several shortcomings in health care. At the beginning of these, there are problems regarding workforce planning. In this study, a general framework on the health workforce plan was presented. Within this framework, basic steps are taken to plan health personnel. Assessments made through the health care system in Turkey, when it is applied to these steps, a proposal was made for workforce planning under main headings. In general terms, these proposals are concerned with the balanced distribution of health workforce across the country, the development of health workforce in terms of quality and quantity. Here, we have made suggestions about the steps before the planning, the use of the data to be used in the planning, and the criteria on which the planning should be carried out. Labour planning in the health system should be done by taking into consideration the quantitative data and methods along with the suggestions in the framework we specify.

Along with using its capabilities and capacity efficiently, Turkey is capable of having a very strong health care system. Personal planning in the health care system has become an important issue as the building blocks of the health system are people working within this system. According to population and economic terms, Turkey is one of Europe's largest county, demand for healthcare services is greater than the supply amount. This makes labour planning in health a step more important so that the system can be used more efficiently. This study can be ranked according to the importance of the factors that affect the health workforce planning in terms of keeping a light on future studies. Furthermore, depending on different scenarios, short, medium and long-term action plans can be created in the health system and appropriate plans can be set up against different environmental, economic and social situations.

The article which represents a general framework guide future research about the topic of health workforce management. The future research directions are determined in the way of operations research and statistical analysis. For instance, in the presence of the statistics of disease emergence, the physician numbers determined in their branches by OR methods such as modeling, (mixed integer linear programming, assignment etc.) forecasting (arima, decomposition, time series etc.).

CONFLICT OF INTEREST
The authors declare no competing interests in relation to the work.

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All authors agree to submit the article in IIOAB Journal. All the statement (as appropriate) on these issues provided in the Method section of the manuscript.

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ABOUT AUTHORS

Cihat Öztürk is a PHD candidate from the Program in Industrial Engineering at the Marmara University, Turkey. Also, he is research assistant at Engineering and Natural Sciences Faculty, Yıldırım Beyazıt University. His graduated from Industrial Engineering Department at Yildiz Technical University, Istanbul and he has a master degree from Industrial Engineering at Kocaeli University. His research areas are operations Research, optimization, forecasting, metaheuristics, inventory management and statistical analysis.

Deniz Efendioğlu graduated from Industrial Engineering Department of Istanbul University in 2011 with Bachelor Degree and in 2013 with a graduate degree. Along with trying to acquire a place in the academic field, the topics of Operations Research, Decision Making Techniques and Statistical Design in general have been the subjects of his attention. With his double major, Chemical Engineering, he does research in the fields of optimization and regulation of chemical processes. He would like to continue to develop this subject together with the related thesis studies on Renewable Energy Sources. He continues his education in Marmara University in Industrial Engineering Department with Ph.D.

Abdullah Yıldızbaşı is working as a Assistant Professor with Department of Industrial Engineering, Yıldırım Beyazıt University, Ankara, Turkey. Before joining Yıldırım Beyazıt University, he was a Consultant at Ministry of National Education, Turkey. He obtained my M.S. degrees from Selcuk University in January 2008 and Syracuse University in May 2010 respectively. He got his B.S. degree from Selcuk University in June 2006. His major research interests are operations research, closed loop supply chain, green production, green supply chain management, reverse logistics, lean manufacturing, six sigma, business process improvement, sustainability, project management, engineering economics and emotional intelligence management.

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