NEAR EAST UNIVERSITY
GRADUATE EDUCATION INSTITUTE
BUSINESS ADMINISTRATION PROGRAM

HEALTH SERVICES PRODUCTION ACTIVITY MODEL

Songül CAN KARADAŞ

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ABSTRACT

HEALTHCARE SERVICES PRODUCTION ACTIVITY MODEL

Health indicators are indicators that are directly related to the development and health systems of countries. Although there are many health-related indicators, life expectancy at birth and infant mortality rates are among the most basic indicators. In this context, this research aims of Turkey's GDP during the period covering the last 1993-2018 years, applied to physicians, physicians and the number of nurses in the hospital birth of variables such as number of bedrooms, life expectancy and in indicators such as infant mortality rates, is to determine the impact on health indicators. The research data were compiled from different databases such as OECD, World Bank, World Health Organization, TUIK and publications belonging to the Ministry of Health. In this context, it was evaluated that the most suitable model to be used in the research was the VAR model, and the VAR model was used in the analysis of variables. EViews package program was used in the analyses.

In this study, the relationship of variables such as GDP, patient beds, number of physicians and nurses, number of physician visits, with the life expectancy at birth and infant mortality rate was examined, and it was found that there was no statistically significant and causal relationship between the variables. Due to the lack of data for the last two years of some variables included in the study and the oldest completely available data belonging to 1993, the data between 1993 and 2018 were evaluated and interpreted.

Keywords: Health services, health indicators, life expectancy at birth, infant mortality rates

ÖZ

SAĞLIK HİZMETLERİ ÜRETİM ETKİNLİK MODELİ

Sağlık göstergeleri ülkelerin kalkınmışlıkları ve sağlık sistemleri ile doğrudan ilişkili olan göstergelerdir. Sağlıkla ilgili olarak çok sayıda gösterge mevcut olsa da doğumda beklenen yaşam süresi ve bebek ölüm oranları en temel göstergelerin başında gelmektedir. Bu bağlamda bu araştırmanın amacı Türkiye' de son 1993-2018 yılı kapsayan süre içerisinde GSYİH, hekime müracaat, hekim ve hemşire sayısı ile hastane yatağı sayısı gibi değişkenlerin doğumda beklenen yaşam süresi ve bebek ölüm oranları gibi göstergelerin, sağlık göstergeleri üzerindeki etkisinin tespit edilmesidir. Araştırma verileri OECD, Dünya Bankası, Dünya Sağlık Örgütü, TUİK gibi farklı veri tabanlarından ve sağlık bakanlığına ait yayınlardan derlenerek oluşturulmuştur. Bu kapsamda araştırmada kullanılacak en uygun modelin VAR modeli olduğu değerlendirilmiş ve değişkenlerin analizinde VAR modelden faydalanılmıştır. Analizlerde EViews paket programı kullanılmıştır.
Bu çalışmada da GSYH, hasta yatağı, hekim ve hemşire sayıları, hekime müracaat sayısı gibi değişkenlerin doğumda beklenen yaşam süresi ve bebek ölüm oranı ile ilişkisi incelenmiş, değişkenler arasında istatistiksel olarak anlamlı, nedensel bir ilişki olmadığı tespit edilmiştir. Araştırmada yer alan bazı değişkenlerin son iki yıla ilişkin verilerinin bulunamaması nedeniyle ve eksiksiz olarak ulaşılabilen en eski verilerin 1993 yılına ait olması nedeniyle 1993-2018 yılları arasındaki veriler değerlendirilmiş ve yorumlanmıştır.

Anahtar Kelimeler : Sağlık hizmetleri, sağlık göstergeleri, doğuşta beklenen yaşam süresi, bebek ölüm oranı

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ABBREVIATIONS

ADF: Augmented Dickey-Fuller

ADSH: Oral and Dental Health Services

AFAD: Disaster and Emergency Management Presidency

AIC: Akaike Information Criterion

AKUT: Search and Rescue Association

AMATEM: Endotem, Autism Center of Excellence

AR: Autoregressive

ATT: Emergency Medical Technicians

CE: Conformite European

FPE: Final Prediction Error

GDP: Gross Domestic Product

GSS: General Health Insurance

HMO: Health Maintenance Organizations

HQ: Hannan-Quinn Information Criterion

HTP: Health Transformation Program

ISO: International Organization For Standardization

JCAHO: Joint Commission on Accreditation of Hospitals

JCI: Joint Commission International

LR: Likelihood Ratio

MCO: Managed Care Organizations

MOH: Ministry Of Health

OECD: Organisation for Economic Co-operation and Development

PPO: Preferred Provider Organizations

SAS: Health Accreditation System

SC: Schwarz Information Criterion

SDG: Sustainable Development Goals

SKS: Health Quality Standards

SSI: Social Security Institution

SUT: Health Implementation Communiqué

TSE: Turkish Standards Institute

TSM: Community Health Centers

TUİK: Turkish Statistical Institute

TÜSEB: Turkey Institutes of Health Administration

VAR: Vector Autoregression

WHO: World Health Organization

INTRODUCTION

Health is expressed as one of the most fundamental human rights. However, the basic principle of social justice is to ensure that there is access to the necessary elements for a healthy and satisfying life. On the other hand, providing these opportunities increases the productivity of the society both economically and socially and provides long-term economic benefits (Oral and Sayın, 2013; 396). Health services are services that concern the whole society rather than address a specific segment of the society, and where activities are carried out to improve and develop the health conditions of the society. There is a mutual relationship between the developments in the health level and economic level of a society. In societies that have attained a certain level of economic development, the resources allocated to health are also increasing. At the same time, there is an increase in the awareness of individuals about health. In the studies, it has been determined that the improvements in economic indicators have a positive effect on health indicators (Ersöz, 2009; 1651). Even in countries with the highest wealth level, individuals with relatively lower wealth have lower life expectancy and a higher probability of getting diseases (Wilkinson and Marmot, 2003; 7). Therefore, it is obvious that economic indicators will also affect health indicators. The development status of a country is explained by factors such as education, health and economic conditions, which are among the sub-systems of that country. Health indicators have a different position among these variables. Health and development level are in a two-way interaction, which affects each other. It is argued that in a country with a high level of health, production will also rise due to a healthy workforce structure, which will also increase economic welfare and the level of health by preventing problems such as access to health. On the other hand, health indicators are affected by the economic situation of a country, the structure of the health system, health expenditures, and the qualitative and quantitative adequacy of health manpower. Since health indicators are one of the main factors that determine the level of development, the insufficiency of health services affects development negatively (Oral and Sayın, 2013; 396). Establishing a well-functioning health system in a country leads to the provision of health services at an adequate and effective level, to increase

human development and to increase social welfare. Since the mental and physical training of socially, physically, and psychologically healthy people is easier, the human capital of a healthy society can be increased more easily. Therefore, in a country that wants to increase its human capital stock, it becomes a prerequisite to increase the health level by increasing health investments (Yar, Çulha and Atilla.2019; 3-6).

What factors determine the health status of a society has attracted the attention of researchers for many years. According to one view, health status of a society is shaped not only by lifestyle, but also by many other factors such as economic status, social structure, educational status, employment status, access to health services and working conditions. (Ministry of Health, 2011; Healey, 2014). It is possible to make various classifications that include many factors and to increase the number of the factors. For example, Mullner (2009) classified these factors under four headings: biological, behavioural, social, and ecosystem. According to a generally accepted classification today, determinants of health are behaviours, inheritance, environmental elements and health services (Schults & Johnson, 2003). The effects of these factors on health may vary from society to society or from period to period. Life expectancy at birth and infant mortality rates are the primary indicators of health status.

According to a study, there is a strong relationship between mortality rates by age and socio-economic variables. It is found that literacy status, employment status and per capita income are associated with mortality rates by age (Lorcu & Bolat, 2009). In another study, statistically significant relationships are found between infant mortality rate and family structure, especially the socio-demographic characteristics of the mother (Uslu, 2007). In another study, it is found that the gender of the baby, the mother's having more than one birth, premature birth and living in the rural area were associated with infant mortality (Baraki et al., 2020). The study, conducted by Zakir and Wunnava (1999), found that fertility rate, women's participation in the workforce, GDP per capita and women's literacy rates significantly affected infant mortality rates.

In a study examining the reasons for the decrease in infant mortality rates and infant mortality rates in developing countries in the 1990s, it was determined

that the main causes are reproductive behaviours, nutrition, breastfeeding, neonatal nutrition, use of health services in terms of mother and child, environmental health and socio-economic situation (Rutstein, 2000). When the use of health services is evaluated, the importance of health resources becomes obvious. In another study, it is determined that increasing available health resources decreases infant mortality rate, whereas socioeconomic inequalities and some demographic characteristics increase infant mortality rates (Chan, 2011). In addition, in another study, it is found that the number of physicians and nurses per person is associated with infant mortality rates (Yılmaz, 2019). In order to reduce infant mortality, besides health services, it is necessary to increase the general education level and maternal education, to make the income distribution more equitable in the whole country, and to increase the number and ratio of insured individuals. (Barlas et al.2014) Basic health and development indicators such as maternal mortality rate, infant mortality rate, life expectancy at birth are affected by many factors such as income inequality or access to public services, and can also affect many factors such as GDP, education level or life satisfaction. (Yılmaz, Kar,2018). The majority of babies dying before they reach the age of one means that the necessary importance cannot be given to child health and environmental conditions are not sufficiently improved (Özdamar, 2013). It is acknowledged that many factors such as the change and deterioration of environmental health conditions, the inability to control the communicable diseases that occur in the society, the lack of adequate nutrition, the inadequate education of the society on baby care, feeding and raising are considered to play a major role in the death of babies. (Sümbüloğlu, 2019).

In this context, unlike other studies in the literature, this study aims to examine the relationship between infant mortality rate and health resources that may be effective in the use of health services.

There are studies in the literature that evaluate the subject from different perspectives regarding the factors affecting the life expectancy at birth. According to the results of a study, life expectancy is influenced by infant mortality rates, health expenditures per capita and health service utilization levels (Bayın, 2016). On the other hand, in another study, the relationship

between economic indicators and life expectancy is examined, and it is found that national income and health expenditures were related to life expectancy (Aydın, 2020). Similarly, in another study, it is stated that more health resources and socioeconomic advantages increase life expectancy (Chan ce Kamala Devi, 2015). In a study examining the impact of adequate access to health care on life expectancy, it is determined that access to appropriate health services could cause an increase in adult life expectancy (Hao et al., 2020).

As mentioned above, factors affecting life expectancy were examined in many studies and different results were reached. However, health service utilization is one of the most generally accepted factors. Therefore, in this study, it is aimed to examine the relationship between life expectancy and some factors that can be evaluated within the health services factor, which have effect on life expectancy.

When the literature is examined, it is seen that the most used health indicators are the life expectancy at birth and infant mortality rate. In this context, the relationship of various health and economic indicators with life expectancy at birth and infant mortality rates is examined in this study.

CHAPTER 1

1. HEALTH SERVICE

Health service is a highly specialized field in terms of its characteristics and structure. Health service is among the indispensable services for all countries. It is one of the main determinants of the development level of countries and it is multidisciplinary. It has the feature of bringing together quite several specialties and branches of science. In addition to being very important in terms of the value it creates; it is also privileged in terms of the risks it entails. It contains high costs. All over the world, the share that countries allocate to health in their national income is increasing with each passing day. Therefore, such a featured area needs to be grasped in detail. In this section, the concept and characteristics of health, different aspects of health services, health system and components will be discussed.

1.1. Health Concept and Health System

The discussions to define the concept of health still continue today. With the establishment of the World Health Organization (WHO) in 1948, defining the concept of health in its constitution has been the first stage of the institutional modern understanding of health. The definition developed by WHO has created a globally accepted perspective to view health with a more holistic approach (Svalastog et al., 2017; 431).

This definition has taken health beyond the view that defines health only as physical state of well-being or the absence of disease, and stated that social, mental and physical conditions should be evaluated in an integrated manner (WHO, http://www.who.int/governance/eb/constitution/en/). From this point of view, which is the basis of modern understanding in health, individuals need

to find a balance between their inner strength and their social environment. The main condition for this success is that individuals become aware of their core selves and realize themselves (Rutter, 1987; 317). This definition has been at a highly controversial point because it is very comprehensive and at the same time includes facts that are very difficult to measure. The definition of WHO has been criticized especially over the phrases of "social and mental well-being". It is stated that the definition puts great constraints on the phenomenon of health, since it is not possible to accurately evaluate the perceptions and expectations of individuals about their lives and to reveal their level of happiness (Callahan, 1973; 78). However, the belief that health is a social right, which is accepted by WHO and declarations that governments should take first-degree responsibility for health have affected the course of health policies around the world and managed to place this definition at the core of basic policies (Kronenfeld, 2002).

Another factor that should be handled with the concept of health is "health status". Health status refers to the current health level and indicators of an individual, group or country population (Medical Dictionary for the Health Professions and Nursing, 2012). These indicators include basic mortality rates and disease measurements. This ratio is evaluated within the framework of demographic variables. In order to make health policies more accurate, the factors that shape the health status of individuals and groups have begun to be examined. All of these factors that shape health status are expressed as "Determinants of Health". “Determinants of Health” states that health status can only be protected and increased with a multidisciplinary approach. The idea that ‘keeping a society or a country healthy and obtaining positive indicators in their health status is only possible with medical industry’ has been left, and the belief that a social cooperation is required has been settled (Çelik, 2016; 27).

The most widely known study in the field of “Determinants of health” is the study conducted by Schultz and Johnson in 2003. In this study, there are four main factors affecting health status; heredity, environment, behaviour and health services (Schultz & Johnson, 2003; 18-19). As seen in the figure below, when evaluating the concept of health, not only healthcare-oriented areas but

also areas shaped by individuals and groups are taken into account. This table also reveals the understanding of responsibility in health. In order to keep the health status high, an understanding of individual responsibility and health literacy should be embedded. Producing and consuming too much healthcare is not an application that can solve all problems. The important thing is to determine the needs correctly and to be resolved quickly. For this, society needs to integrate health services. Associations such as NGOs, charity organizations, foundations, cooperatives have an important role in the development of health responsibility.

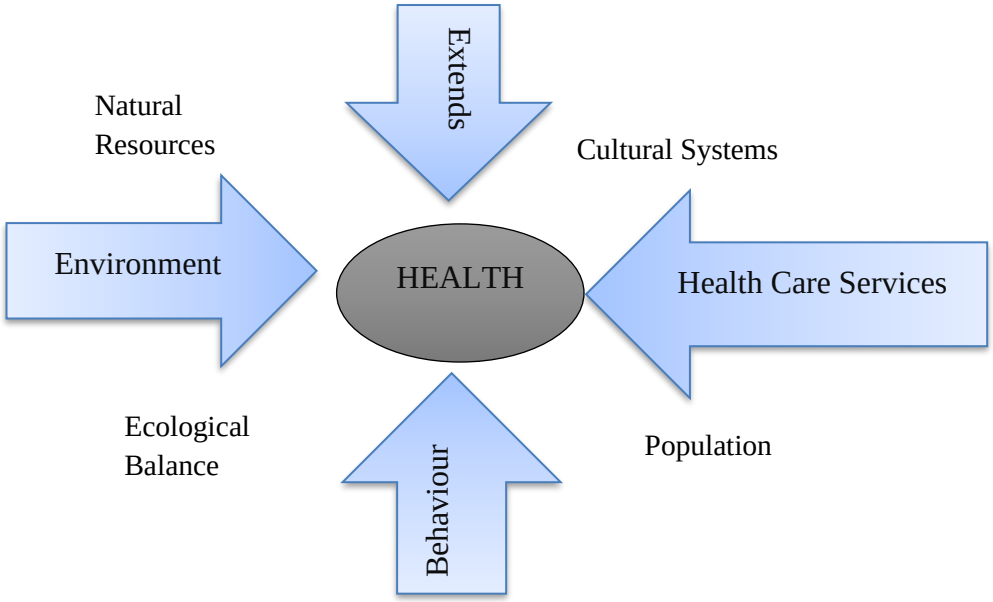


Figure 1: Determinants of Health
Source: *Schultz and Johnson, 2003; 18*

In another modelling on the determinants of health status, direct and indirect determinants affecting health are expressed. In the study conducted by Lerer et al in 1998, indicators such as nutrition, infections, water supply, violence, housing, education were referred to as direct determinants. In indirect determinants, phenomena such as trade and economic life, climate changes, pollution, social classes, aging, war, and migration were expressed (Çelik, 2016; 37).

This understanding has also created differentiation in the delivery of health services. Instead of physician and treatment-oriented health services, a

collaborative health approach and individual responsibility increase day by day. The current understanding in health care is shaped by the evaluation of society as a whole and individual is placed in the centre of the services with its environment, behaviour and characteristics (WHO, 2008a; 41-42)

Health services are shaped around a system in all countries. The system is a structure where more than one part in relationship with each other serves for the same purpose. It obtains some resources (input) from outside in order to achieve its goals and turns it into outputs to meet the needs (Koçel, 2018; 251). In this direction, a health system refers to a structure that aims to reach the required health services physically and economically for the whole population in the relevant country or region and must use its resources rationally in line with this purpose. The healthcare system represents a large production area. Basically, there are 4 elements that make up this production system. These are finance (fundraising), health insurance (assurance), service providers and reimbursement mechanisms (Shi and Singh, 2012; 5-7).

The organization and management style of health systems differs between countries. Economic conditions of countries, cultural characteristics and expectations of societies are among the main factors affecting the health system (Ateş, 2011). The main feature that differentiates health systems from each other is the ownership status of the structures in the system and the economic policies adopted by the countries. Liberal and capitalist policies, which are currently in a very strong position on the world, shape the world health systems to a large extent. Countries that adopt liberal policies emphasize individual responsibility and choice in health services. For example, health insurance in the United States of America (USA), it is mostly obtained from the private health insurance market, which is shaped by individual preferences. However, economic choices are not the only factor shaping the health system. England, which is one of the liberal countries of the world like the USA, preferred a public-oriented health system unlike the USA. However, the economic system also shows its effects in the UK health system, and individuals have to fulfil responsibilities at the point of reaching service (Mossialos & Wenzl, 2015).

1.2. Service Concept

Businesses are basically divided into three; production, trade and service businesses. Although health also includes a production in its content, it is essentially a service production due to its structure. Therefore, it is important to know the concept of service for a right management.

There are some basic features that differentiate services from products; abstraction, heterogeneity, simultaneous consumption, and being not durable. The abstract nature of the services makes it difficult for them to be evaluated at first. It is not possible to obtain concrete data. However, it is possible to measure the consumer's satisfaction with the service and perception of the service to some extent. The inability to store the production also makes quality control difficult. The fact that it must be realized simultaneously with consumption makes the quality of production dependent on the conditions and the people. Therefore, it is very difficult to achieve a standardization in production quality. Labour is in the foreground in service production. It is not possible to control human resources clearly and intensively, like in a production line. This situation causes deviations in service production (Zeithaml et al., 1985; 33).

1.3. Service Concept in Health

Health services have a very wide range of coverage. All components related to the diagnosis and treatment of diseases, health protection and development services and all services related to individual and social health are included in the scope of health services. Health service refers to a combination of financial resources, human resources, equipment and medicines that will enable health-related initiatives.
(WHO: http://www.wpro.who.int/topics/health_services/en/)

Health services consist of a large number of components. However, in today's understanding, instead of a fragmented understanding of healthcare, the concept of integrated healthcare services gains importance. The important

point emphasized by WHO is that the health services are provided at the right time, at the right value for money with a user and result-oriented approach, (WHO, 2008b; 1-2).

Health services represent a holistic system. There are three basic components that made up this system; personal element, social element and professional element. Personal element refers to the segment that needs and consumes the service produced. In this component, besides the sick population, there are individuals and groups who do not have a disease but consume services such as health promotion, health education or screening. Professional element refers to the institution, organization and people who produce and provide the service. The social element refers to the regulations, institutions and individuals which enable effective functioning of these two groups (Çelik, 2016; 130).

There are some principles that are at the center of health service concept. These principles should be adopted in order to enable health service reach the desired goals. These principles are as follows

(WHO http://www.who.int/healthinfo/systems/WHO_MBHSS_2010_section1_web.pdf; 3).

- Accessibility: refers to the financial and physical accessibility of health services.
- Coverage: means that health services are available to all relevant populations and provided in an integrated manner.
- Sustainability: means the availability of health services whenever needed and their existence for future generations.
- Accountability: means that healthcare services are worth the money spent and ensuring transparency in terms of resource utilization.
- Quality: refers to the delivery of health services in an effective, efficient and positive way.

Healthcare production is a production field that has its own characteristics. Sustainability is in a vital position for health services that require a large number and variety of inputs and provide social development. Therefore, it is

one of the main objectives to be able to produce the right service at the right time, to the right people and in the right amount. The relevant principles mentioned above are those to fulfil this purpose. If the correct resource consumption and correct sharing processes are not carried out in health services, which are among the direct determinants of the welfare and development level of the countries, justice will not be allocated and the economic development process of the country will be damaged. The allocation and adopting of these principles is not only the duty of government or service servers. Success in healthcare services is possible with the participation of all parties. Providing improvements in the understanding of individual responsibility, making clear the responsibilities of all parties and a multidisciplinary approach are among the basic building blocks of the concept of health service.

1.4. Historical Development of Health Services

The fight against diseases and the effort to stay healthy is one of the basic motives that human beings have gained since existence. The beginning of the developments in the field of medicine has also started to be shaped by people struggling with the challenges of the world and their efforts to make sense of life. Observation, trial and error were the focus of these developments. The understanding of illness attributed to evil spirits or demons of the primitive periods has begun to leave its place to medicine and some treatment methods obtained from plants and animals, with the help of civilization developments (Sutcliffe and Duin, 1992; 8). There has been a particular focus on the healing aspects of plants and minerals. The " Signature Theory", which has an important place in the development of medicine, expresses the symbols for the healing aspects of plants and minerals. However, this understanding is quite far from scientific foundations. The similarities between plants and minerals and disease symptoms have been the basis of the inference. For example, trying to find a relationship between gold and jaundice (Bayat, 2016; 32).

Until the period when the ancient Greek civilization began to take effect, there were medical developments in Mesopotamia, Egypt, and China. Especially in

Mesopotamia, religious officials and attributing religious characteristics to diseases were common. Egypt made great breakthroughs in medicine with the embalming method considering its period. Advances were observed in surgical procedures. Similar developments occurred in Indian medicine. In China, the acupuncture method formed the basis of medicine (Güntöre, 2005; 60-62). At the same time, the Ying-yang philosophy took a great place in the field of medicine. Yin-yang philosophy is essentially a religious-based approach. It is believed that the condition for being healthy is that Tao's two opposing strengths, ying and yang, balance each other (Bayat, 2016; 85). It was with the developments in Greek civilization that medicine started to get rid of mythological and primitive understanding. Especially Hippokrates laid the foundations of modern health understanding by synthesizing observation and empirical understanding. The free thought and philosophical conceptions of the ancient Greek period enabled the development of medical philosophy and laid the groundwork for the emergence of new understandings (Bayat, 2016; 100).

The breakthrough of medicine in modern and scientific sense was experienced after the Renaissance movements. With the experience of industrial developments, freedom, individualization, human rights discourses, and discussions in economic and social life helped scientific studies to gain momentum (Erdem & Hasan, 2012). The mass movements created by the bourgeoisie started to weaken the power of churches and religious institutions (Özakpınar, 2014; 189). With these developments, science, which started to find a comfortable working area showed its effect in health and medicine, and developments occurred in medicine, anesthesia and imaging methods (Kavuncubaşı & Yıldırım, 2012).

When the first hospitals were established is highly controversial. However, it is stated that the first buildings established for health services outside the temple were seen in the Indian geography. It was observed that a hospital system began to develop among military units in Rome. In the Islamic geography, it is stated that the first hospital was established in Baghdad, in the Abbasid period,

especially after the initiatives started during the Umayyad period (Tokaç and Topçu, 2013; 3-9).

Health services on the territory of Turkey were organized institutionally, mostly palace and military-centered, during the Seljuk and Ottoman periods. Foundations and funds played an important role in health services (Çavdar and Karcı, 2014; 256). The establishment of the Gulhane Military Medical Academy in 1898 is the first step for modern and systematic health service and hospitalization in Turkish (Basustaoglu, 2016; 347-380). With the proclamation of the Republic, health services began to modernize in Turkey. It is aimed to deliver health services to all parts of the country, including in rural areas. Especially after the 1960 military coup, the drafts that were tried to be realized had an effect on the improvement of health services in the following period. In the 1980s, private healthcare production units started to enter the market. Today, health services are provided by both public and private sectors. Hospitals have have shown very radical developments and technology has become intensive.

1.5. Features of Health Services

Health services are very complicated services. Due to its nature, it is directly related to human life and is among the sensitive issues for all countries and people. Therefore, there is no geography in the world where health services are completely left to private enterprises. The main features that distinguish the health care production system from other systems: the high level of complexity (due to the nature of the service and the cooperation of a large number of specialties), the high production costs, the reflection of the benefit of consumption not only on the user but also on the society, and therefore it is difficult to exclude from the service, the provision of services under uncertainty and risk and the level of knowledge among market actors is not exactly the same. These features prevent the functioning of the classical market mechanism and stipulate the existence of formations such as government, private enterprise, civil society, insurance and security institutions, etc.

The need for healthcare services may appear suddenly and the size of the required service cannot be predicted. At the same time, although it varies according to the severity of the health status, it is not possible to postpone the need for service, as it directly affects the social and economic life (Odabaşı, 2001). Therefore, supply and demand in healthcare services are uncertain. The uncertainty in health services is also present in terms of the costs that will arise. Health services that involve intensive labor and technology are quite costly. Health insurances are indispensable for the healthcare system to prevent service users from encountering high costs at an uncertain moment. The inability of individuals to predict when and in what dimension they will need health care causes them to make payments for the risks that may occur between now and tomorrow (Celik, 2016; 56).

Information asymmetry is one of the characteristic features of healthcare. Information asymmetry (Hubbard et al., 2015), which implies that the level of information between the producer and the consumer of a service is asymmetrical, that is, the information availability of one party is less than the other (Hubbard et al., 2015), makes the communication between the service provider and the consumer different from other production areas. The service provider largely determines the content and scope of the service. Patients or customers do not have the chance to determine the content of the service, nor are they able to test or gain experience before consuming. Therefore, a greater trust bond is needed in healthcare production compared to other production areas. It is stated that the education and work ethic of physicians is decisive at this point. In addition, health insurances included in this mechanism have to undertake the duty of protecting the service user (Arrow, 1963; 961-967). However, a different dimension of information asymmetry also exists between the insurer and the insured. It is very difficult for the insurer to accurately determine the health service consumption status and all health conditions of individuals who will buy assurance. There is a risk of hiding information about the health status or habits of the insured from the insurer. Insurers may tend to keep premiums higher, taking this risk into account. This situation causes individuals who think that their premiums are high and that they need less health care to give up insurance. As a result, the insurance market is stuck in

the triangle of higher premiums, individuals with poor health conditions, and purchasing more services (Guinness, 2011)..

Another important feature that differentiates health services is that it is very difficult to express the value it brings up financially. It is not possible to calculate a common value if the evaluations about quality of life remain subjective and the healthy years obtained are experienced differently among individuals (Zweifel et al., 2009; 17). It is not possible to clearly determine the outputs in health. Although standard treatment procedures are available, the varying characteristics of people cause the same treatment methods to show different characteristics in different individuals. In addition to this feature, the fact that health is a service area causes production to be shaped according to the characteristics of human resources. Therefore, it is quite difficult to reach clearly standardized outputs (Greenwald, 2010; 10-11).

Another feature of the health sector is the presence of positive externalities. The benefits of services reflect not only on consumers but also on society as a whole. At the same time, every problem that does not have treatment reveals a social cost. While it is possible to exclude those who do not pay for the special benefit of health services, some services have the ability to spread and not divide the benefit. Because of these features, health services show a semi-public character. This makes it necessary to provide some services with the intervention of the state. In addition, states and governments certainly play a role in regulating healthcare and insurance markets around the world. Government intervention in the health sector is concentrated in determining insurance coverage, transferring resources and supervision (Mahon et al., 2009; 2-4). In addition, restrictions may be imposed on competition and initiative in health services. There are quite a number of responsibilities to be fulfilled at the entrance to the sector (Çelik, 2016; 57). Health professionals must also pass the required certification process in order to be able to work. In addition, the relevant documents may be requested to be renewed periodically (Mutlu & Işık, 2012; 60).

These basic features of health services show that it is a very difficult area to manage and maintain. Therefore, it is very important that the human resources are trained in this field and also the society have sufficient knowledge, skill and responsibility level in order to ensure sustainability in health services.

1.6. Types of Healthcare Services

Health services can also be examined in three branches in terms of content; preventive, therapeutic and rehabilitative health services. This functional distinction is essentially not a sharp distinction. Health institutions and organizations have been built to offer all three types of services in an integrated manner. In fact, they also have complementary features. On the one hand, the treated individual should also be brought back to social-economic life and at the same time prevented from getting sick again. At the same time, the fact that some services are developed and sufficient makes it possible for other service areas to function more effectively. For example, a well-developed primary health care service will ensure healthier individuals and make it possible to spread resources among alternative areas. Therefore, organizing all types of services in a way that ensures adequate production and delivery is a very important decision stage.

1.6.1.Preventive Health Services

These are the services provided to protect individuals and prevent the spread of existing diseases before diseases occur. In preventive health services, individuals are also evaluated together with the environment. It is aimed to protect both the individual and the environment. Therefore, it requires a multidisciplinary understanding. It is based on the cooperation of sectors such as health, education, social services, local governments, and security. Services such as early diagnosis, vaccination, health education, family planning are included in the scope of health services, while at the same time, services such as clean water, food health, infrastructure adequacy, fight against pollution, etc. are also needed (Sarp, 2017; 38-40). Preventive health services are generally evaluated within the scope of primary care. However, in fact, it is one of the most important issues for each care step. Increasing the

value that society gives to their health status and taking responsibility in this regard is one of the most effective components in preventing health risks and costs that may occur. This understanding is of great importance for today's health systems that seek sustainability (WHO, 2012; 2).

Today, with the development of technology, it is possible to protect and improve the health level of the society by improving living conditions and establishing different communication channels with patients (data sharing via cloud, online consultancy, monitoring with active body devices, etc.), without the need for intensive healthcare production. These systems protect individuals from existing risks related to their health status and try to prevent more costly initiatives. In the United States, Health Maintenance Organizations (HMO) work with a primary care focus and aim to protect public health with such technological infrastructures, while it varies according to the scope of the package (Navarro & Cahill, 2009; 2-3).

1.6.2.Therapeutic Health Services

These are the services offered directly to individuals, in case of illness or accidents, to carry out the relevant treatment process, to ensure the survival of the individual and to maintain the integrity of the body. In therapeutic services, diagnosis, diagnostic processes and the art of medicine exist in parallel (Ateş, 2011; 25).

The delivery of treating health services is examined in three main groups that exist as subsystems of the health system: primary care, secondary care and tertiary care. Although the boundaries between the steps are clear in terms of the tasks they are imposed, they can expand in a typical treatment process, making it difficult to separate clearly. What is expected within the layered service is that the first application point is the first step. It is expected from the primary care, which plays the role of a gatekeeper for the transition to the second and third steps, to make the first evaluations about the application, to solve the problem without the need for an additional procedure, and to refer

the application to higher levels if a complicated treatment is required (Walshe & Smith, 2006; -56)

As shown in Figure 2, the level of specialization and the level of complexity in cases increase when one proceeds through the steps. The main purpose of the cascading structure is to ensure that the allocated resources are used rationally. The effort to prevent cases that can be solved with less resources and a lower level of specialization from creating intensity and waste of resources in the second and third stages and to keep the level of service usage at optimum levels is one of the main areas of occupation of every healthcare system.

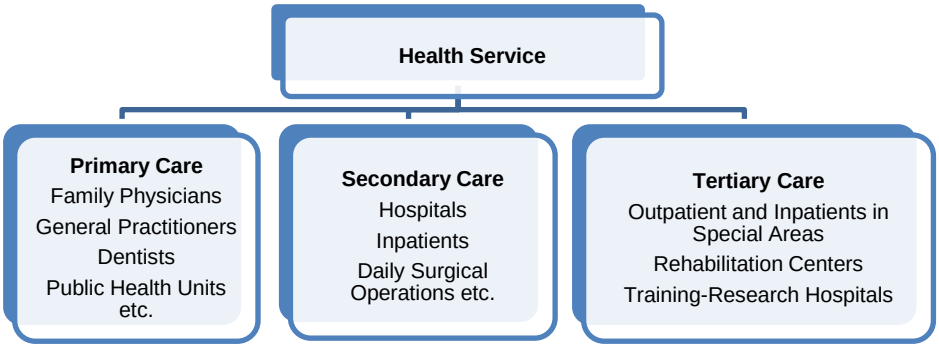


Figure 1: Stepped Health Service

Source: *Walshe and Smith, 2006; 54*

Primary health care services are provided worldwide by professionals referred to as family physicians or general practitioners. It is expressed as "general practitioner" in English literature. They have outpatient and door-keeping roles. The second level is the organizations where inpatient institutions / businesses provide treatment services. The two main factors that differentiate the tertiary care are that it is organized for educational and research purposes and therefore the level of expertise is much higher than other levels. As the steps go up, the intensity of intervention and treatment and consequently resource consumption increases. To have a rational resource consumption, each step should concentrate on its field of expertise and not allocate resources to problems and diseases that can be solved at a lower level.

1.6.3.Rehabilitation Services

The concept of rehabilitation refers to a series of support and preventive efforts organized for individuals experiencing or likely to experience disability to achieve and maintain optimal functionality in interaction with their environment. The desired outputs from rehabilitative services, physically and socially; Preventing loss of function, reducing function loss rate, improvement of functions, regulating loss of function, preventing deterioration of current functional status (WHO, 2011; 95).

Medical rehabilitation refers to improving the diagnosis and treatment processes of individuals' health conditions, preventing complications, and interventions to prevent existing risks (Gutenbrunner et al., 2006; 13).

Social rehabilitation essentially points to a paradigm shift. Social rehabilitation is an approach where individuals are at the center and it is aimed to increase the production capacity by evaluating them in terms of the needs of the society. This approach can be used in conjunction with the concept of economic rehabilitation. Issues such as reintegration into business life after injury, improving job skills development, integration into social life are considered within the scope of social and economic rehabilitation (Gokhale, 2001; 42-51; Demir & Demir, 2014).

1.7. National and International Standards in Healthcare

Standard development and standardization effort is a product of the pursuit of quality. Today, the concept of quality is also considered indispensable for healthcare services. World-class quality studies continue with great momentum, both because they have cost-reducing feature and they create a more satisfactory customer experience with sustainability in services. With the expansion of economic and trade borders, the standards have now gone beyond the national dimension. International organizations set the quality standards in health and provide accreditation services. Especially in terms of health tourism, the existence of a quality service is measured by being largely accredited.

1.7.1.National Standards

One of the components of the "Health Transformation Program", which was designed in Turkey, in 2002 within the scope of the "Emergency Action Plan in Health", and whose steps started to be taken since 2003 are corporate performance and quality applications. The efforts to establish criteria for the evaluation of health services at all levels within the scope of this component have gained momentum (Akdağ, 2008; 77).

Currently under the Ministry of Health, General Directorate of Health Services, the Department of Health Efficiency, Quality and Accreditation sets “Health Quality Standards” (SKS) and provides guidance for its implementation. It is published in four dimensions; Hospital, Dialysis, Home Health and ADSH (Oral and Dental Health Services) (http://www.kalite.saglik.gov.tr/TR-12680/guncel-standartlar.html; Date of Access: 09.10.2018).

The roadmap followed during the development of standards is as in Figure 3 below.

Figure 2: Preparation Process of SKS Standards

Source: General Directorate of Health Services, 2016; 19

SKS Hospital set, published in 2016, includes 5 dimensions, 39 departments, 557 standards and 1100 evaluation criteria. 5 dimensions (Figure 4);

1. Corporate services
2. Patient and employee oriented services
3. Health Service
4. Support services
5. Indicator management

CORPORATE SERVICES	PATIENT AND EMPLOYEE ORIENTED SERVICES	HEALTH SERVICE	SUPPORT SERVICES	INDICATOR MANAGEMENT
Institutional Structure	Patient Experience	Patient care	Facility Management	Monitoring of Indicators
Quality management	Access to the Service	Medication Management	Hospitality Services	Section Based Indicators
Document Management	End of Life Services	Prevention and Control of Infections	Information Management System	Clinical Indicators
Risk management	Healthy Work Life		Material and Device Management	
Security Reporting System		Sterilization Services	Medical Record and Archive Services	
Emergency and Disaster Management		Transfusion Services	Waste Management	
		Radiation Safety	Outsourcing	
Training Management		Emergency		
Social responsibility		Operating room		
		Intensive Care Unit		
		Newborn intensive care unit		
		Birth Services		
		Dialysis Unit		
		Psychiatric Services		
		Biochemistry Laboratory		
		microbiology Laboratory		
		Pathology Laboratory		
		Tissue Typing Laboratory		

Figure 3: Dimensions of SKS Hospital

Source:*General Directorate of Health Services, 2016; 24*

When the quality indicators of the SKS Hospital set are examined, it is seen that it is divided into two parts as service and clinic. Service quality indicators include corrective/preventive activity concluding rate, indicators related to white/blue codes, training, turnover speeds, number of patients returning again for treatment, documentation-related indicators, etc. In clinical quality indicators, there are indicators related to faulty procedures, infection rates, surgical complication rates, etc.

Hospitals, oral and dental health centers are assessed by the Ministry of Health within the framework of relevant quality standards. This situation has enabled the concepts of quality and safety in health to increase their importance in the sector. Steps are also taken to institutionalized health accreditation in Turkey.

Turkish Institute of Health Services Quality and Accreditation is planned to be established as part of Turkey Institutes of Health Administration (TÜSEB) which was founded in 2014. (Güdük and Kılıç, 2017).

The Ministry of Health has also implemented the Health Accreditation System (SAS) on a voluntary basis. The first studies in this area started in 2012. Within the framework of the agreement made with ISQua, the development of accreditation standards has been achieved by examining the "ISQua International Principles for Healthcare Standards" document. The SAS Hospital set is as follows (General Directorate of Health Services, 2015; 19).

Figure 4: SAS Hospital Set
Source:*General Directorate of Health Services, 2015; 19*

The Turkish Standards Institute (TSE) also develops standards related to health services. 15224 Health Services Quality Management System is the list of standards in this field. This standard is an industry-specific quality management system standard for healthcare organizations. The requirements in this standard include TS EN ISO 9001: 2008 requirements and additional specific definitions for health services. This standard includes health services, such as primary health care, pre-hospital care and hospital services, tertiary health services, nursing homes, preventive health services, mentally disabled care services, dentistry, physical therapy, occupational disease health

services, rehabilitation centers and pharmacies. It is a management system standard that can be applied in the entire health sector. (https://tse.org.tr/IcerikDetay?ID=2438&ParentID=1063 Date of Access: 10.10.2018)

1.7.2.International Standards

The accreditation body with the most important series of standards known internationally is “Joint Commisssion on Accreditation of Hospitals” (JCAHO). In the United States, which was the first place of formation of accreditation studies in health, as a result of these efforts, JCHAO was born with the participation of "American College of Surgeons", "American College of Physicians", American Hospital Association "," American Medical Association "and" Canadian Medical Association " (Roberts et al., 1987; 937-38).

Joint Commission International (JCI), a sub-organization of JCHAO, publishes health services (especially for hospitals), standards and provides accreditation services. Standards are based on the evaluation of clinical services and focus on patient care and continuity, training of patients and their relatives, patient rights and evaluation (Akyurt, 2013; 455).

JCI's 2017 set of hospital standards are grouped under three main headings. Patient-Centered Standards include standards in 8 different dimensions. This series of standards focuses mostly on patient safety and rights. Standards for informing patients, patient consent, training and planning appropriate care are included in this section. Organization and Management Standards are discussed in 6 sub-dimensions and standards about quality, infection, facility safety, human resources management and information management are provided. Finally, in the academic hospital standards section, there are standards on academic development in health care. The standards in this context are on training-research hospitals (JCI, 2017).

Patient-Centered Standards	Organization and Management Standards	Academic Hospital Standards
International Patient Safety Goals	Quality Improvement and Patient Safety	Training of Medical Professionals
Access to Service and Continuity	Control and Prevention of Infections	Research on Humans
Patient and Family Rights	Governance, Leadership, Direction	
Assessment of Patients	Facility Management and Security	
Care of Patients	Quality and Training of Human Resources	
Anesthesia and Surgical Care	Knowledge Management	
Medication Use and Management		
Training of the Patient and Family		

Table 1: JCI Hospital Standards

"International Organization for Standardization – ISO" standards, which is another international accreditation institution, is also one of the standards used in health services. ISO- 9001 Quality Management System is among the resources used in healthcare organisations. In 2003, a guide on the implementation of ISO 9001 was published by the Ministry of Health. These efforts have been motivated to ensure that modern business administration can be allocated to health services (Ministry of Health, 2003). It has standards in areas such as customer focus, process and system approach, employee participation, continuous improvement, decision-making with data, and supplier management (ISO, 2015; 1).

ISO also has a management system with standards, especially for medical devices. TSE publishes medical devices quality management systems based on ISO 13485 standards. These standards are prepared in accordance with the instructions given by the European Commission and the European Free Trade Association to the European Committee for Standardization-CEN. Its

main purpose is to ensure that the conformity of the manufacturer in active medical devices is evaluated (TSE EN ISO, 13485). It offers an active quality management system for CE (Conformite European) certification processes, especially for compliance with European norms.

ISO has management systems in many areas. These systems include 14001 Environmental Management System, 45001 Occupational Health and Safety Standard, 27001 Information Security Management System, and 10002 Customer Satisfaction Management System. These systems can be used for indicators that are mandatory for health institutions. 14001, in waste management and patient safety, 45001, in employee safety, 27001, in information security and data protection, and 10002, in ensuring patient and employee satisfaction. ISO 9001 management system basically includes standards related to these featured systems. The use of these management systems is among the effective tools to ensure success in indicators mandatory by the Ministry of Health.

1.7.3.Other Standards Related to Healthcare Services

Health services are an area where there are quite a lot of legal regulations and standards. An important point for these regulations is the issue of privacy. In particular, the protection of personal data is very important for the individuals who share personal information with service providers and may not want to be known. “Personal Data Protection Law” numbered 6698 is the broadest legal regulation in this field. Personal consent is especially important in sharing and transferring personal data. However, it is necessary to share data between institutions in compulsory situations and general service operation. This is considered within the normal procedure. Organizations and units such as the Social Security Institution, Ministry of Health, Private Health Insurance Companies, Judicial Authorities, related institutions or foreign services related to care (laboratory, imaging, dialysis, etc.) in case of referral, General Directorate of Security, etc. can share data in mandatory situations and in general service operation.

There are regulations that determine the rights and responsibilities of the parties within the health services. "Patient Rights Regulation" in the Official Gazette No. 23420, "Regulation on Ensuring Patient and Employee Safety" in the Official Gazette No. 27987, "Regulation on Job and Job Descriptions of Healthcare Professionals and Other Professionals Working in Health Services" in the Official Gazette No. “Private Hospitals Regulation” in the newspaper are only some of these regulations.

Although it is not directly related to health services, there are regulations that regulate social life in terms of health. The main ones are the regulations on smoking and alcohol consumption. The regulation on tobacco products was made with the “Regulation on Legal Warnings Regarding the Consumption of Tobacco Products” published in the Official Gazette No. 27555, and consumption of tobacco and cigarettes was prohibited especially in closed areas. Regulations regarding the sale and consumption of alcohol were made with the Law No. 487 and the Law No. 375 Amending Decree Laws.

1.8. Factors Affecting Healthcare Services

Health services are shaped around many factors. Factors such as the demand for health services, cultural, social, and economic characteristics of the society, and educational status are among the factors that affect health services. Especially, in the service planning and policy making process, these factors that decision makers must take into account are important for service sustainability and effective results.

1.8.1.Health Services Request

Healthcare demand is a phenomenon dependent on the value attributed to health. However, this does not always mean that individual beliefs and expressions and behaviours will completely overlap. People have to decide what to consume and what to give up in life. Although it is often stated that health is one of the first preferred factors, individual preferences tend towards consumption areas other than health until the disease develops (Mcpake & Normand, 2008).

Health care demand is basically expressed as derived demand. It triggers the production of health services to health. At the same time, it is the service providers that determine the service. In other words, it is the health professionals who determine the content of the health service on the individual's expectations about health, make a health service request and ensure the consumption of the service (Mcpake & Normand, 2008; 17).

The widely known study, developed on the demand of health services, was conducted by Groosman and published in 1972 under the name "On The Concept of Health Capital and The Demand For Health". The basic assumption of this model is that individuals use healthcare consumption as an investment to increase their declining health stock over time. In this model, it is also stated that the health status is provided not only by health service consumption, but also by the inputs, individuals obtain from living standards and habits. Therefore, it is stated that the standard of living, which increases as income increases, will go towards a decrease in health care consumption (Grossman, 1972; 225)

1.8.2.Consumer Preferences and Balance

The uncertainty of the demand for healthcare services has been mentioned before. Individuals are quite passive in the consumption of healthcare services and at the point of determining the content of the service. The main reason for this situation is the asymmetrical level of knowledge. However, individual preferences can also affect health services. Individual preferences are basically shaped by demographic, environmental and economic conditions. The two main factors determining health consumption in terms of demographics are age and gender. There may be large differences between the frequency of health care use and the type of health service between men and women. The difference in the value attributed to health between the two genders causes variations in the level of expectation in health services. A similar situation is valid for age. Health needs of age groups are different from each other. Especially over the age of 65, which is expressed as older or

senior, they need a more intense health service due to their social life limitations and mostly chronic diseases (Mutlu & Işık, 2012; 85). It shapes preferences in environmental conditions. Cultural and social habits are among the determinants of the level of expectation and satisfaction from health services. For example, there have not been many preferred primary care institutions in our country until the last years. Possible reasons for this situation may include trust in intensive investigations and initiatives, and past experience. Another factor that is highly influential among the determinants is the economic conditions. The increase in revenue increases the demand for health services as it increases the expectation of quality in the service.

It is not always possible to reflect consumer preferences on the market. Individuals who are under compulsory public insurance and do not have an additional insurance are obliged to act within the existing scope. The increase in income can basically create flexibility at this point (hospital selection, physician selection, quality in services, etc.). At this point, in line with the understanding of individual responsibility, the USA can be expressed as the country where individual preferences are reflected at the highest rate. The private health insurance market is shaped by the policies and scopes that individuals purchase in line with their demands, provided that minimum coverage is provided.
(https://www.cornerstones4care.com/content/dam/nni/cornerstones4care/pdf/others/Health_Insurance_Booklet.pdf; Access Date: 11.10.2018).

1.8.3.Demographic Factors

The study area of demography is on the size, density, distribution of the population as well as birth, death, and disease data (Leone, 2010; 1). When health services are examined in terms of demographic factors, the size, distribution, and structure (composition) of the population come to the forefront. While the size and distribution of the population is directly related to the demand for health services and the use of health services, the composition of the population makes it possible to make predictions about health behaviours (Pol and Thomas, 2013; 14-15)

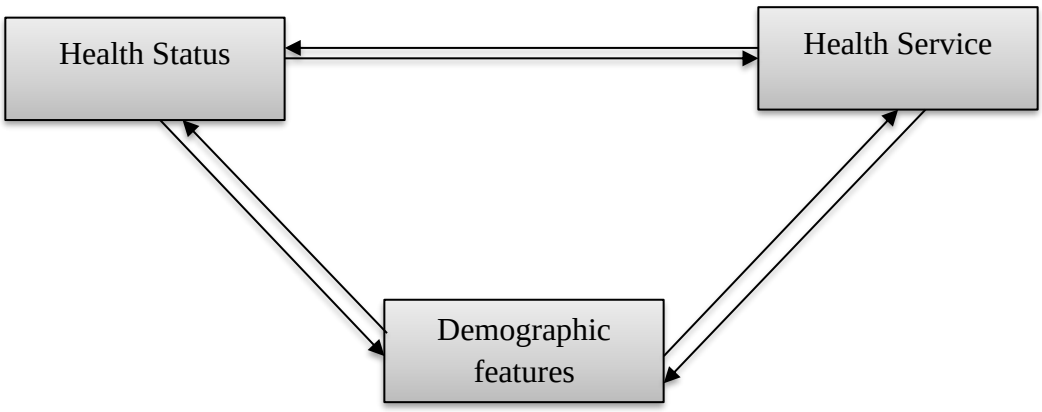


Figure 5: Relationship between Demography and Health
Source:*Pol and Thomas, 2013; 14*

Demographic characteristics are reflected both as a determinant and a result of health status and health services. Health services planned according to demographic characteristics will affect health status, improvements in health status will create differentiation in demographic features. For example, as a demographic data, the elderly population ratio is an indicator that chronic care will increase in healthcare services. Improvements in healthcare enable to prolong of human life and create changes in demographic characteristics. Therefore, the relevant factors affect each other in a cycle.

While developing health policies, demographic data are among the basic resources taken into consideration. Especially at the point of resource allocation decisions, demographic characteristics provide the basic input to identify and prioritize areas of need. Of course, quantitative analysis is not the only items used in this process. At the same time, the course of behaviour in the population and its possible long-term consequences are estimated and included in the process of planning services (Leone, 2010; 2). In fact, demographic data should be handled in a way that includes historical, social, and religious information because all these variables contain information that can provide inferences about the diet, hygiene, living habits and risky behaviours of the population. The mentioned variables are very useful for understanding health problems and therefore the demand for health care (Sava, 2018; 7).

The economic power of the countries is provided by a sufficient population in terms of quantity and quality. In order to increase the production capacity, the population must be healthy and well equipped. Hence, healthcare, demography, education, etc. areas need to cooperate closely. By analysing the population groups well, the needs of each group should be determined correctly, and a sustainable health service should be organized.

1.8.4.Health Organization and Disease-Related Factors

The severity and urgency of the disease directly affects the delivery of health services. Individuals' perceptions of their health status are among the factors that determine the amount and urgency of demand for the service. The resistance of the individual to the pain and the value he attributes at the same time is the main determinant of whether to apply to a health institution or not. If the patient has a high degree of negative value and perception about the pain, he will demand health care to get rid of this pain as soon as possible. Therefore, the worsening in health status of the individual increases the demand for health services (Folland et al., 2013; 178).

As can be seen in the indifference curve below, in case of illness, the share of the budget allocated to other goods and services decreases and the preference for health services increases. The main reason for this is that, under the relevant conditions, the value attributed to health increases.

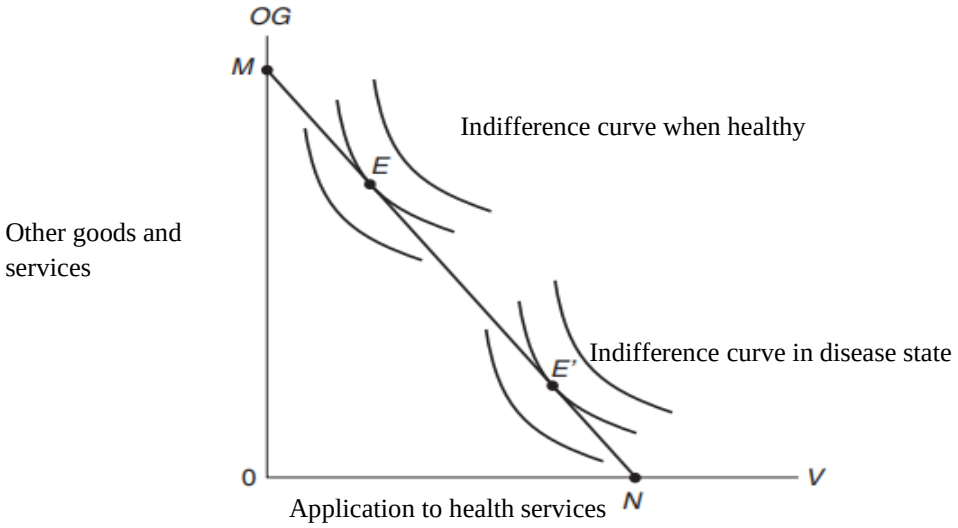


Figure 6: Health and Sickness Indifference Curve

Source:*Folland et al., 2013; 178*

At this point, the perceptions and feelings of the individual are not only shaped by factors related to themselves. The cultural, social and economic characteristics of the environment in which they live, the thoughts and beliefs of the family and immediate environment have a great influence on the decision made by the individual. At the same time, the individual's ability to bear the costs that will arise as a result of the use of health services is another factor.

Besides these factors, the education level of the patient is also a very important point. As the level of education increases, the awareness of individuals increases and their decisions regarding demand become clearer. Education has a great impact on early diagnosis and treatment compliance processes. At the same time, the high level of health literacy enables individuals to regulate their living habits and need less health care (Çelik, 2016; 42).

The structure of the health organisation and the quality of the service it offers are factors that affect the service demand and the level of achieving the desired results. A quality healthcare organisation / business ensures that the relevant service users have positive feelings about the business and thus increase the prestige of the business. In addition to success in medical

processes, a quality health service is a combination of all elements such as, corporate image, communication management, building-related features, cleanliness, approach of the human resource to the service user etc. As long as the characteristics of the health organisation are not suitable for the people, it is not possible for the organisation to provide effective services and at the same time to achieve the expected output from the services.

1.8.5.Socio-Economic Factors

Purchasing behaviour of individuals is shaped around socio-cultural and economic factors. While social and cultural factors are effective in shaping personal tastes and preferences, economic features are the main determinants of which related preferences can be realized. As the economic power increases, access to services becomes easier and consumption preferences expand. This situation is valid to a certain extent for health services. Individuals with high income and high health insurance can access health services more easily and create a higher demand.

If the service to be used by the individual is covered within the scope of the health insurance, the demand of the individual will appear more clearly. However, individuals consider not only the cost of the service but also all costs in the relevant processes. The costs of travel, dismissal, medication, etc. are also among the determining factors for the individual (Mutlu & Işık, 2012; 88) As an increase in the income of the individual facilitates all these factors, it increases the demand for health services (Folland et al., 2013; 177).

As can be seen in the figure below, the increase in income shifts the demand curve to the right.

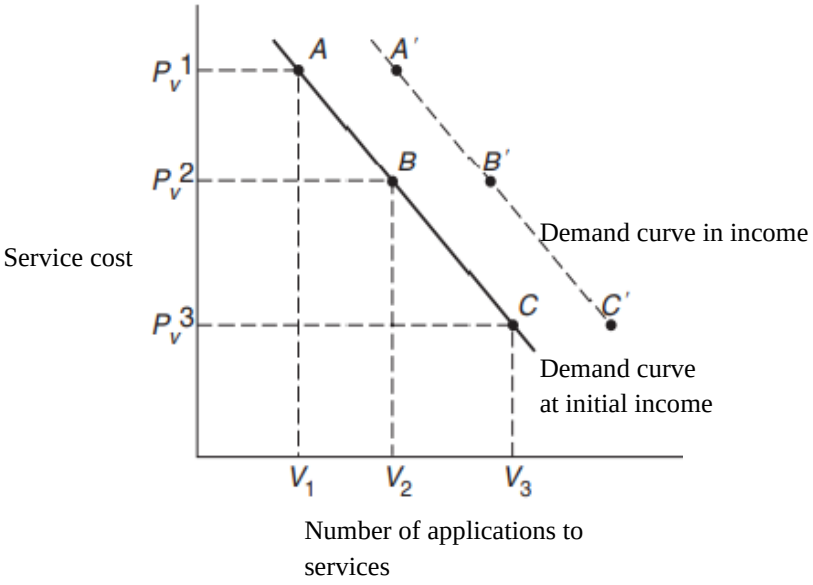


Figure 7: Income Growth and Healthcare Demand Curve

Source:*Folland et al., 2013; 177*

A similar situation can be observed in the presence of health insurance. An increase in health insurance coverage or ownership creates an expansion in the demand for health services.

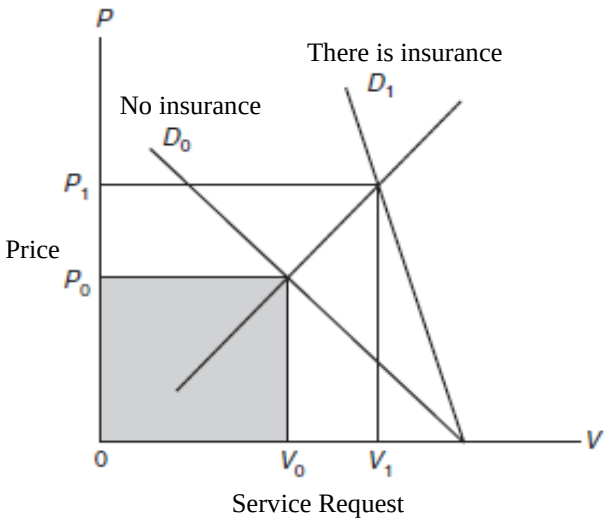


Figure 8: Insurance Effect on Health Care Demand

Source:*Folland et al., 2013; 182*

As mentioned previously, cultural characteristics and habits have a great impact on the whole system. Health services are not the only area for increasing health status. In order to make health services effective, cultural

and social characteristics need to be taken into consideration. In order to make sure that the developments in medicine give effective results, they should be organized in a way that the population can accept. For example, in Africa, where AIDS and HIV are quite common, the World Health Organization, realizing the public's trust in traditional healers, chose to cooperate with these people. Because otherwise, it has been observed that the trust of the society cannot be gained and success cannot be achieved (Haviland et al., 2008).

When analysing the health indicators of a country, the conditions and characteristics of the country should be included in the analysis in a multidimensional way. In addition to the fact that healthcare services have a major impact on healthcare status, social, economic, political, demographic, etc. conditions directly affect both the use and organization of health services and welfare. Therefore, health services should be evaluated in terms of all relevant variables within their specific characteristics. The correct interpretation of the relations between the indicators can be realized by evaluating the demographic structure of the countries, economic strength, livelihood methods, structure of health institutions, etc. For this purpose, the concept and characteristics of health, differentiated aspects of health services, the relationship between health care and demographic-economic-social variables, health system and components are explained, national and international standards related to health services are examined.

For the same purpose, in the second part, the service production units in the health system and health service levels are examined and international examples are included in terms of health systems as well as Turkey.

CHAPTER 2

2. HEALTH SERVICE PRODUCTION SERVICES IN TURKEY

Health care access indicators are very important indicators when evaluating service effectiveness and quality. Along with improving the living conditions of the individual, ensuring a sustainable health understanding, treating and preventing diseases are directly related to access to adequate health services. In this context, issues such as the ownership structure of the health system, the size and organization of service providers, health insurance, and the diversity of health services make the indicators meaningful. The mentioned factors and economic conditions are the main factors that shape service providers in rural areas and cities, number of healthcare workers, number of beds. In particular, organizational structures and access issues are the main determinants of service efficiency. A healthcare system that is not properly constructed causes unnecessary resource expenditure in addition to the inability to improve health indicators. While evaluating the health status of the countries and the efficiency of the health system, the way of service organization and characteristics must be evaluated. In addition, what makes system evaluations meaningful is the benchmarking. Therefore, in this chapter, health service production units in Turkey will be evaluated in terms of property and organizational structures, health insurance access, and some country application examples will be analysed and readers will be given the opportunity to benchmark.

2.1. Public Health Service Production Units

The Ministry of Health is in a position to be the largest service provider in Turkey. Most of the hospitals in the country belong directly to the Ministry of

Health. Even though it has a private appearance by its nature, family health centers can also be evaluated within the public sector, as they are financed by the state budget. In addition to these, hospitals and service units belonging to public universities should be evaluated within this scope. In this section, all relevant units will be covered.

2.1.1.Primary Health Care Services

In today's competitive conditions, regardless of their level of development, national health systems struggle with scarce resources in the face of increasing demands, inequalities in the provision of health services, and deficiencies in terms of quality and number in health manpower and develop a number of strategies (Şahin, 2002; 3-5). While developing these strategies, the main purpose of health systems is to optimize the level of health as much as possible despite the diversity of health needs and to minimize the differences in status among individuals. It aims to provide health services to everyone, anytime and anywhere (Figueras, 2005; 331). In line with this goal, countries around the world use different models in the provision of health services due to different health policies. While determining these models within the scope of health policies, first of all, the health problems of the country, demographic structure, health workforce and economic and socio-cultural structures are taken into consideration. Health services offered to the society are classified as preventive, curative and rehabilitation services (Fişek, 1983; 5).

In the constitution of the Republic of Turkey, it is guaranteed that everyone will live in physical and mental health with the phrase 'everyone has the right to live in a healthy and balanced environment'. In the first years of the Republic, a policy presented by the state was developed for the solution of emergency health problems (Üstü et al., 2011; 56). Preventive health services have been prioritized, and infectious diseases have been fought. Since the 1950s, in parallel with the rapid change in the demographic structure, the fertility rate has increased, and infant and maternal deaths have increased. Afterwards, the therapeutic period in health has begun. Apart from the hospitals of the

Ministry of Health, different institutions and organizations have established health facilities for their employees. In 1961, with the new constitution, the law of 'Socializing Health Services' numbered 224 was enacted in order to remove the multi-headings in the field of health and to eliminate the health service differences between the target regions. Within the scope of the law, it is aimed to provide continuous and integrated services to meet the health needs of individuals. In line with the purpose, health centers, health houses, district and provincial hospitals were established to provide primary health care services (Özcan and Erdal., 2017; 59). Within the scope of preventive health services, Mother and Child Health Centers and Tuberculosis Dispensaries started to serve. In the provision of services, it is envisaged to provide services to the whole country with a gradual structuring in the provinces and an integrated structure within the province. However, the desired success could not be achieved due to the problems in the provision of primary health care services and insufficient financing. Reform mobility began to provide primary health care services more effectively and efficiently. The Emergency Action Plan announced by the Ministry of Health in 2002 includes the reforms that need to be made in health services. In the emergency action plan, basic principles were determined under the title of 'Health for Everyone' and were put into practice in 2003 within the scope of the 'Health Transformation Program (HTP). Healthcare Emergency Action Plan basically includes the following principles (Çavmak, 2017; 53-54)

- Functional restructuring of the 'Ministry of Health'
- Structuring health institutions under one umbrella
- Coverage of all citizens within the scope of general health insurance
- Emphasis on mother and child health
- Financial and administrative autonomy of hospitals
- The introduction of family medicine practice
- Dissemination of preventive medicine
- Eliminating the lack of health personnel in priority development regions
- Encouraging the private sector to invest in healthcare
- Transfer of authority to the lower levels of all public institutions
- Implementation of the e-transformation project in the field of health

These basic principles determined within the scope of the Health Transformation Program aim to provide health services effectively and efficiently, to organize them equitably and to ensure their financing. In addition, basic strategies that will contribute to the European Union membership process have been included in the program. This reform movement in Turkey realized by the HTP in the health system was monitored by the OECD, and interpreted as 'Addressing the problems faced by the health sector in Turkey and how to resolve these issues'. The Health Transformation Program, which handles the problems in the health sector with all its dimensions, consists of more than one sub-component. Although each component is interrelated, it is basically divided into three sub-components (MOH, 2008). These are:

1. Gathering the general health system and different working groups under one umbrella
2. Family Medicine Model
3. Public Hospital Associations Model

2.1.1.1. Family Medicine Practice

Family medicine model proposed by the World Bank for the Turkish health system in 2003 constitutes the second pillar of the HTP (Ataay, 2007; 3). According to the Family Medicine Practice Regulation published in the Official Gazette No. 28539 on January 25, 2013, the family physician refers to the specialist physicians who work on a full-time basis and provide comprehensive and continuous preventive health services and primary care diagnosis, treatment and rehabilitative health services. (Law No. 5258). The concept of family medicine was first addressed within the scope of the 'Socialization of Health Services Law' no. 224 prepared by Prof. Dr. Nusret Fişek. The law was based on the implementation of common preventive and treatment services in accordance with the justice system, full-time and one-stop service. System finance was designed with an insurance system in mind that everyone would contribute in proportion to their earnings, but the aim was not achieved in the draft law prepared in 1968. At the same time, the law was insufficient due to

the lack of necessary updates against the rapidly increasing urban population (Fişek, 1983; 30-32). The financial gains of physicians and healthcare professionals, and the lack of education and social support also disrupted the service delivery. In the 'Medical Specialization Regulation' issued on 5 July 1983, family medicine was re-mentioned and defined as a separate specialty. In the Eighth Five-Year Development Plan (2001-2005), it was stated that Family Medicine would be included in the primary health care organization. In this direction, within the scope of the Health Transformation Program, family medicine practice was introduced and on December 9, 2004, the Law No. 5258 on the 'Family Medicine Pilot Implementation' entered into force. It was first implemented in Duzce province and was implemented all over Turkey as of 2010. The main elements of the family medicine model are defined as follows (Law No. 5258).

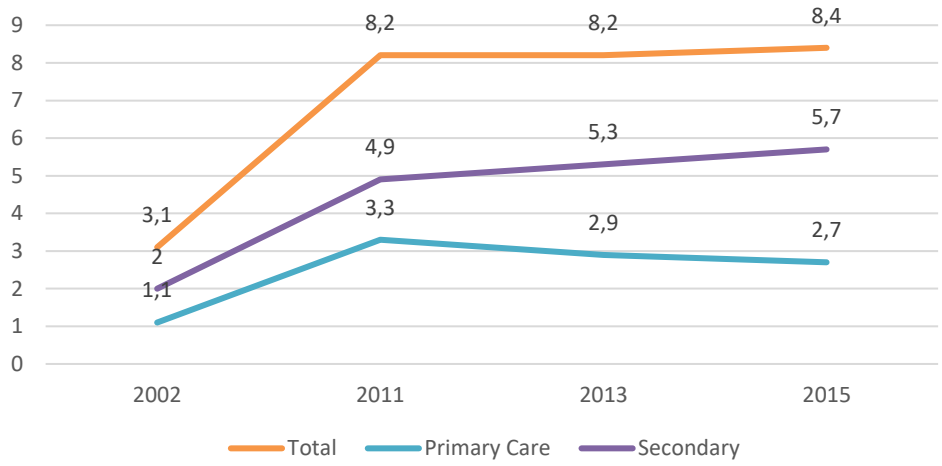
- Family health center is the basic unit of the system with a family physician and nurse.
- Every citizen is free to choose a family physician.
- Family physicians are obliged to provide primary health care.
- Community health centers will be established in all districts. They will be obliged to serve the patients coming from outside and will act as central laboratories.
- Family physicians will provide mobile service to the villages in their responsibility and make home visits.
- A family physician will serve a maximum of 4000 people.
- Family physicians also have the right to choose their patients.
- When general practitioners receive the designated training, they will be able to serve with the title of family physician.

The main purpose of the family medicine model implemented within the scope of primary health care services is to increase the accessibility of health services and to increase the quality of life and health standards of individuals by enabling them to benefit from these services in line with their needs. In this direction, the duties and responsibilities of family physicians are defined as follows (Family Medicine Practice Regulation).

- To provide supervision and in-service training to the team they work with by ensuring the management of family health centers.
- To carry out mother&child health and family planning as well as preventive, curative and rehabilitative services for individuals who are dependent on him.
- Working in cooperation with the community health center in the region where the family health center is located
- To carry out periodic health examinations in the region
- Making home visits for the initial assessment of the individuals
- To carry out mobile health services for disabled, elderly, bedridden and similar patients
- Keeping records of the services provided in the family health center
- To prepare all kinds of health reports, referral documents, prescriptions and other documents to be issued for the individual in primary health care institutions specified in the legislation
- Referring patients who cannot be diagnosed and treated in the family health center
- To update the records of its affiliated individuals annually
- To perform monitoring and screening of individuals for age, gender and disease groups
- To inform the community health center about the events related to public and environmental health

The family medicine model, which aims to relieve the burden of secondary healthcare services with preventive health services and an effective referral chain system, provides an opportunity to provide better quality healthcare services in secondary and tertiary healthcare services and to provide health training. At this point, more effective and efficient use of high-cost secondary and tertiary health services will be ensured and patient victimization will be reduced. In addition, the family medicine system based on patient satisfaction provides an advantage in terms of cost reduction and competition. Therefore, the referral chain system, which is expected to reduce costs, involves directing patients who cannot find a solution in the primary care to the second and third steps (Akman, 2014; 72). In the regions where family medicine is applied, the

referral of the family physician is mandatory in order for individuals to apply to health institutions and organizations according to the Law on Family Medicine Pilot Practice. Within the scope of the same law, it is stipulated that a discount will be applied to the payments to be made to family physicians in case of insufficient preventive medicine services or high referral rates. However, these provisions within the scope of the law were annulled by the Constitutional Court as they were deemed objectionable. For this reason, the current compulsory referral system application has lost its validity (Özcan & Erdal, 2017; 61).



Graph 1: Physician Application Rates Per Person
Source:*MOH, 2016; 143*

As seen in the graphic, the level of referral to primary care increased after the transition to the Family Medicine model shows. However, due to the inability to implement the mandatory referral system, the increase in the rate of applications to the second level continues at a rapid pace. The system losing its obligation has also removed the obstacle for individuals to apply to the upper step. This situation is a factor that can cause serious problems in the long term if no measures are taken in terms of the sustainability of health expenditures. Because the treatment services provided in secondary and tertiary care are more expensive for simple diseases. This causes an increase in the burden on the public budget.

2.1.1.2. Women and Reproductive Health and Child and Adolescent Health Services

The population, which decreased after the wars in the world, increased again until the 1960s, and the negative effects of the increasing population on development began to draw attention. In order to prevent these negative effects on population, international collaborations have been developed and solution-oriented programs have been implemented (Kırca, 2001; 463). The first meeting on demographic-based approach was held in Bucharest. Meetings were then held in Mexico City in 1984 and Cairo in 1994, as health concerns grew. At the Population and Development meeting held in Cairo, reproductive health was defined as 'not only the absence of disease and disability in areas related to the functions and functioning of the reproductive system, but a state of physical, mental and social well-being' (United Nations, 1994). Basic life cycle concepts of primary health care services for reproductive health are infant health, child health, adolescent health, women's health, and family planning. Services provided within the scope of sexual and reproductive health include methods and techniques that will find solutions to reproductive health problems and contribute to well-being (Akın, 1994; 15-19). Services offered in this context are;

- To raise awareness of responsibility in reproductive and sexual behaviour, to provide training for responsible parenting
- Providing service to pregnant and puerperal women in accordance with the standards
- To identify risky pregnancies and to follow them
- To provide trainings on women's and maternal health issues
- Providing postpartum and post-abortion family planning services
- Follow-up of sexually transmitted diseases and general screenings for early diagnosis on issues such as breast cancer and cervical cancer
- To provide in-service training to healthcare personnel
- Expanding family planning services
- Preventing unwanted pregnancies

- To control genital area infections
- Prevention of sexually transmitted diseases, fight against AIDS
- Adolescent health and sexuality
- Organizing healthy lifestyle trainings
- To provide reproductive health services for men
- Mother-baby nutrition
- To ensure the participation of men in women's reproductive health trainings

The level of knowledge achieved through these services provided within the scope of primary health care prevents the death and illness of millions of mothers and babies. Individuals have sufficient knowledge about health risks and transform this into behaviour change only through effective communication. At this point, a lot of work falls on the primary health care services. Because the provision of the correct service in the field of reproductive health and the correct performance of the service provided determine the quality of the service. In this regard, the service provider must work according to the standards determined in line with their medical knowledge, without causing harm. In addition, in order to provide qualified service, family planning, widespread service provision in reproductive health, healthcare professionals' knowledge and skills are sufficient, Continuous in-service training and standardization in service should be ensured. Another important approach in service delivery is 'respect'. Individuals' boundaries should be recognized and respect should be implemented despite all differences. These differences; gender, culture, race, socio-economic, educational level, knowledge, individual opinions and so on. are considered as elements (MOH, 2017).

Another type of service provided in primary health care services is child health monitoring. These are the examinations carried out by the health personnel at regular intervals from the moment of birth to the evaluation of babies without any complaints and to protect their health. The purpose of this service is to monitor the growth of infants and children, to improve their health, to support their development by reducing their illnesses and to reduce infant mortality.

Infants and pediatric follow-ups are presented more frequently in years when growth and development are rapid, and at wider intervals in the following years. These intervals are carried out in the first week after birth, in the 1st, 2nd, 3rd and 4th months, the 6th, 9th, 12th and 15th months, the 18th and 24th months and once a year after the 24th month. During the follow-up, body weight, height, head circumference are measured. Physical examination is performed. The development of the child is evaluated and vaccinated. Early diagnosis is provided with screening tests and family raining is provided in accordance with the age of the child (Child and Adolescent Health Modules). In addition, the most important factor in infant nutrition is breastfeeding, and the most important condition for starting life in the best way and increasing health is breast milk. Breastfeeding: Key to Sustainable Development. At the United Nations (UN) Sustainable Development Summit held between 25 September and 27 September 2015, the Sustainable Development Goals (SDG), which is a strategy plan to increase the development levels of countries until 2030, was accepted with the signatures of all member countries of the United Nations. Breastfeeding practices improve 'nutrition for all', which is a positive step towards promoting health well-being and healthy lives around the world. Another important item of Sustainable Development Goals is "Healthy Individuals". It aims to lead a healthy life and support well-being / well-being at all ages. Within the scope of this aim, it primarily focused on improving health efforts for children by preventing non-communicable diseases and reducing infant mortality. (Kartal and Gürsoy 2020).

One of the personal, holistic, and uninterrupted services offered within the scope of primary health care services is adolescent health services. Adolescence is the period from childhood to adulthood, with development and maturation periods in which physical, biochemical, social, and spiritual growth develops rapidly. Adolescents are very vulnerable to risks and adverse effects in this process. However, while health services are offered, this period, which involves rapid physical and spiritual change in the correct reach of adolescents, can be turned into an opportunity for the individual and society by the family physician. These services offered by the family physician are provided in a way that enables the person to lead a healthy life regardless of

age, gender or any characteristics of the person. When evaluating the adolescence period of the individual, especially physical, psychological, and social evaluations are carried out. While conducting these evaluations, the most important issue is the communication between the individual and the family physician because the individual is constantly monitored by the family physician and evaluated emotionally. In this process, health problems related to adolescence are openly discussed with adolescents, and sexuality and reproductive health issues are also provided. The health problems of adolescents who do not apply to a health institution for any reason during their adolescence period are considered as a characteristic of the period they are in and they are overlooked. Health problems that are overlooked during adolescence and will affect the future life of the person reduce the chance of early diagnosis of some systemic, hereditary, and metabolic diseases. The most common problems during adolescence are smoking, alcohol, drug, adolescent pregnancies, deaths and disabilities due to accidents and violence, suicide attempts, sexually transmitted diseases and obesity. At this point, risky behaviours that threaten the health of adolescent individuals should be known by the physician and screenings should be carried out to improve health. Within the scope of primary health care services, physicians are expected to provide preventive health services to adolescents by analysing them well (Set & Çayır, 2012; 32).

2.1.1.3. Services for Infectious and Epidemic Diseases

Another common disease group in the world is infectious diseases. Migrations, wars, social movements, climate changes, socioeconomic factors, business travel, infrastructure problems, use of technology, trade expansion and industrial developments increase the occurrence and spread of infectious diseases. Some of the infectious diseases are malaria, trachoma, tuberculosis, leprosy, syphilis, AIDS etc. (MEB, 2013). The Flower Law was published for the first time in the world in 1885 to prevent and control infectious diseases. Public Health Law is the fundamental law of the Republic of Turkey, published in 1930. The law covers disinfection, vector control, destruction of animals that are likely to carry diseases and isolation in detail for the control of infectious

diseases that may come from other countries. By the 1970s, antibiotics, sanitation and vaccination had achieved significant success in the field of infectious diseases, but nearly thirty infectious diseases have been recorded worldwide since 1975. Aids/HIV, anthrax, chlamydia infection, cholera, diphtheria, bird flu, etc. are among the diseases that cause premature deaths and an increase in the number of cases. These infectious diseases cause the deterioration of the social order, disruptions in the provision of health services, increase in deaths and disabilities, deterioration of the economic structure and spread of diseases worldwide. In order to eliminate the mentioned problems, the Ministry of Health restructured primary health care services by making the necessary arrangements within the scope of the Health Transformation Program. While the preventive health services provided for the individual are given to the family practitioners, the preventive health services to be provided for the society have been given to the Community Health Centers, which will carry out health education and supervision activities in an integrated manner with primary health care institutions. Accordingly, a number of strategies are announced for the diagnosis, notification, monitoring, evaluation and feedback functions of infectious diseases (MOH, 2010). Strategies are;

- Improving laboratory infrastructure in order to improve the diagnosis of infectious diseases throughout the country,
- Realization of in-service training of laboratory personnel in accordance with the requirements and standards
- Reviewing surveillance strategies by updating the guide with standard case definitions
- Developing national surveillance networks
- Surveillance system is the creation of flow charts and the establishment of control mechanisms.

Infectious diseases can infect people in various ways and cause epidemics. In order to control outbreaks, it is necessary to take precautions for the triangle consisting of the source, the transmission route and the healthy person in the chain of infection. In addition, measures should be taken within the scope of physical, social, and biological environmental factors in which people live. For

example, providing clean water, waste disposal, food control, and housing health. The method that will support these measures is health education. It is the basic step of protection from infectious diseases. In this context, individuals should be taught individual hygiene in prevention by explaining the ways of transmission. Individual and social training should be provided on the symptoms, prevention methods and treatments of diseases. Information should be given about sexually transmitted diseases. Balanced and regular eating habits should be tried to be gained. Trainings on rational drug use should be provided.

2.1.1.4. Environmental Health Services

The outer place with which the living creatures on Earth maintain their relationships throughout their lives is the environment. There are interrelated physical and biological elements in the environment. Physical elements are air, water, soil and biological elements are human, animal, plant and other microorganisms. Environment and life are two important interconnected factors. The rapidly increasing world population in life, unplanned settlement, industrialization, unplanned urbanization, nuclear tests, wars, wrong spraying in agriculture, use of chemicals such as artificial fertilizers and detergents cause environmental pollution. Due to environmental pollution, deterioration in air, water and soil structure affects lives adversely. Environmental pollution in recent years has begun to cause environmental disasters. In order to prevent environmental pollution affecting lives negatively, public awareness should be raised on environmental health issues (JRC, 2013; 16-18). In our country, the education of the community and the provision of environmental health services have been given to the Public Health Institution of Turkey, the Department of Environmental Health and Family Medicine within the scope of Community Health Services. Activities carried out by the Department of Environmental Health within the scope of environmental health services:

- Providing adequate and healthy water supply to the society, planning for the protection of water resources and cooperating with responsible institutions and organizations

- Performing the necessary inspections for the protection of natural resources
- Licensing and permitting biocidal products produced or imported
- Providing on-site, timely and effective environmental health service in case natural disasters occur
- To provide inspection and surveillance of toys in the market
- To carry out national and international studies to improve environmental health services.
- Activities of family physicians are;
- To monitor and evaluate all kinds of environmental conditions that will threaten the health of the individuals and take precautions.
- Providing drinking water controls, monthly and annual chlorine measurements in accordance with the relevant legislation, chemical analysis, and bacteriological analysis
- Evaluation of air pollution in open and closed environments
- To cooperate with relevant institutions and organizations for waste management, elimination of electromagnetic pollution and prevention of other environmental problems (MOH. 2010).

In order to get positive results from these activities carried out within the scope of environmental health services, it is insufficient to only monitor and collect data of the activities. The effects of these activities on public health should be researched and transformed into information. Otherwise, since priorities regarding environmental health cannot be determined, necessary support cannot be provided from policy makers to solve the problems (Güler, 1997; 10-11).

2.1.1.5. Public Health Laboratory Services

Public health laboratory services perform clinical and non-clinical services within the scope of their duty by examining the factors that will affect the health of the individual and society in order to protect and improve the health of the community. The purpose of establishment of laboratories is to carry out quality studies in accordance with national and international standards in order to

increase the quality of the quality management system and service; In this direction, to plan in-service training and to ensure training by providing communication and coordination inside and outside the laboratory. Within the scope of primary health care services, Public Health Laboratory services were first opened in 1971 under Refik Saydam Public Health Center. The laboratories working under Refik Saydam Public Health Center until the health transformation program were transferred to the Public Health Institution of Turkey by law no. 663. Public Health Laboratories provide services as L1, L2 and Test Based Reference Authorized Laboratories, depending on the service type. The duties of the laboratories described within the scope of the Regulation on Working and Procedure Principles of Public Health Laboratories and Authorized Laboratories are summarized below (MoH, 2010).

- Performing primary care diagnostic tests, screening tests and analyses within the scope of family medicine services
- To perform microbiological and biochemical analysis of body fluids such as urine, blood and other samples taken in the clinic
- To send the samples to the authorized laboratory for definitive diagnosis when necessary
- To participate in studies in cases where there are endemic, epidemic or public health problems within the province, including epidemic situations and case studies, to collect and analyse human, animal or environmental samples that have been exposed to the case
- Planning in-service trainings
- Analysing the waters
- Performing employee health and safety analysis with clinical laboratory services
- To make necessary analysis in line with regional needs

Units providing Public Health Laboratory service are Sample Receiving and Report Preparation Unit, Microbiology Laboratory, Chemistry Laboratory, Neonatal Screening Laboratory, HPV Laboratory, Clinical and Biochemistry Laboratory (Önal, 2014).

2.1.1.6. School Health Services

The goal of ‘ensuring that young people are healthier and able to fulfil their roles in society in a healthy way’ is included into the scope of Health For All in the 21st Century which is announced by the World Health Organization for the European Region. In line with this goal, the importance of school health services that protect the health of children and young people is pointed out. School health services is the whole of the activities that will ensure the physical, mental and social health of all school-age children in the society, to improve the health of children and therefore the society, to evaluate and improve the health of students and school personnel and to provide a healthy school life (Seçginli et al., 2004; 462). School health services were first included in the Public Health Law in our country. In 1984, the presentation of school health services and the definition of school health were made in the Health Services Application Guide. By 1996, the School Health Services Cooperation Protocol was signed between the Ministry of National Education and the Ministry of Health in order to standardize school health services across the country. The purpose of this protocol is; to protect the health of students and school staff, to provide training on hygiene, to ensure a healthy school life, to adopt a healthy lifestyle, and to coordinate work and procedures by providing health education. After the health transformation program, the duties of family physicians for school health services were clearly defined within the scope of the Family Medicine Implementation Regulation in 2010 (MEB and MoH, 2016). Within the scope of school health services to be provided by family physicians together with Community Health Centers, school environmental health, health education, studies for the protection and development of students' health, healthy nutrition, physical activities, prevention of violence, fight against infectious diseases, oral and dental health screenings and vaccinations are included. (Saka, 2011).

2.1.1.7. Health Services in Emergencies and Disasters

Health services provided in emergency and disasters are a duty given to the state to sustain the lives of individuals in social, physical and mental health in accordance with the phrase 'everyone has the right to protect and develop the

material and spiritual presence of life' as set out in our constitution. Emergency healthcare services across the country are services that are provided quickly and without interruption by a trained and well-equipped team when needed. Correct and timely medical intervention saves lives and any delay can result in irreparable consequences. In this direction, in order to support the healthy life of the society, necessary studies are carried out successfully to provide fair, equal, accessible, effective and quality health services to everyone. The first studies were carried out in 1990 by the Emergency Health Services Branch Directorate within the General Directorate of Treatment Services. In 1993, firstly, ambulance and emergency care technician personnel started to be trained within Dokuz Eylül University. The emergency medical technician (ATT) trained in Ministry of Health started to work in 112 ambulances. ATT and Paramedics, which were first appointed in 2004, started to serve in Emergency Health Stations. Health Service in Emergencies and Disasters is served at 112 call center stations, hospitals and emergency services. In addition, community health centers and family physicians are important institutions in the provision of these services. At the same time, Disaster and Emergency Management Presidency (AFAD) and Search and Rescue Association (AKUT), are units operating in this field. They offer three types of protection services in case of possible emergencies and disasters. Primary protection service of these is carried out in the silent phase of disasters (MoH, 2010; https://www.afad.gov.tr/; https://www.akut.org.tr/). This service offered for the individual and society takes place in four stages. These are;

1. To eliminate the disaster risks
2. To remove the irreversible disaster risks from the individual and society
3. Raising awareness of people against disaster risks
4. To make people stronger against disaster risks

Secondary protection services are services that enable the individual and society to overcome disasters with the minimum damage. In the provision of secondary protection services, environmental health services have an important role as well as health care services. There are services that stand

out and gain importance according to the type of disaster in order to prevent the damages of the deteriorating ecological balance. The main ones are; water and food health, provision of a temporary and healthy settlement, de-harming domestic wastes and human feces and urine, housing health, animal control, removal of debris and rubble, quarantine and vaccination.

Third protection services include incurable illnesses and disability that occur after disasters but whose effects do not disappear completely in a short time. These services include controlling prognosis, preventing complications, and medical and social rehabilitation.

The important thing in the delivery of health services in emergency and disasters is the domination of the understanding of holism and inclusion. Another important point is that risk management and crisis management are an important component in health service delivery (MEB, 2011).

2.1.1.8. Health Education Services

Health education services are carried out in order to protect and improve the health of the society, to eliminate the complications that may occur due to diseases, and to inform the public about diseases that require rehabilitation. In our country, the Public Health Directorate prepared annual plans including health education activities are conducted (the central organization in Turkey with the Public Health Agency Decree No. 694, became the Directorate General of Public Health). In addition, health trainings are organized throughout the year in line with individual and institutional demands. At the end of the interactive model preferred training method, the effectiveness of the training is evaluated with the test application. Health education services should focus on improving health, improving service quality and lifestyle change. In-service trainings for healthcare professionals have a high impact on service quality. Within the scope of primary health care services, Community Health Centers conduct in-service training programs created by the Ministry within the concept of "continuous education". In addition, it provides annual in-service trainings for family physicians and family health personnel. The part of health

education carried out by TSM is generally geared towards the community and health personnel training. In addition, it provides annual in-service trainings for family physicians and family health personnel. The part of health education carried out by TSM is generally geared towards the community and health personnel training.

In this direction, the main objectives of health education services are;

- To increase the quality of life of the society
- To increase the knowledge level of healthcare personnel
- Increasing the motivation of healthcare personnel
- It is the provision of community-oriented trainings on the protection and improvement of health, treatment, and rehabilitation of diseases (MoH, 2010).

2.1.2.Secondary Health Services

Health reforms are discussed and carried out in all countries as they are the source of better health level, increasing expectations, demographic changes, financial effects, and technological developments (Saltman and Otter 1997; 24). Health reforms have been on the agenda for more than fifty years in our country. Although the first reform initiatives related to the health system of our country came to the forefront in the early 1960s, they gained more importance in the 1990s with the effect of globalization and liberal policies. Ongoing health reforms have been carried out within the scope of the Health Transformation Program since 2003. The foundations of the modern health care system in Turkey are based on the Tanzimat reforms (Yıldırım ve Yıldırım, 2010; 28-30). Grand National Assembly of Turkey put into effect on May 3, 1920, that Ministry of Health (MOH) was established with the Law No. 3. The first mission given to the MOH was to determine the priorities of health services, to increase gains in the field of health and to allocate resources according to the determined criteria. In this period, it is planned that the curative services will be provided by municipalities and special administrations. First Minister of Health Dr. Adnan Adıvar determined the health policy of the period as healing the wounds after the war and establishing the legislation infrastructure.

With the proclamation of the Republic, Minister Dr. Refik Saydam who adopted the policy that prioritizes preventive health services did not consider therapeutic services as a duty of the state. Second Minister of Health of the period Dr. Behçet Uz's First Ten-Year Health Plan included the health services within the scope of the state duty again and aimed to spread it throughout the country. Accordingly, the country was divided into seven regions and 10-bed health centers were established for each 40 villages. Thus, for the first time, preventive and curative services were offered together (Akdur, 1998; 10-12). With the law numbered 224, it is aimed to provide the health services in a continuous, widespread and integrated way to meet the needs of the people. In this context, hospitals have been established at provincial level for therapeutic services. In the 1990s, a master plan for health services was created by the State Planning Organization. Two National Health Congresses were held where health reforms were evaluated within the scope of the plan. In these congresses, a National Health Policy Document was created, and the implementation of General Health Insurance (GSS) and Family Medicine was included. In the First National Health Congress held in 1992, GSS was re-included and no progress was made. However, in the same year, the green card application was introduced, and the uninsured population was included. Between 1993 and 1997, many health minister served, but until the early 2000s, due to political and economic instability, lack of democratic culture, opposition of interest groups, lack of social support and lack of intellectual capacity, health policies could not be stabilized (Aydin, 2002; 184-198).

All these reforms planned to be made in the field of health were brought to the agenda again in 2002, under the title of 'Health for All', within the scope of the Emergency Action Plan. In Article 60 of the Constitution, it is stated that "Everyone has the right to social security and the state takes the necessary measures and establishes the organization to ensure this security". In addition, Article 56 of the Constitution states that “The state ensures that everyone lives in physical and mental health; It organizes the health institutions to plan and provide services from a single source in order to realize cooperation by increasing the savings and efficiency in human and material power. The state

fulfils this task by utilizing and supervising the health and social institutions in the public and private sectors. Also in the same article, there is also a provision stating that “General Health Insurance may be established”. The World Health Organization's 2000 report and the difficulties in the health care system in Turkey as part of the Emergency Action Plan made the Health Transformation Program start.

With the health transformation program, it is aimed to organize, finance and present health services in an effective, efficient and equitable manner. For this purpose, the basic principles of HTP were declared as human-centeredness, sustainability, total quality management, participation, compromise, volunteering, separation of powers, decentralization and competition in service provision. Within the scope of the principles explained, the basic elements of the HTP arise on three main pillars. The first is the General Health Insurance, which gathers everyone under one umbrella, the second is basic health services and family medicine, and the third is the restructuring of the Ministry of Health. Other subcomponents of HTP are; Health institutions, which are managed more efficiently administratively and financially with the gradual referral chain, have been designated as institutional structuring in health manpower, quality and accreditation and rational pharmaceutical and material management (MoH, 2008).

Restructuring the Ministry of Health, which is specified within the scope of the emergency action plan and put into practice with the HTP, making the secondary and tertiary treatment institutions 'autonomous' in administrative and financial terms, transferring authority to public institutions and organizations, and encouraging the private sector to invest in the field of health, by the Decree No. 663 of the Ministry of Health and Affiliated Institutions Organization. According to the 10th article of the Decree No. 181 on the Organization and Duties of the Ministry of Health, public hospitals managed by a centralized structure under the General Directorate of Curative Health Services were affiliated with the Public Hospital Unions with the Law No. 663 (MoH, 2003). The purpose of establishing public hospital units is to ensure effective and efficient use of resources, to provide quality health

services in accordance with the performance criteria determined by the Ministry of Health. The main task of the Turkish Public Hospitals Institution is to establish and operate affiliated hospitals, oral and dental health centers and similar institutions and organizations, to evaluate their activities, and to ensure the rights of patients and employees.

Provincial organization facilities of Turkish Public Hospital Associations;

- Hospitals
- Oral and dental health centers
- Dental treatment and prosthesis centers
- District polyclinics
- Treatment institutions such as AMATEM, Endotem, Autism Center of Excellence (Official Gazette, 2011).

Within the public hospitals union secretariats, presidency of medical services, presidency of administrative services and presidency of financial services were established. The hospitals affiliated to the Union's secretariats will be managed by the hospital director, and the chief physician, administrative-financial affairs directorate and health care services directorate have been established under the director. The organizational structure of the Public Hospital Unions announced in accordance with Article 30 of the Decree Law No. 663 is as follows.

One of the most important changes that came with the reform is that the changing the status of the managers of the unions to which hospitals and hospitals are affiliated, and the experts and office personnel working under the umbrella of the association into a contractual working status. The associations' relationship with the ministry will be in the status of 'relevant institution'. Public hospital unions may be established more than one within the same city, or they may also cover more than one city. The Ministry will be able to establish a 'union coordinator' for the unions located more than one in the city. Basic organs of Public Hospital Unions consist of the Board of Directors, the General Secretariat and Hospital Managers. The decision-making bodies of the associations have been determined as the Board of Directors, and the

executive body as the General Secretariat. Unions' service infrastructure, organization, quality, will be subject to performance evaluation in terms of efficiency and patient satisfaction. It was stated that performance evaluation will be carried out according to the procedures and principles to be determined by the Ministry. However, the draft does not explain how the control will be carried out. Only in audit provisions, it was mentioned that administrative and technical audit to be carried out by the Ministry of Health, financial audit to be carried out by the Ministry of Finance and external audit to be carried out by the Court of Accounts (Ataay, 2007; 7).

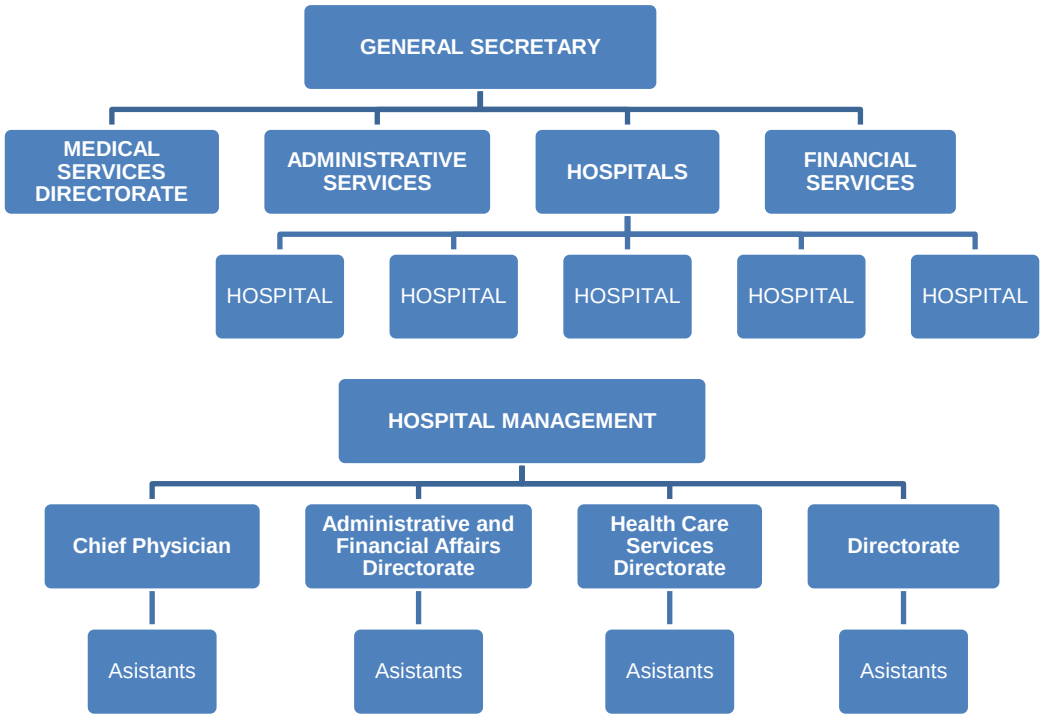


Figure 9: General Secretariat and Hospital Management

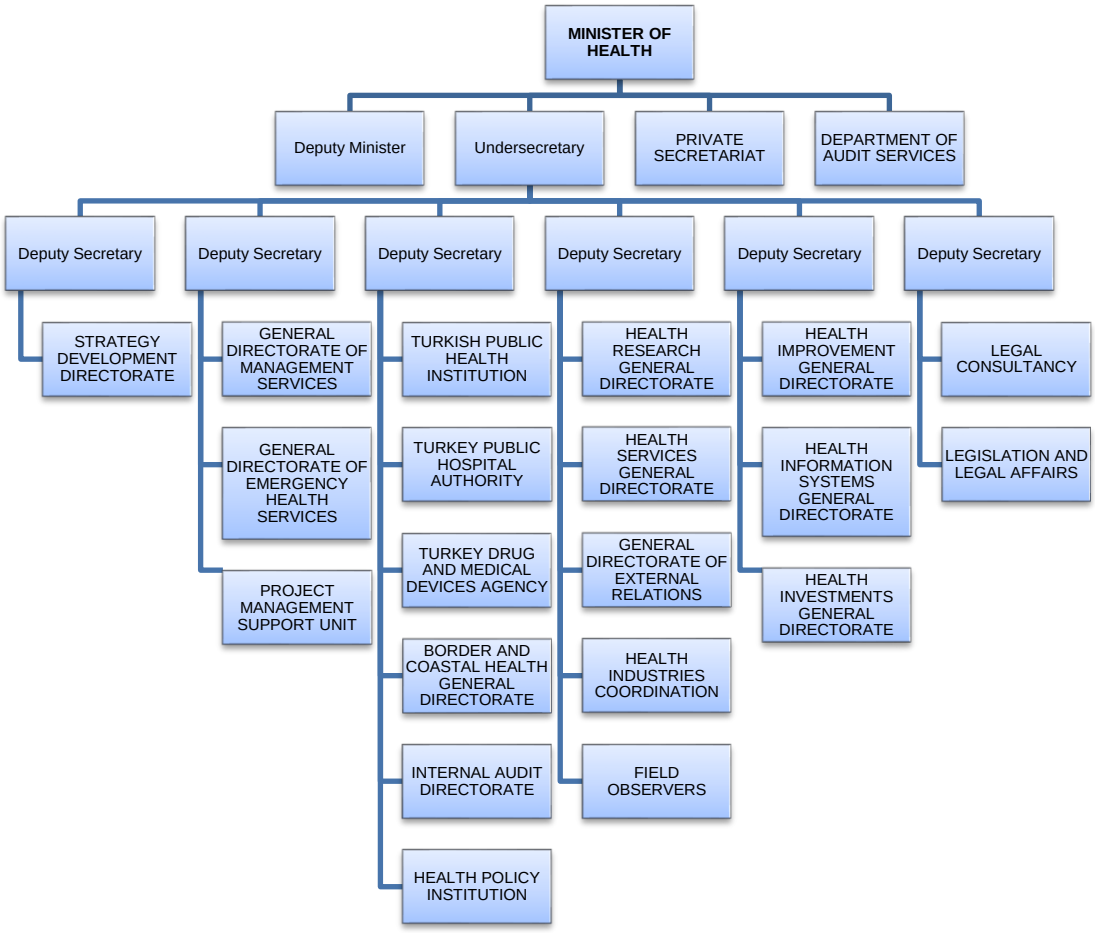


Figure 10: Central Organization according to Decree Law No. 663

MoH organization consists of central organization, provincial organization and affiliated organizations. According to the Decree No. 663, the responsibilities of Ministry of Health are;

- Protection and development of public health, reduction, and prevention of disease risks,
- Conducting diagnosis, treatment, and rehabilitative health services,
- Protecting the country against public health risks,
- Improving health education and research activities,
- Delivering medicines, substances subject to national and international control, active and auxiliary substances used in pharmaceutical production, cosmetics and medical devices used in healthcare services to the public and determining their prices,

- Providing equal, high quality and efficient service throughout the country by increasing productivity in manpower and material resources, ensuring a balanced distribution of health workforce throughout the country and cooperating among all stakeholders,
- Managing the health system and determining the policies regarding the planning and dissemination of the public and private health institutions (Official Gazette, 2011).

With this regulation, the Ministry of Health was removed from being an institution that produces restructured health services and became responsible for determining general health policies, supervision, and regulation of the health sector. The Ministry is responsible for planning and executing health services only in emergencies and disasters. The provision of primary health care services was left to the Public Health Institution and the second and third-line services were left to the Turkish Public Hospitals Institution. Thus, the new structuring has transformed public hospitals into income generating enterprises that produce and sell services (Altay, 2007; 54-55). According to the KHK, public hospitals are managed by Secretary General named as CEO at the provincial level. Hospitals affiliated with the union will be managed by the hospital administrator, while the chief physicians will work under the hospital administrator. Health directorates will only be responsible for the execution of emergency health services. When the provincial organization is reviewed within the scope of the Decree No. 663; provincial representatives are observed to have provincial health directorates. This situation indicates that the area of Provincial Health Directorates, which existed in the previous system, has been narrowed. However, staying as a consultant at the provincial level, as in the old system, also created problems for some institutions. The biggest factor in experiencing such a situation is that the current system still continues even though the duties and responsibilities in the old system have been changed (Bulut, 2011; 111-124). A circular was issued by the Ministry of Health in 2013 to solve this opposite structure encountered in the system. With the circular, a regulation was made that "Provincial Health Director is in the front row in the provincial protocol than the Director of Public Health and the General Secretary of the Public Hospitals Union". These changes made for the

provincial organization created differences in terms of organizational structure, service delivery and manpower. Parallel to these changes, the concept of professional management has emerged, and the concept of contracted personnel has come to the forefront. However, although these changes in public administration created positive results, it could not be a long-term system.

Based on the problems in the current system, steps were taken to return to the old system with the decree numbered 694 for the state structure under the state of emergency (Acar, 2018; 713). According to the decision taken in the Decree Law on the Organization and Duties of the Ministry of Health and its Affiliated Institutions published in the Official Gazette, the Public Health and Public Hospitals Institution was turned into the Directorate and connected to the Provincial Health Directorates. (694 KHK, 2017). When the organization is examined under the new Decree Law where there is a return to the old system, it is seen that the Public Hospitals Institution is again organized under the Provincial Health Directorate. It is divided into 4 sections as Public Health Services, Public Hospital Services, Personnel and Support Services, and Emergency Health, Health Services, Medicine and Medical Device services. With the regulations, the management of the hospitals was again given to the chief physicians. Administrative and financial affairs and health care services directorates report to the chief physician. Depending on the size of the hospital, the management can be done by a single person or this number can increase up to four. Deputy chief physicians and deputy directors may be assigned by the provincial health directorate for hospital management. Hospitals will also be evaluated for a period of six months and one year. These evaluations will be carried out within the framework of patient and employee safety and education, considering medical and financial criteria. According to the evaluation results, the hospitals will again be divided into classes as (A), (B), (C), (D) and (E). Another regulation made in the central organization structure is; in Turkey Border Coast Health General Directorate, Director General, two deputy general manager, in the departments and strategy development departments and in Turkey Pharmaceuticals and Medical Devices Agency, president, five vice presidents will be assigned according to the needs of the

departments. The central organization structure formed after the arrangements is presented as follows (694 KHK, 2017).

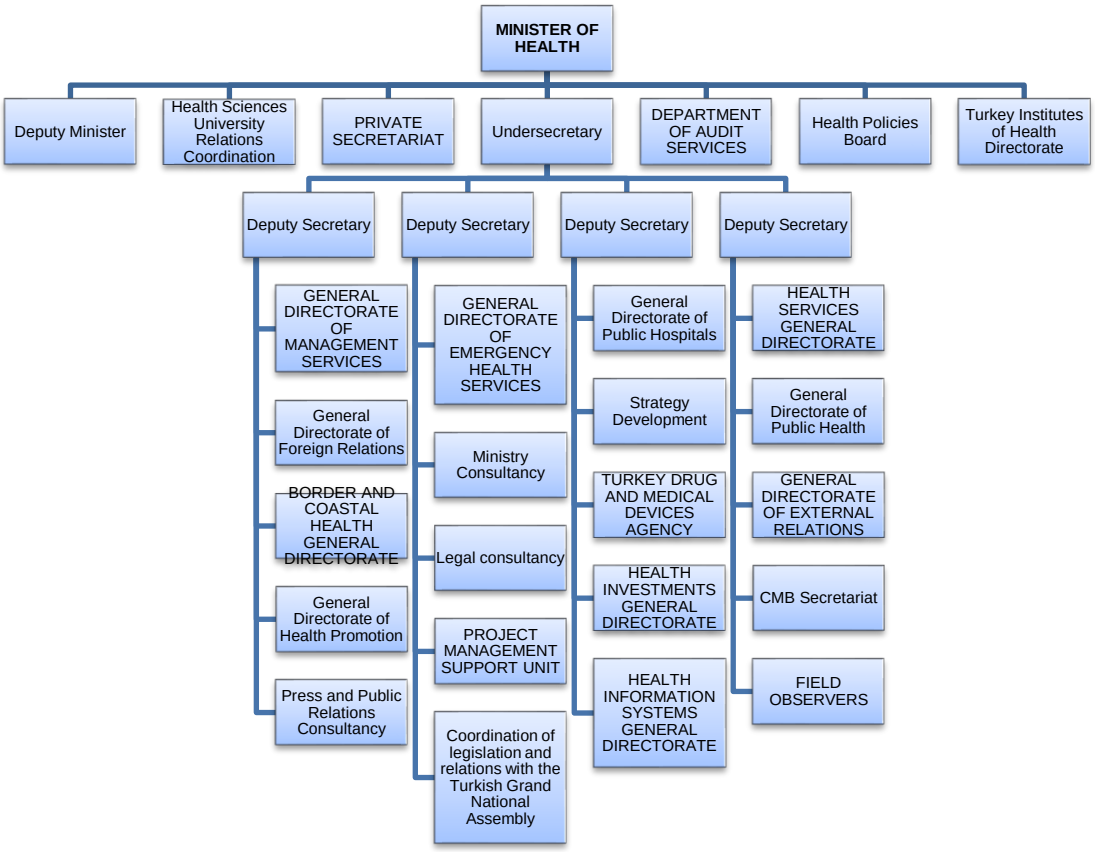


Figure 11: Central Organization Structure of the Ministry of Health with the Decree No. 694

2.1.2.1. Public Hospitals

Hospitals are defined by the World Health Organization as inpatient establishments that provide monitoring, diagnosis, treatment and rehabilitation services, where patients receive short or long-term treatment. Hospitals, which have an important place in today's society, offer two types of health services, therapeutic and preventive. Hospitals play an important role for individuals to lead a healthy life. Importance of hospitals has increased even more due to reasons such as industrialization, urbanization, population increase, widening of social security coverage and increase in the level of consciousness of individuals because hospitals are organizations that provide regular nursing services, medical technology and laboratory services during the treatment process. In addition to these, another factor that increases the importance of hospitals is high costs.

General hospitals that are not educational research hospitals are divided into three groups. These are classified as (A), (B) and (C).

Group A hospitals; These are institutions that have licensed bed capacity of at least fifty, and provide health services by employing physicians on a full-time basis in at least five different internal and surgical specialties. In addition, they are institutions that have radiology, biochemistry, microbiology, hematology and pathology laboratories suitable for medical technology.

Group B hospitals; These are institutions that have a bed capacity of thirty to fifty licensed, and provide health services by employing physicians in four different internal and surgical specialties on a full-time basis. In addition, they are institutions that have radiology, biochemistry, microbiology, hematology and pathology laboratories suitable for medical technology.

Group C hospitals; These are institutions that have licensed bed capacity of ten to thirty, and provide health services by employing physicians in three different internal and surgical specialties on a full-time basis. In addition, they are institutions that have radiology, biochemistry, microbiology, hematology and pathology laboratories suitable for medical technology.

2.1.2.2. Private Branch Hospitals

Section 7 of the Private Hospitals Act. Branch hospitals defined in the article; 'in order to provide services for patients of a certain age and type and those who are infected with a particular disease or for patients of an organ and organ group, at least two specialist physicians are employed in each of the specialties related to the main activities of the hospital and at least one tenured specialist physician for other specialties required by this specialization branch, continuously and regularly standing and insed examination are private hospitals with at least ten patient beds that provide diagnosis and treatment services, have clinics, units, laboratories and emergency units required by the specialization branches they accept and treat patients, or purchase these

laboratory services required by specialization branches and operate full-time'. Private Branch hospitals must meet the following conditions in order to provide twenty-four hours uninterrupted service (ÖHY, 2002).

- To employ physicians in at least four specialties related to the main field of activity of the hospital,
- Having at least twenty-five beds, excluding intensive care services,
- To have an emergency unit
- To have the necessary intensive care unit, radiology, biochemistry and microbiology laboratories for the clinics where patient admission and treatment services are provided.

Private branch hospitals are concentrated in big cities such as Ankara, Istanbul and Izmir. The number of private branch hospitals in Istanbul is more than half of the total. As a result of the concentration of hospitals in regions with a high level of development, it is seen that the health services are unequally distributed according to the regions (Yücetürk, 2009). Operating in the fields of gynecology and obstetrics, pediatrics and diseases, cardiology and cardiovascular surgery, emergency aid and traumatology, chest diseases and surgery, oncology, bone diseases, occupational diseases and mental health and diseases in many provinces, especially in large cities, there are private branch hospitals. Their existence is considered to be acknowledged in terms of providing a more specific health service. In the residential areas where branch hospitals are located, there are generally no clinics related to that branch in general hospitals in the region. Private branch hospitals are supported by state loans and can also charge difference fees for service delivery.

2.1.2.3. University Hospitals

University hospitals are health institutions that provide health services to the community, carry out educational services and research activities in the field of health. They are institutions that provide practical training as well as theoretical training to medical faculties that train physicians in the field of

health. It has an important role in the health system. Turkey's health system consists of health institutions and organizations organized in three steps according to the type of service they offer. According to the health system organization structure, university hospitals are defined as the institution where individuals can receive the highest and advanced health service. University hospitals are institutions where advanced healthcare services are provided with the latest technology. Establishment purposes of university hospitals are to provide education, research and application opportunities in all areas related to health services, to train competent medical and health personnel at all levels. In order to achieve this goal, it cooperates with other faculties, institutes, colleges, research and education centers and other institutions within the university, especially with medical faculties, to ensure that health services are fully carried out at a quality and efficient level. As can be understood from the definition, it basically has two purposes.

1. Education service; It is the service offered at the institution that provides research and application opportunities to medical faculty students who have not graduated, as well as research assistants and other health personnel who will receive specialization training.
2. Health service delivery; to provide diagnosis and treatment services under the one-to-one supervision and supervision of faculty members of medical faculties.

Within the scope of these basic purposes, the other purposes of university hospitals are;

- To prepare an environment for scientific research, to ensure that clinical studies are carried out,
- To conduct research and applications by providing quality diagnosis and treatment services for a healthy life,
- To cooperate with health-based public institutions and organizations,
- To increase the awareness level of the society about healthy living, to organize written and visual programs by publishing books, magazines, and brochures in this direction,
- Preparing projects for public and private sector organizations,

- To organize training programs.

In order to contribute to the development of medical science, university hospitals provide both research and application and treatment services to fill all the gaps in the field of health.

University hospitals carry out their activities within the framework of the Inpatient Treatment Institutions Regulation, as well as the laws and regulations issued for various institutions and organizations. In physician patient relations and treatment services, the health legislation provisions which are the same in other health institutions are applied. The 'Medical Specialization Regulation' is used in the specialty education, and the regulations of the educational institutions are used in undergraduate education. University research hospitals are qualified as higher education institutions in our country. For this reason, university hospitals established as research and application centers are directly affiliated with the rector. Therefore, directors of university research hospitals are appointed by the rector. Although university hospitals are considered as education and research and application centers within the scope of the laws, they are in the nature of hospitals that provide care and treatment services to patients in practice. Because the research and application center in universities is established with the proposal of the universities and the permission of the higher education board. University research hospitals are intertwined with medical schools. The work of medical faculty members in these institutions strengthens this relationship. Therefore, some university hospitals work under the dean of the medical faculty. In another aspect, university hospitals are the institutions where the educational practices given in the medical school take place. These are the areas where the theoretical education received in medical faculties is applied in practice. Authorized delegates of medical faculties are involved in the management of university hospitals. Physician lecturers report to the dean of the medical faculty in terms of their personal rights. The chief physician, who is the most competent administrator of the hospital, is one of the lecturers of the medical faculty and is affiliated to the dean of the medical faculty. The structure of university hospitals is as follows.

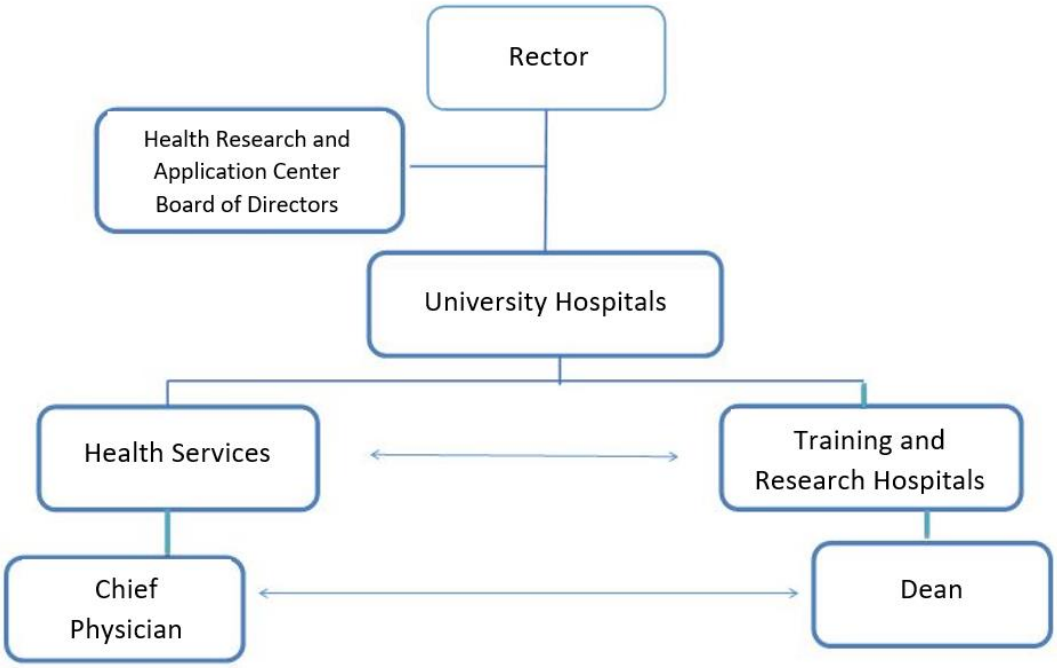


Figure 12: University Hospital Management

2.1.3.Tertiary Health Services

Tertiary health services are organizations with advanced level of specialization and complicated cases. One of its main objectives is to raise the health workforce, to conduct research on diagnosis and treatment methods and to train academicians. The main principle adopted in all countries is to treat the special diseases that come from primary and secondary health care in tertiary care. Otherwise, a waste of resources will be created in the third step. However, the referral mechanism does not work in Turkey, the third step can be reached directly.

2.1.3.1. Training and Research Hospitals

Hospitals perform four basic functions in line with their goals and missions. These are; treatment services, preventive and developmental health services, education and research services. Hospitals are classified based on criteria such as ownership, educational status, type of service provision, size, and duration of hospitalization. In addition, hospitals have structural features such as specialization, functional commitment, professionalization, managerial control difficulties, and dual authority lines. Besides, it has process

characteristics such as complexity of tasks, sensitivity to emergency situations, errors and uncertainties. (Seçim, 1991). Inpatient treatment institutions are divided into five groups according to their functions. The first of these is training and research hospitals. These are the institutions where education is provided and research experts and sub-branch specialists are trained. The education meant here is to enable physicians to gain expertise. Clinical training given to assistant healthcare personnel and trainee students is not sufficient for hospitals to receive the title of training hospital. Training hospitals are also inpatient institutions with full-fledged sanitary and technical conditions that provide examination, diagnosis and treatment services to all kinds of inpatients and outpatients. While the trainings for the health personnel in our country are given at our universities, the specialty training in medicine, defined as higher education, is carried out by the education and research hospitals and medical faculties under the responsibility of the Ministry of Health. At this point, hospitals are institutions where the practice is carried out as well as theoretical knowledge. Clinical structuring and chiefship systems are effective in training and research hospitals. Specialization trainings are carried out with this clinical organization and carried out together with health services. How clinical training should be carried out was explained in the report published by the World Medical Education Federation in 1998. According to the report, medical education needs to adapt to changes in the disease spectrum, population movement and health care. With its developing range of patients, education and research hospitals have strengths such as the number and diversity of cases, easy access to specialists and educators, and one-on-one patient care. Educational research hospitals in Turkey can be organized in the form of hospitals and university hospitals that are directly affiliated with the Ministry of Health.

2.1.3.2. University Hospitals

University hospitals have the mission of pioneering innovations in treatment and diagnosis processes and providing academic education, as well as producing the necessary therapeutic healthcare services. University hospitals are health institutions and also science centers. Public universities and

foundation universities have hospitals in Turkey. Some universities have affiliation with private and public hospitals in order to provide medical, nursing, etc. education instead of establishing hospitals. Relevant hospitals are subject to all legal regulations related to their fields and they have to comply with the regulations regarding higher education due to the educational activities. University hospitals are managed by assigned delegations. Rector, dean and also professional managers take part in the management.

2.2. Private Health Services Units

Private healthcare organizations refer to service organizations that are owned by private entrepreneurs, not the state. Even if it is private as property, the rules are shaped according to the regulations determined by the state. In particular, agreements with the SSI, which is a compulsory public health insurance, caused private hospitals to be affected. Especially since the 1980s, improvements have been seen in the area of private hospitals, in Turkey. Private hospitals, medical centers and laboratories operate in every region of Turkey play a big role in addressing the need for services. The private sector also carries out joint projects with the public. The "City Hospitals" that are being opened are referred to as "Public Private Collaborations / Partnerships" based on the cooperation of the private sector and the state. In the following sections, free enterprise service units other than private hospitals will be explained.

2.2.1. Private Hospitals Licensed According to the Private Hospitals Regulation

Private hospitals must comply with the "Private Hospitals Regulation" in terms of establishment and service process. The minimum qualifications and characteristics of private hospitals are determined in detail in the relevant regulation. All details such as qualitative and quantitative structure of human resources, physical conditions of the building, environmental conditions, minimum service scope, etc. have been determined.

In order for private hospitals to be opened, they must apply to the ministry with documents showing their compliance with the conditions specified in the

regulation and obtain a preliminary permit. Applications made to open a hospital are evaluated and decided by a commission formed with the participation of 7 members. If the application is deemed appropriate, the licensing process begins. Private hospitals are subject to the inspection of the ministry. Service standards of hospitals are inspected with periodic inspections and sanctions can be applied if necessary.

Human resources of private hospitals must be reported to provincial health directorates. Change of responsible manager, new doctor-nurse employment and changes are reported. “Personnel Working Documents” are prepared and reported to the directorate in the same way. Related transactions are carried out and monitored through the "Health Institutions Management System".

General hospitals defined in the second part of the Private Hospitals Law are organizations that provide regular and continuous service for twenty-four hours and provide outpatient and inpatient diagnosis, treatment and examination services. General hospitals cannot start providing services without meeting the general conditions determined by the Ministry of Health. These conditions are;

- To have building, service and personnel standards determined under minimum conditions
- Employing physicians in at least three surgical specialties, six of which are clinical specialties
- Having at least twenty-five beds, excluding observation beds and intensive care beds
- To have the necessary intensive care unit, radiology, biochemistry and microbiology laboratories for the clinics where patient admission and treatment services are provided
- To provide emergency health services.

In addition to admitting privately insured and paid patients in Turkey, private hospitals also accept patients through their agreements with the SSI. SSI has a very important place for private hospitals. The fact that SSI started to make agreements with private hospitals created differentiation in the internal

processes of private hospitals (especially invoicing). In the services offered within the scope of SSI, payments are received through the Health Implementation Communiqué (SUT). In addition, up to 200% of the invoiced service is legally granted to private hospitals so that the patient can be charged a difference fee.

2.2.2.Private Medical Centers and Private Branch Centers Opened Within the Scope of the Regulation on Private Health Institutions for Outpatient Diagnosis and Treatment

The relevant regulation covers "Type A, Type B and Type C medical centers, type A and B outpatient clinics, laboratories, institutions and practices and operators of these organizations, which are provided with outpatient diagnosis and treatment services and are defined as private health institutions.
Medical centers, outpatient clinics and doctor's offices and laboratories are evaluated according to the regulations in the relevant regulation on establishment, service processes and inspection issues. The place, environment, physical conditions of the building and personnel conditions required for the establishment of the relevant organizations are explained in detail within the scope of the regulation.

According to the regulation, medical centers are opened with at least four clinicians. The centers have to complete their manpower within two years from the start of their activities. Staff members are registered through the "Health Institutions Management System". In order to open A and B type medical centers, the prior permission of the ministry is required. A and B type medical centers must have at least the following service units;

- Patient waiting room
- Outpatient examination room
- Operating room
- Observation unit
- Emergency unit

- Sampling room

Polyclinics can be opened with at least two physicians. Laboratories are units that provide service for no less than eight hours a day on working days, and are established and managed by relevant experts. Laboratories offer services to private hospitals by agreement.

2.3. HEALTHCARE SERVICES AROUND THE WORLD

Health services are among the main areas of responsibility of all states around the world. Even though health services adopt different organizational structures according to the economic models adopted, the fact that it is a variable considered in terms of showing the development level of countries has placed health at the center of country policies. The Human Development Index considers life expectancy at birth as one of the basic dimensions. As mentioned earlier, improving health status is not only a responsibility of health services, but an effective health system enables the development of society in all dimensions. There is a very strong link between all factors such as productivity in economic life, success in educational life, social development, etc. and health services. Even in the USA, which is regarded as the only example of liberal capitalism, the share of the state in health expenditures has reached almost 50%. Therefore, all countries around the world strive to organize healthcare services in an effective and sustainable manner by adding private sector elements to the place. Country health systems are essentially a product of the policies adopted. Economic power of countries, trade volume, livelihood methods, years of schooling, strength of social ties, traditions etc. are all the factors that shape the relevant policies and therefore the health system. While the private sector feels its weight in the United States, in post-communist countries, reflections of past experiences and partial statism still maintain their effects. In this context, information about the health system of some countries is given below.

2.3.1.United States of America

The US healthcare system is known as the service organization most affected by liberal economic policies in the world. The understanding that the state is at the point of providing welfare at a minimum level has also shown its presence in health services. Health has been described as a first-degree area of individual responsibility. However, in the historical process, there have been attempts towards inclusive health insurances. These initiatives have generally had limited effects. Particularly, the state's involvement in first-hand provision and financing has been subjected to heavy criticism on the grounds that it harms the individual preference mechanism.

One development that has had a major impact in the US healthcare system has been the service organizations that physicians set up together and work prepaid. In particular, the effects of the Great Depression of 1929 were also negative on the health status, and workers turned to alternative searches in order to receive health services. These first practices, which started in California and Los Angeles, were also very effective in meeting the healthcare needs of workers. Later, these partnerships started to become larger structures and Blue Cross and Blue Shield health plans emerged, in which the insurer and the service provider have an agreement. These plans were working with the "community rating" method based on getting the same premium for all members. Today it is expressed as non-profit health insurances. Blue Cross covers the hospital expenses and Blue Shield covers the doctor's expenses (Mutlu and Işık, 2012; 316-317).

The position of the state in health services in the USA is largely shaped by Medicare and Medicaid. These two scopes, which came into effect in 1965, were also one of the main reasons for the increase in US health expenditures. Medicare covers patients over 65 years of age, with disabilities, and terminal period patients. According to the program, it consists of employee / employer contributions (mandatory taxes), premiums, contributions, general taxes and policy payments (deductible). Medicaid includes patients with AIDS, low-income elderly, children and pregnant women, based on an income test. It is

funded by federal budget and contributions. Nearly 35% of the population was included in these programs in 2013.

	Medicare	Medicaid
Scope	65+ individuals	People with low income and pregnant women
	People with disabilities	Children under 18 years of age with low income
	Terminal stage kidney patients	AIDS
	Als patients	Elderly people with low income
Funding	Part A: payroll deductions, employer contributions	Common fund and taxes of federal and states
	Part B: Premium and general taxes	
	Part C: Contributions	
	Part D: Contributions, general taxes, premiums	
Services	Part A: Inpatient, home, and hospice care	Hospital services
	Part B: outpatient services	Home and hospice care
	Part C: supplement. (6 especially eye and dental)	Service with nurses and midwives
	Part D: medicine costs	

Table 1: Medicare and Medicaid Features

Source:*Barton, 1999; Shi and Singh., Cited from 2014; Çavmak and Kaptanoğlu, 2017;*

Medicare is divided into 4 sections. Medicare is funded by user contributions and bonuses. It covers most of the health expenses of individuals over the age of 65. At the same time, services such as home care and hospice are also available. Medicare can also be used as a supplementary insurance to existing insurances (Rice et al., 2013).

"Obama Care", which was published in 2010 and named after Barack Obama, has created quite a change in the scope of health insurance. Actually, this law, known as the “Affordable Care Act”, required the entire population to purchase health insurance and regulated the insurance market in order to meet this demand (Shi and Singh, 2014; 11).

This law has three main objectives;(https://www.healthcare.gov/glossary/affordable-care-act/: Access Date: 23.10.2018)

1. Make affordable health insurance available to more people. The law provides consumers with subsidies (“premium tax credits”) that

lower costs for households with incomes between 100% and 400% of the federal poverty level.

2. Expand the Medicaid program to cover all adults with income below 138% of the federal poverty level.
3. Support innovative medical care delivery methods designed to lower the costs of health care generally.

With Obama Care, many plans and agencies have started to emerge, with a more comprehensive basic coverage package that can appeal to the preferences of individuals. Individuals can be insured collectively by the employer, and there are incentives at the point of purchasing individual insurance. Individuals can obtain an individual health insurance with the support of their employer in line with their income, lifestyle and preferences. When evaluated with incentives and scope of service, it is aimed to leave workers and employers with less financial liability. In addition, Obama Care has prevented insurers from rejecting individuals. Individuals have been obliged to take part in an insurance in accordance with their health conditions. This situation has dramatically increased the proportion of the population under protection (Pilzer & Lindquist, 2015).

In the US health system, there are independent health insurances and service organizations, referred to as "Managed Care Organizations-MCO". MCO has been shaped around three main objectives (Sekhri, 2000; 833);

- Avoid unnecessary service usage
- To achieve cost effectiveness in services
- To increase the level of health with quality health care

HMO	**PPO**
Members only receive service from the servers selected by the organization	It offers services by means of an agreement with service providers working independently
Crossing between steps is subject to physician report.	Transition between steps is flexible. Agreements are in a wider framework
It is cheaper, premiums are low.	It is more expensive. Premiums are high

Table 2: HMO and PPO Comparison

In this structure, financing and delivery of health services are integrated. Service refers to a pre-paid service organization within the framework of the package preferred by the person. Individuals can extend the insurance coverage according to the rules of the service providers, provided that they increase the price paid. There are basically two types of MCOs; Health Maintenance Organizations (HMO) and Preferred Provider Organizations (PPO). HMO refers to a relatively lower premium and a narrower scope. PPO, on the other hand, offers a more flexible and high premium maintenance plan, as it has agreements with a wider perspective.

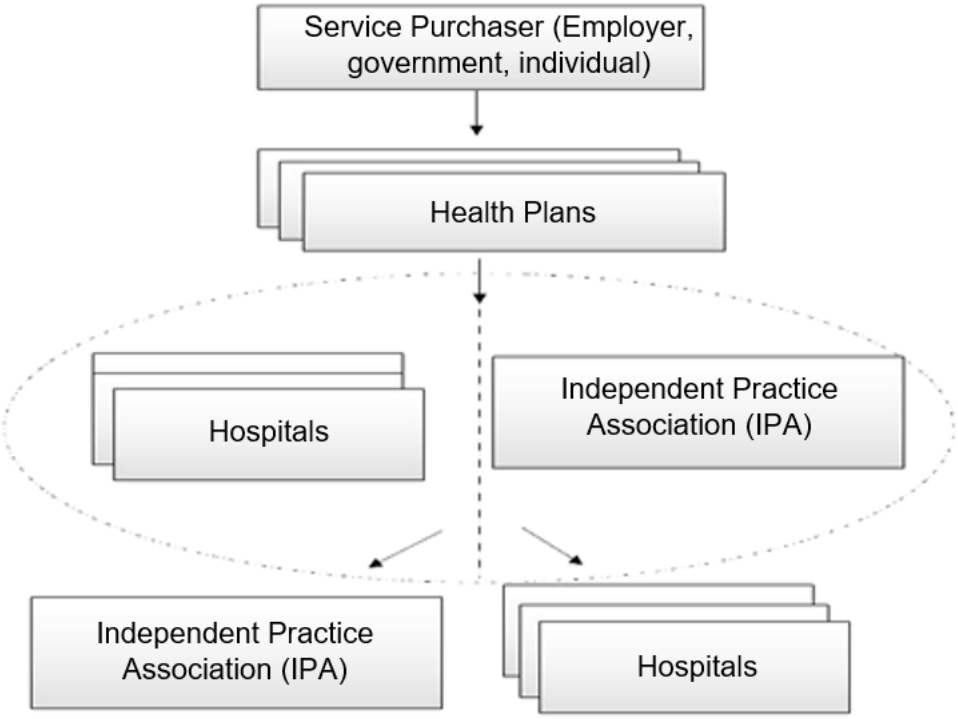


Figure 13: MCO
Source:*Sekhri, 2000 act. Çavmak and Kaptanoğlu, 2018; 47*

MCOs have different organizational forms as of their establishment. These are;

1. Staff Model (Staff Model); the organization has its own hospitals. They offer services with low cost and narrow choice. Healthcare professionals are employees, not owners / shareholders.
2. Group Model: MCO offers services by making an independent agreement with a service provider group consisting of a large number of physicians from different specialties.

3. Network Model: Agreements are made with more than one service provider group. It is similar to a project-based working methodology.
4. Independent Service Providers Association (IPA): separate agreements are made with independent physicians and service provider groups. It offers a wide perspective.

The most used method in MCOs is the "Network" model. In this model, which is based on an agreement between physicians' associations and health plans, unions generally receive per capita payment. However, since physicians can make agreements with more than one health plan, they can also receive payment per service from different plans and individuals (Sekhri, 2000; 833). In MCOs, individuals are directed to apply to service providers within the network. In case of application is from outside the network, individuals are considered to be out of insurance coverage and have to make additional payments. Therefore, MCOs prefer to work with contracted service providers as a prepaid budget instead of a fee for service method (Buttigieg et al., 2015).

In the US healthcare system, cost-effectiveness is one of the main areas of concern. Professional management efforts are made in order to reduce costs and thus ensure sustainability in service delivery. As insurance agents and service providers are under intense competition, they can make outstanding technological investments in order to gain customers and prevent heavy costs. Intensive technology and specialist care form the core of competitive efforts in the US healthcare system (Buttigieg et al., 2015;)

2.3.2.Canada

Canada has a national health insurance program. The first application was in 1966 with the Medical Care Act. National health insurance consists of 13 provincial and regional health insurances and is based on common basic standards. Insurance revenue consists of general state taxes and transfers from the federal government. The management of the insurance system is shaped under the responsibility of each provincial and regional governor (state). The federal administration transfers resources to each region on a per

capita basis. The relevant district administration uses the transferred resources to meet the healthcare needs according to the residence conditions of the region. These expenditures correspond to approximately 70% of the total health expenditure. While the state / government manages national coverage and health insurance, the private sector is concentrated in service delivery. Private health insurance, on the other hand, assumes a share of approximately 12% in total health expenditure, and is purchased to cover services such as medicines, dental care, rehabilitation, home care, care in private rooms in hospitals, which are not covered by the national coverage. Apart from these, a share of around 14% consists of out-of-pocket payments, especially for medicine, long term care, dental, etc. services (Shi & Singh, 2014). Individuals can enter complementary insurances as a group or individually. Insurance can be provided by employers, unions and associations / foundations (http://clhia.uberflip.com/i/369328-canadian-life-and-health-insurance-facts-2014-edition/13 ?; Date of Access: 23.10.2018 .

Regional insurance plans must cover the physician, diagnosis, hospitalization and medication costs without any prepayment conditions. (This situation is referred to as "first-dollar coverage" in the literature.). The scope of this service is determined in cooperation with the relevant regional governments and medical specialties, and there is no requirement for coverage at the national and federal level (Mossialos et al., 2016; 21-22).

In primary care, there are mostly self-employed, general practitioners or specialist physicians. The first step has the task of being a gatekeeper. Currently, physician payments are made per service. However, group payments and payments per registered person are also observed. Physician payments are determined by the regional administration and the negotiations of the physician unions in the relevant region. Most Canadian hospitals are run by private, non-profit, voluntary organizations, municipalities, and boards of trustees. Generally, they are financed by the global budget. (https://www.canada.ca/en/health-canada/services/canada-health-care-system.html: Access Date: 23.10.2018).

Canadian health system is in a decentralized structure. However, the federal Ministry of Health (Health Canada) and The Public Health Agency of Canada, are very influential organizations that regulate health services. Health Canada generally supports the health system, ensures drug and food safety, and evaluates medical devices and technologies. The Public Health Agency of Canada, on the other hand, has responsibilities at the point of control and prevention in public health, infectious diseases, chronic diseases, etc. (Mossialos et al., 2016; 22-24). The Canadian health care system and its elements are basically as follows.

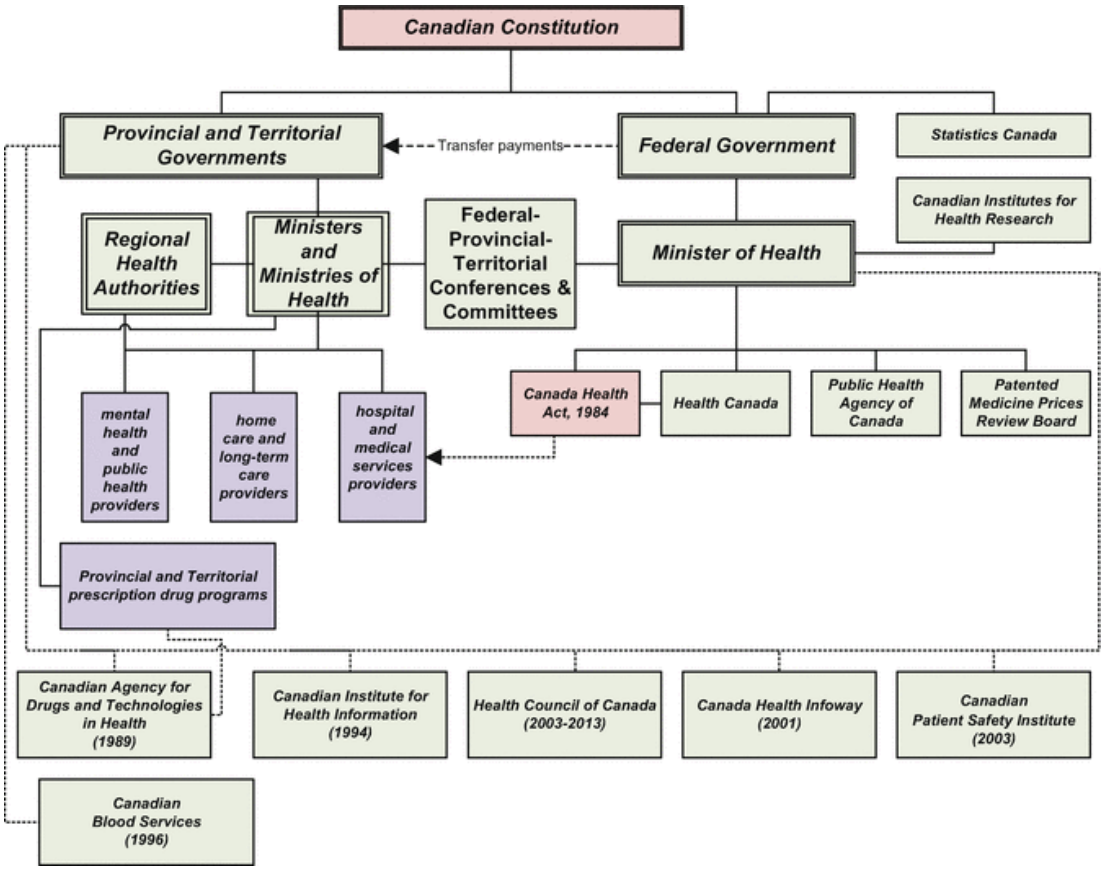


Figure 14: Canadian Health System

Source:*Mossialos et al., 2016; 26*

In the Canadian health system, a number of initiatives are implemented to ensure integration and coordination. Divisions of Family Practice, The Regulated Health Professions Network, and Health Links are some of them. Ontario organizes a multidisciplinary primary health care service, especially at the point of community based. It makes regulations on deprived segments of the population and minorities (Mossialos et al., 2016; 26).

2.3.3.Germany

The decision-making mechanism in the German health system is shaped within the framework of the political structure, in the triangle of states, federal government and non-governmental organizations. Governments share their powers with service providers and payment organizations that have independent internal dynamics. The main responsibility of the government is to develop management processes to ensure the effective functioning of compulsory public health insurance. The German health system is expressed as the Bismarck model. In 1883, the first steps of social insurance started in Germany. Therefore, Germany, which started the concept of social insurance at a very early date, has a very long history and experience in this field. The effects of industrialization started to have great effects in Germany in the 19th century. Workers' movements and health demands led to development on social security. The studies initiated by Chancellor Bismarck in this field made it known by the name of the system established later (Casteras, 2005; 2; Çelebi and Cura, 2013; 52).

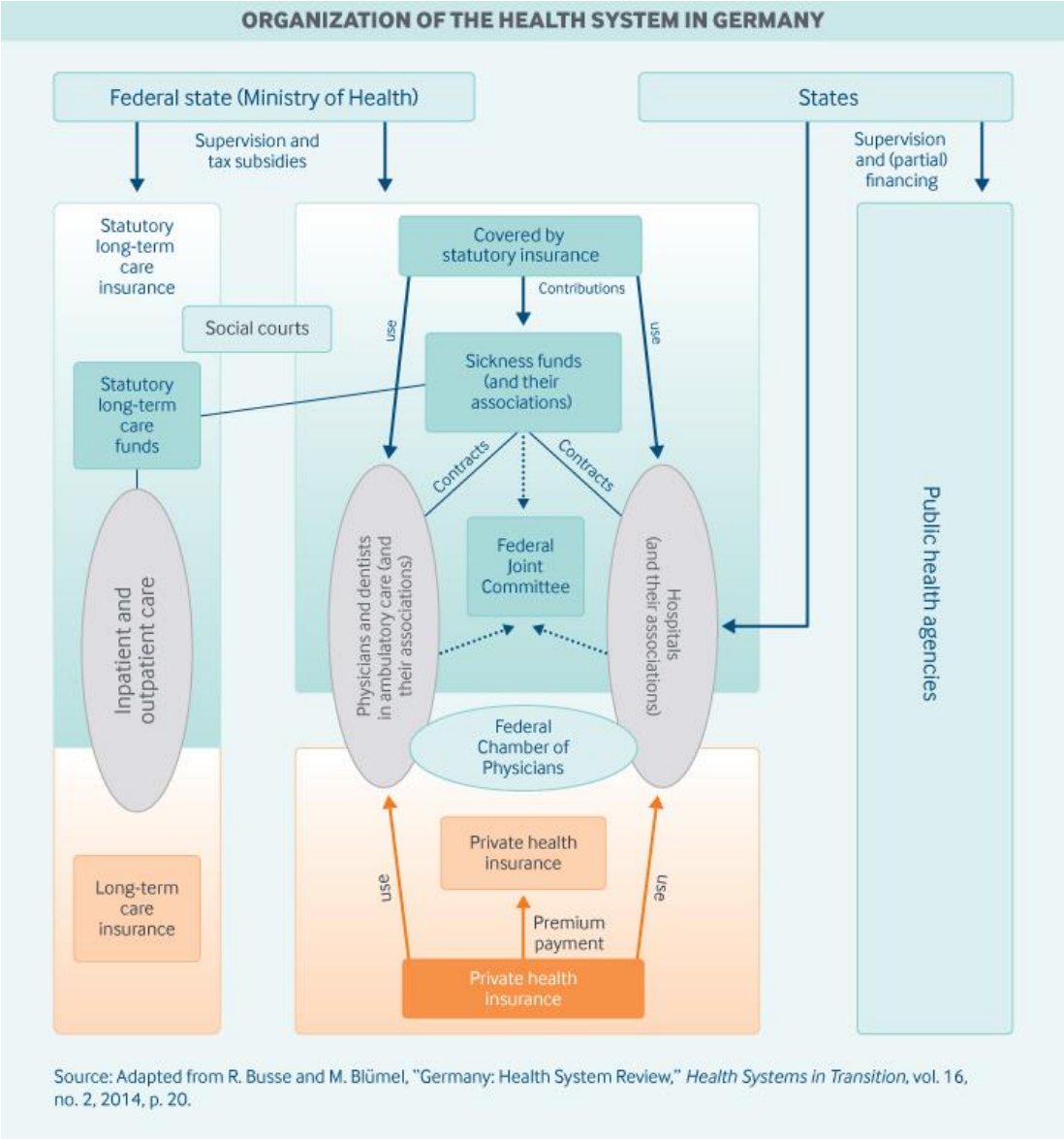
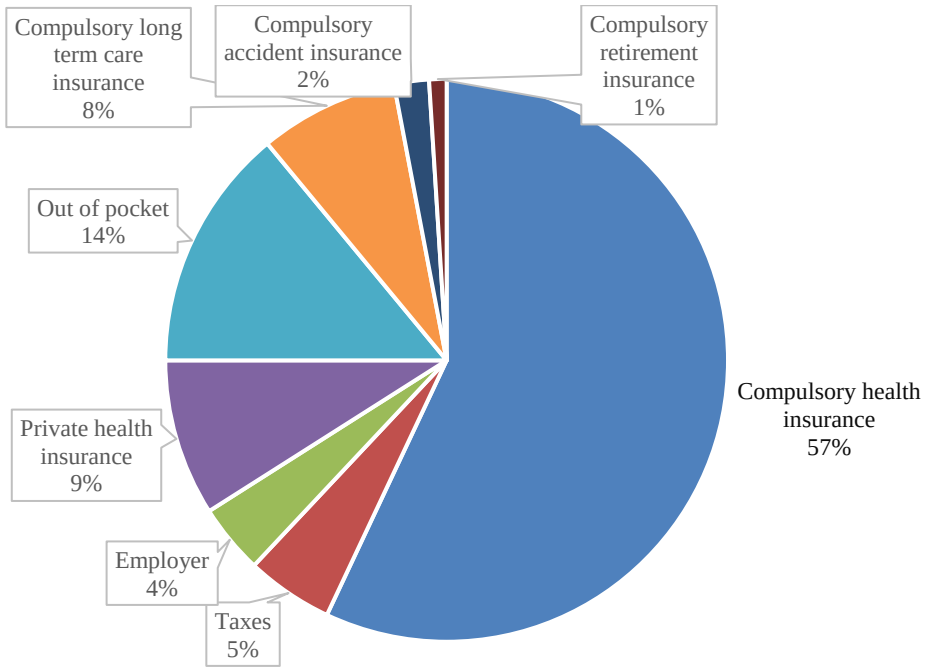


Figure 15: German Health System Elements

Source:*Mossialos et al., 2016; 73*

Health financing in Germany is provided through compulsory public health insurance. Insurances are provided through non-governmental and competitive insurance providers. These organizations, which are called sickness funds, work with affiliated or contracted servers with compulsory insurance. They are based on compulsory membership and internal democratic constitutionalism (Busse and Blümel, 2014; 17). Mainly, agencies are not for profit. Sickness funds are financed by shares of a fixed rate of gross wages up to a certain maximum value. All citizens up to a certain income level must be covered by public insurance. Individuals can receive services within

the system together with their spouses and children. Public insurance is voluntary for individuals above the income threshold. Individuals can stay under public insurance as well as private health insurance. Private health insurance is generally complementary (Mossialos et al., 2016; 69-70).



Graph 1: Health Financing in Germany, 2014

Source:*Busse and Blümel, 2014; 117*

Primary health care services in Germany are provided by specialist family physicians. Physicians can work independently or come together to establish a primary health care enterprise. In line with the agreements made with sickness funds, they receive payments per service. They serve as units primarily responsible for the health status of the region they serve (Busse, 2008; 2; Mossialos et al., 2016; 70-71). Hospitals in Germany traditionally focus on inpatients. Since 2000, this scope has been expanded, and outpatient care has also begun to be offered widely. Also since 2000, a framework has been developed to allocate an integration between physicians working independently, outpatient units and hospitals. Planning and arrangements for hospitals are made by the ministry of health at the state level (Busse and Blümel, 2014; 193).

2.3.4.Russia

The main components of the Russian health system are as shown in the figure below.

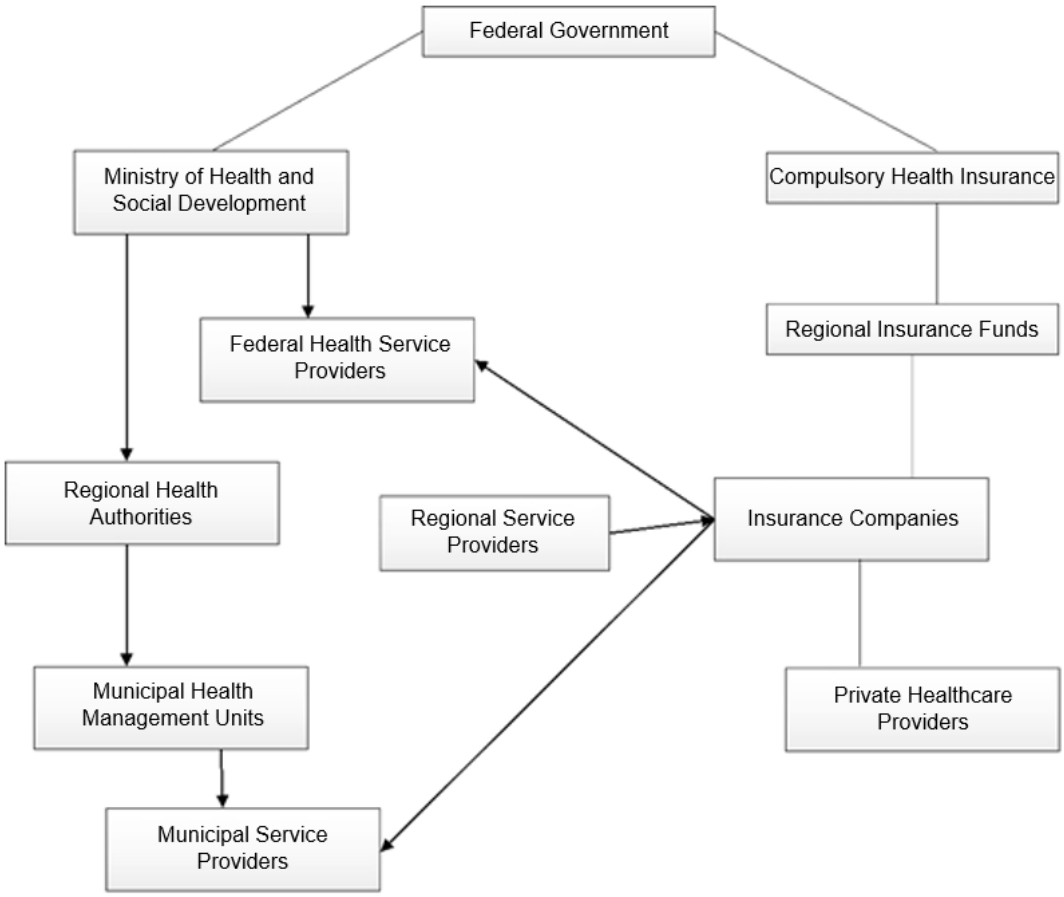


Figure 16: Russian Health System

Source:*Popovich et al., 2011; 14*

In the Russian Federation, the organization and delivery of health services are among the primary duties of the state. Services are organized in a very central structure. Even regional units operate under the intense control and hierarchical structure of the central government. Starting from 1998, annual programs have been started to be designed and implemented so that health services can be provided free of charge. There is compulsory public insurance. Resources collected under compulsory insurance are used to pay service providers through private insurance companies. Apart from compulsory public insurance, voluntary insurances can be purchased, especially for complementary use (Davydov and Shepin, 2010; 74).

The Federal Mandatory Insurance Fund (FOMS), which started to be implemented in 2010, is in the position of single payer. FOMS, on the other hand, derives the source of payment from general tax, insurance premium and contribution payments reflected to the society. However, the economic crisis, especially in 2014, started to make payments difficult. Especially the big difference between the real costs of healthcare services and the payments made by the insurance fund has started to threaten sustainability in services (Institute of Modern Russia, 2016; 6).

The Russian public health system relies heavily on Soviet-era health and epidemiology services. The Center for Hygiene and Epidemiology conducts studies on environmental health and communicable diseases through its laboratories and units. Vaccination, family planning, maternal and infant health are largely the responsibility of primary care organizations. Specialized hospitals, polyclinics, emergency service units, diagnostic centers etc. service structures are available in urban areas. Rural areas are organized around general hospitals, rayon hospitals and small village / town hospitals. Primary care services are provided in outpatient care units in rural areas, general hospitals. Some local governments can also provide services through their own health units. This situation is called "parallel health system". Hospitals traditionally receive payments based on the invoiced item and the number of beds. Amounts to be paid are determined centrally by the tariff commission. At the local level, especially in the primary level, per capita budgets are allocated by the compulsory insurance fund and this budget is used by insurance companies (Popovich et al., 2011; 13).

2.3.5.Japan

The role of government in the Japanese health system is very effective in terms of health financing. Universal health insurance is the responsibility of the government in all aspects. Government and local governments are under the responsibility of ensuring that all citizens benefit from accessible health services with sufficient quality level, within the framework of their

responsibilities specified in legal regulations. For this purpose, the national government must make budget programs, subsidize local governments and support insurers and service providers.

Health insurance is publicly funded but provides coverage through a large number of insurance companies. There are more than 3400 insurance companies. Individuals have to register with a trust fund. State employees are covered by a separate insurance. Private health insurance is only complementary and at a low rate (Mossialos et al., 2016; 107).

In Japan, therapeutic and preventive services are clearly differentiated. While curative services are provided by private and public service providers, preventive services are under the responsibility of local governments. Therapeutic services are covered under insurance, while preventive services are financed through taxes. Local governments are one of the important components of the health system. Public health services are organized entirely by local governments. Hospitals are largely privately owned. However, these businesses are not primarily profit making organizations, their areas of interest are only in health. (Tatara and Okamoto, 2009; 19 Mossialos et al., 2016; 108-109).

Primary health care services are mostly provided through private clinics. There are also general practitioners working on their behalf. In addition, hospital outpatient clinics can also provide services in this direction. Primary care is typically provided by a team of physicians and nurses. Institutional and employee payments are generally made per service. However, payments are based on encouraging service providers to coordinate with chronic care, home care units and other organizations. So, service integration is among the main goals. Individuals can choose the clinic or any hospital as their first application point. The Japanese health system specifically adopts the principle of free choice. However, if the first application is made to the upper levels instead of primary care, it will cause additional payments (Mossialos et al., 2016; 108-109).

Diagnoses Related Groups (DRG) and payment per service methods are used for the payments in hospitals. Payments are shaped within the framework of negotiations with hospitals. DRG payments are determined on a per-service and per-day basis, and are generally used for basic hospital expenses and relatively lower-cost treatments. Per-service payments are made for surgical procedures, rehabilitation services, and expensive services that require more expertise (OECD, 2009).

2.3.6.Mexican

The foundations of the current health system began to be founded after the Mexican revolution of 1910-1917. As of this period, the Mexican state has initiated intensive studies to provide development in health, social services, education, etc. The establishment of ministries on health and welfare in 1943 was among the first institutional organizations.

The Mexican health system is examined under two main components, public and private. The Ministry of Health (Secreteria de Salud) and the decentralized units (Servicios Estatales de Salud-SESA) are the main governing units that undertake the organization of the public sector. At the same time, the Mexican Social Security Organization (Instituto Mexicano de Seguro Social-IMSS) and the anti-poverty units (Program to Combat Poverty) are among the factors that have an impact on health care. The Mexican health system aims to provide general coverage for the entire population. In addition, the national security and military organization (SEDENA), PEMEX, which is a major state initiative on oil, is an organization that has widespread effects in providing assurance to its employees and providing health services. PEMEX and SEDENA have their own service units. Health services are considered among the main responsibilities of the state. However, the private sector is also included in the hospital, clinic networks and insurance systems and health services (Castro, 2014; 2).

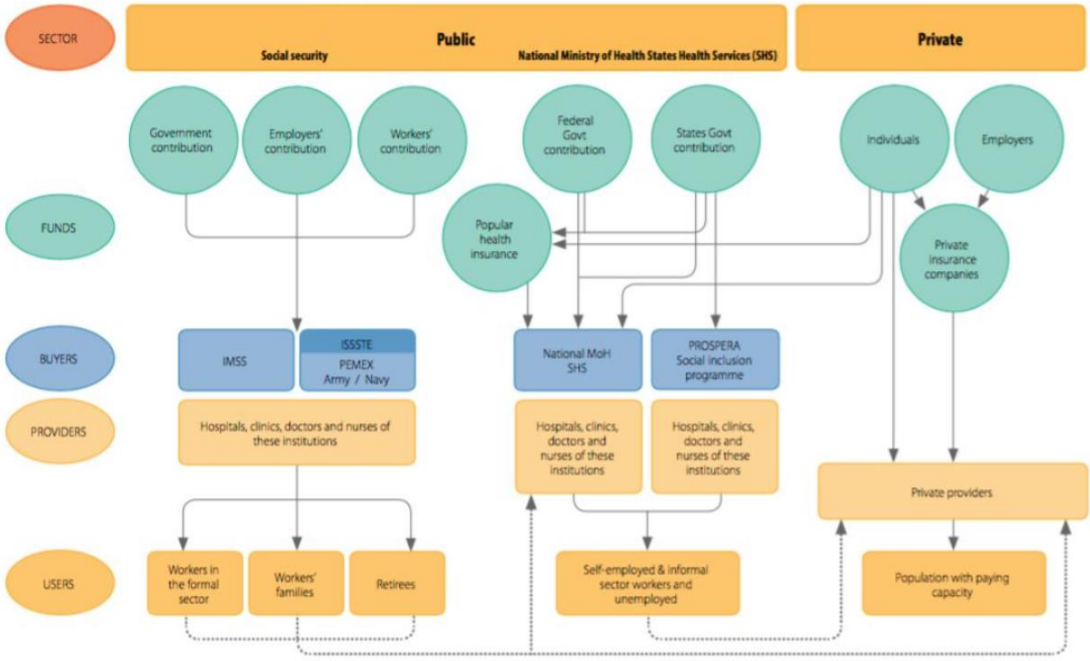


Figure 17: Mexican Health System Components

Mexican health insurance operates on the basis of employee and subsystems. Each subsystem must fulfill the tasks required for health care: management, fundraising, service procurement and service delivery for the relevant population. Individuals in the formal sector are covered by the assurance. There are two basic programs according to the employment type. The above mentioned IMSS secures private sector and salaried employees. For government officials, it provides assurance services called as “Instituto de Seguridad y Servicios Sociales de los Trabajadores del Estado- ISSSTE”. Individuals who do not work or are in the informal sectors are outside the scope of this assurance and the relevant regulations are made by the ministry of health. Every subsystem must organize primary care and public health services for its population. General practitioners, family physicians and nurses are the main units that provide services in primary care. Vaccinations are carried out and monitored by state health units. In addition to vaccinations, family planning, mother-child health, etc. services are provided by IMSS (OECD, 2016).

In this section, the health service production units are examined, and the service levels of the institutions that are the health services provider are included. After explaining the institutions involved in the health service in

Turkish health system, information about the health systems of some countries is given at the international level.

In the first two sections, detailed information about the concept of health and its characteristics and the provision of health services are given. In the third part, various health criteria related to the numerical examination of the outputs of a health system are included, and after the theoretical information about the classification of health criteria is mentioned, the variables related to infant mortality rates and life expectancy at birth are examined.

CHAPTER 3

3. EFFECT OF VARIAUS INDICATORS ON LIFE EXPECTANCY AND INFANT MORTALITY RATES AT BIRTH: TURKEY EXAMPLE

Health is expressed as one of the most fundamental human rights. However, the basic principle of social justice is to ensure that there is access to the necessary elements for a healthy and satisfying life. On the other hand, providing these opportunities increases the productivity of the society both economically and socially and provides long-term economic benefits (Oral and Sayın, 2013; 396). Health services are services that concern the whole society rather than address a specific segment of the society, and where activities are carried out to improve and develop the health conditions of the society. Therefore, it is an undeniable fact that health services have a social characteristic. There is a mutual relationship between the developments in the health level and economic level of a society. In societies that have achieved a certain level of economic development, the resources allocated to health are also increasing. At the same time, there is an increase in the awareness of individuals about health. In the researches, it has been determined that the improvements in economic indicators have a positive effect on health indicators (Ersöz, 2009; 1651). Even in countries with the highest wealth level, individuals with relatively lower wealth have lower life expectancy and a higher probability of getting diseases (Wilkinson and Marmot, 2003; 7). Therefore, it is obvious that economic indicators will also affect health indicators. The development status of a country is explained by factors such as education, health, and economic conditions, which are among the sub-systems of that country. Health indicators have a different position among these variables.

Health and development level are in a two-way interaction, which affects each other. It is argued that in a country with a high level of health, production will also increase due to a healthy workforce structure, that which will also increase economic welfare and the level of health by preventing problems such as access to health. On the other hand, health indicators are affected by the economic situation of a country, the structure of the health system, health expenditures, and the qualitative and quantitative adequacy of health manpower. Since health indicators are one of the main factors that determine the level of development, the insufficiency of health services affects development negatively (Oral and Sayın, 2013; 396).

There are numerous definitions regarding the concepts of health and disease, and each science field focuses on this subject from its own perspective (Özçelik Adak, 2015: 7). However, the generally accepted definition is the definition of the World Health Organization (WHO). WHO defines the concept of health as “health is a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity. (http://www.who.int/suggestions/faq/en/). Modern definitions of health, in line with the WHO definition, indicate the maximum capacity of individuals for self-actualization rather than the absence of health disease states. Social medicine and public health approaches also defend the consideration of not only the health of individuals, but also the health of groups and society as a result of the interaction of individuals with the social environment (Svalastog, 2017: 431). Therefore, in today’s approach to define the concept of health today, it is considered that individuals are physically well, their psychological condition is good and they are socially well-being, rather than suffering from a disease or experience symptoms related to a disease.

Like the concept of health, the discussion of the determinants of the health condition is based on many years. In addition to the lifestyle and behaviour of individuals, human health is also affected by many other factors such as socio-economic variables, factors related to access to health services, work environment and biological environment (Ministry of Health, 2011: 6).

3.1. HEALTH INDICATORS

One of the methods used to make comment about the development level of a country is to examine the health level. In order to do this, some objective criteria are required. These criteria are generally expressed as health indicators. These indicators can provide researchers with direct information on issues such as birth, death, life expectancy, diseases, and health services. Indicators are the criteria that enable the analysis of the current situation regarding the system they are related to and examining the changes experienced over time. By means of these indicators, comparisons between countries and regions can be made and improvements in health conditions can be measured. However, it can also reveal differences in the health status of different groups socio-economically (Altintas, 2012; 23-24).

Health indicators are measurement tools that measure health from various perspectives. Each indicator can be considered as a piece of a puzzle that contribute to the overall picture. As the indicators are viewed over time, the pictures become a movie, which provides an understanding of how the health story has changed. Basically, there are two basic indicators: health status indicators and health determinants indicator. Health status indicators examine the health status of the society from various perspectives; life expectancy, infant mortality rate, chronic disease rate. Health determinants, on the other hand, measure the factors affecting health. For example; indicators such as nutrition, smoking, water quality, income status and access to health services are included in this group (First Nations Center, 2007; 2).

WHO has determined the most basic health indicators as “100 Core Health Indicators” and grouped these indicators. According to WHO, health indicators are primarily divided into four main groups as health status, risk factors, service scope and health systems; then each group is classified within itself. Accordingly, it is possible to classify 100 basic health indicators as follows (World Health Organization, 2015; 18-19):

Health Status	Risk Factors	Service Coverage	Health Systems
Mortality by age and sex	Nutrition	Reproductive, maternal, newborn, child and adolescent	Quality and safety of care
Mortality by cause	Infections	Immunization	Access
Fertility	Environmental risk factors	HIV	Health workforce
Morbidity	Noncommunicable diseases	HIV/TB	Health information
	Injuries	Tuberculosis	Health financing
		Malaria	Health security
		Neglected tropical diseases	
		Screening and preventive care	
		Mental Health	

Table 3: 100 Basic Health Indicators-A

As seen in the figure, there are more than one sub-groups in each main health indicator group. Health indicators for each sub-group are described in the following table (World Health Organization, 2015).

100 BASIC HEALTH INDICATORS			
Health Status	**Risk Factors**	**Service Coverage**	**Health Systems**
Mortality by age and sex • Life expectancy at birth • Adult mortality rate between 15 and 60 years of age • Under-five mortality rate • Infant mortality rate • Neonatal mortality rate • Stillbirth rate **Mortality by cause** • Maternal mortality ratio • TB mortality rate • AIDS-related mortality rate • Malaria mortality rate • Mortality between 30 and 70 years of age from cardiovascular diseases, cancer, diabetes or chronic respiratory diseases • Suicide rate • Mortality rate from road traffic injuries **Fertility** • Adolescent fertility rate • Total fertility rate **Morbidity** • New cases of vaccine-preventable diseases • New cases of IHR-notifiable diseases and other notifiable diseases • HIV incidence rate • HIV prevalence rate • Hepatitis B surface antigen prevalence • Sexually transmitted infections (STIs) incidence rate • TB incidence rate • TB notification rate • TB prevalence rate • Malaria parasite prevalence among hildren aged 6–59	**Nutrition** • Exclusive breastfeeding rate 0–5 months of age • Early initiation of breastfeeding • Incidence of low birth weight among new borns • Children under 5 years who are stunted • Children under 5 years who are wasted • Anaemia prevalence in children • Anaemia prevalence in women of reproductive age **Infections** • Condom use at last sex with high-risk partner **Environmental risk factors** • Population using safely managed drinking-water services • Population using safely managed sanitation services • Population using modern fuels for cooking/heating/lighting • Air pollution level in cities **Noncommunicable diseases** • Totalalcoholpercapita(age 15+ years) consumption • Tobacco use among persons aged 18+ years • Children aged under 5 years who are overweight • Overweight and obesity in adults (Also: adolescents) • Raised blood pressure among adults • Raised blood glucose/diabetes among adults • Salt intake	**Reproductive, maternal, newborn, child and adolescent** • Demand for family planning satisfied with modern methods • Contraceptive prevalence rate • Antenatal care coverage • Births attended by skilled health personnel • Postpartum care coverage • Care-seeking for symptoms of pneumonia • Children with diarrhoea receiving oral rehydration solution (ORS) • Vitamin A supplementation coverage **Immunization** • Immunization coverage rate by vaccine for each vaccine in the national schedule **HIV** • People living with HIV who have been diagnosed • Prevention of mother-to-child transmission • HIV care coverage • Antiretroviral therapy (ART) coverage • HIV viral load suppression **HIV/TB** • TBpreventive therapy for HIV-positive people newly enrolled in HIV care • HIV test results for registered new and relapse TB patients • HIV-positive new and relapse TB patients on ART during TB treatment	**Quality and safety of care** • Perioperative mortality rate • Obstetric and gynaecological admissions owing to abortion • Institutional maternal mortality ratio • Maternal death reviews • ART retention rate • TB treatment success rate • Service-specific availability and readiness **Access** • Service utilization • Health service access • Hospital bed density • Availability of essential medicines and commodities **Health workforce** • Health worker density and distribution • Output training institutions **Health information** • Birth registration coverage • Death registration coverage • Completeness of reporting by facilities **Health financing** • Total current expenditureon health(%ofgross domestic product) • Current expenditure on health by general government and compulsory schemes (% of current expenditure on health) • Out-of-pocket payment for health (% of current expenditure on health) • Externally sourced funding (% of current expenditure on health) • Total capital expenditure on health (% current + capital expenditure on health)

months • Malaria incidence rate • Cancer incidence, by type of cancer	• Insufficient physical activity in adults (Also: adolescents) • Injuries • Intimate partner violence prevalence	**Tuberculosis** • TBpatients with results for drug susceptibility testing • TB case detection rate • Second-line treatment coverage among multidrug-resistant tuberculosis (MDR-TB) cases **Malaria** • Intermittent preventive therapy for malaria during pregnancy (IPTp) • Use of insecticide treated nets (ITNs) • Treatment of confirmed malaria cases • Indoor residual spraying (IRS) coverage **Neglected tropical diseases** • Coverage of preventive chemotherapy for selected neglected tropical diseases **Screening and preventive care** • Cervical cancer screening **Mental Health** • Coverage of services for severe mental health disorders	• Headcount ratio of catastrophic health expenditure • Headcount ratio of impoverishing health expenditure **Health security** • International Health Regulations(IHR) core capacity index

Table 4: 100 Basic Health Indicators-B

As can be seen, there are many health indicators that are useful to interpret the health level of a country or region. These indicators are reference both in measuring a country's health level and in comparing it with other countries. It also makes it possible to compare the health levels of different regions within the country. While some of these criteria provide a wide range of health-related information, some of them can provide in-depth information about a specific situation.

4. METHOD AND FINDINGS

The purpose of this study is to establish a model by determining the effects of variables such as GDP, number of physicians and nurses, number of hospital beds, physician consultation on health indicators such as life expectancy at birth and infant mortality rates during the period covering the years 1993-2018. It has been observed that basic health and development indicators such as infant mortality rate, life expectancy at birth are affected by many factors such as income inequality or access to public services, and also affect many factors such as the country's GDP, education level or life satisfaction.

In addition, the changes of some indicators that are not used in hypothesis tests over the years are also explained and shown with graphics.

Hypotheses of the research;

H1A: There is a causal relationship between the GDP, the number of physicians and nurses per thousand people, the number of hospital beds per thousand people and the number of physician visits and life expectancy at birth.

H1B: There is a causal relationship between the GDP, the number of physicians and nurses per thousand people, the number of hospital beds per thousand people and the number of physician visits and infant mortality rate.

In this context, it was evaluated that the most suitable model to be used in the study is the VAR model, and the VAR model is used in the analysis of variables. Vector Autoregression (VAR) is an econometric model that generalizes univariate AR models, gives development and interdependence between multivariate time series. EViews package program is used in the analyses.

Since the data of the study cannot be obtained from a single database, it has been compiled from different databases such as OECD, World Bank, World Health Organization and TUIK. Data from 1993 to 2018 were evaluated and interpreted due to the lack of data of some variables in the study for the last two years and the oldest available data in full were from 1993. The data used in the study are summarized in the following table;

Years	Hospital Bed	Doctor Consultation	Number of Physicians	Number of Nurses	GDP (million TL)	Life Expectancy	Infant Mortality
1993	2.28	1.6	1.03	0.91	1981	68,5	47,6
1994	2.29	1.7	1.09	0.93	3868	68.9	45.1
1995	2.28	1.8	1.1	1.01	7762	69.3	42,7
1996	2.31	2nd	1.1	0.99	14772	69,7	40,3
1997	2.35	2.2	1.12	1.02	28835	70.1	38
1998	2.39	2.4	1.15	1.04	71892	70,3	35,7
1999	2.42	2.6	1,2	1.03	107164	70,7	33,5
2000	2.08	2.8	1,3	1.06	170666	71.1	31,4
2001	2.14	3	1.38	1.11	245428	71,5	29,4
2002	2.48	3.1	1.39	1.1	359358	71.9	27,5
2003	2.46	3.4	1.41	1.12	468015	72,3	25,7
2004	2.45	3.7	1.44	1.12	577023	72,7	23.9
2005	2.48	4.6	1.47	1.14	673702	73.1	22,3
2006	2.50	5.3	1.51	1.19	789227	73,4	20,8
2007	2,52	6.1	1.55	1.35	880460	73,7	19,3
2008	2,56	6.7	1.59	1.41	994782	73.9	18
2009	2.60	7.3	1.65	1.46	999191	74.1	16,8
2010	2.72	7.3	1.69	1.57	1160013	74,3	15,6
2011	2.60	8,2	1.7	1.68	1394477	74,6	14,6
2012	2.65	8,2	1.73	1.79	1569672	74,6	13,6
2013	2.64	8,2	1.76	1.83	1809713	78	12,7
2014	2.66	8.3	1.76	1.85	2044465	78	11.9
2015	2.66	8,4	1.81	1.95	2338647	78	11.1
2016	2.73	8,6	1.83	1.93	2608525	78	10,5
2017	2.81	8,9	1.87	2.07	3110650	78.1	9.8
2018	2.85	9.5	1.88	2.34	3724387	78,3	9.2

Table 5: Research Data

After obtaining the data of the research, the data set is organized in an excel file and then transferred to the EViews program. The research model is established to detect the effect of some variables on life expectancy and infant mortality rates at birth. The research model is summarized as follows;

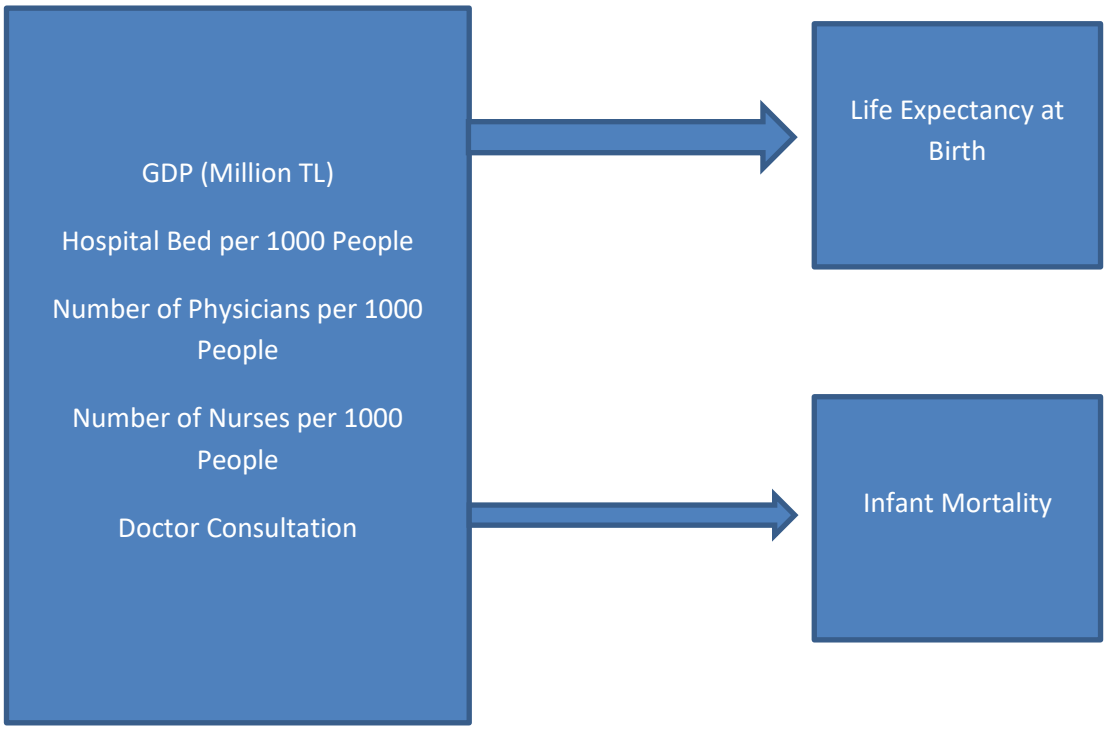


Figure 18: Research Model

First of all, the change of each data over time was examined, and then the relationship of these data with "life expectancy at birth" and "infant mortality rate", which are among the most basic health indicators, was examined.

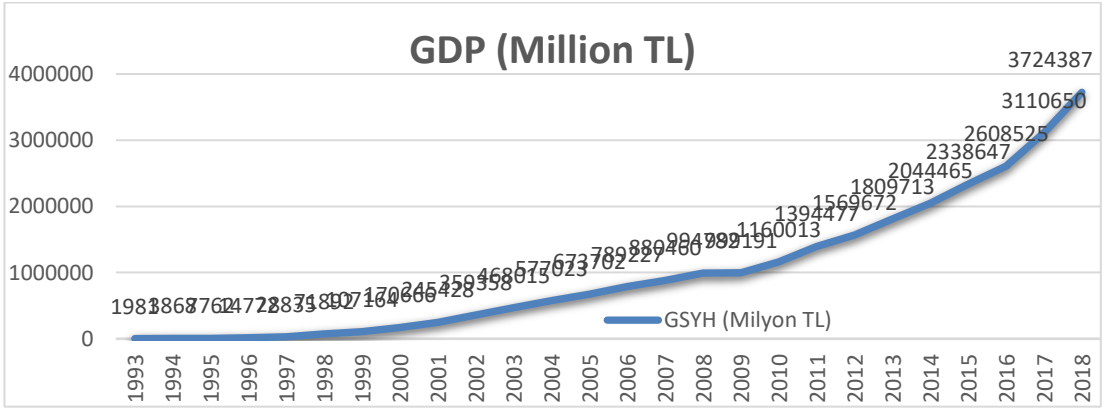


Figure 19: GDP Change Over the Years

Turkey's GDP in 1993 is around 2 billion TL. It continues to increase after a pause in 2008-2009 and approaches to 4 trillion TL by 2018. This change, which is essentially an expected picture in a developing country, has basically continued to increase despite being affected by global economic difficulties (which seems to have been affected by the 2008 crisis).

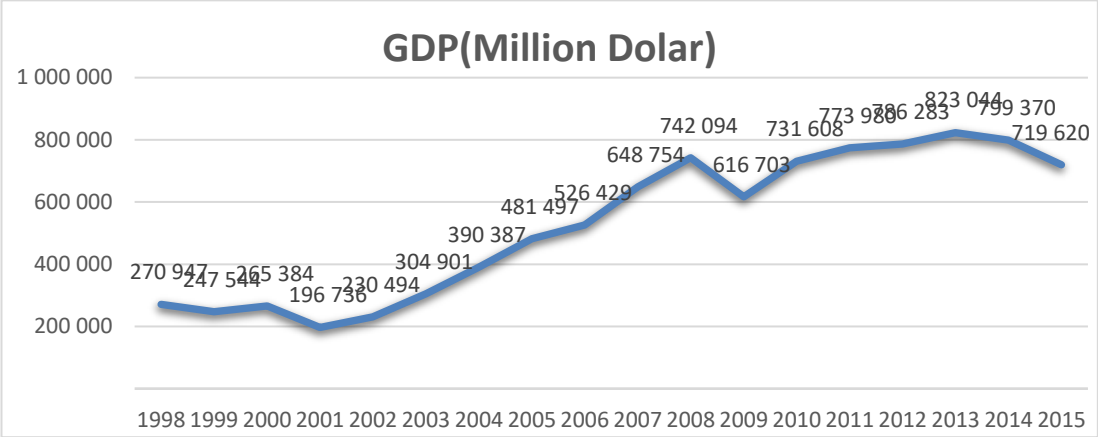


Figure 20: Change in Dollar Based GDP Over the Years

TL-based GDP tends to increase continuously, except for the pause in 2008-2009, while GDP in dollar terms follows a fluctuating course. It decreases in the 1998-2001 period, increases until 2008, and increases until 2013 after a sharp decline between 2008-2009. After 2013, as we come to the present day, the GDP in dollar is decreasing. Although the GDP indicator in dollar seems to be a useful variable in terms of international comparisons, sudden fluctuations in the exchange rate are directly reflected in these indicators as it is directly affected by exchange rate changes. Despite this, the GDP indicator in dollar basically tends to increase, except for the sharp declines experienced in the 1998-2001 and 2008-2009 periods.

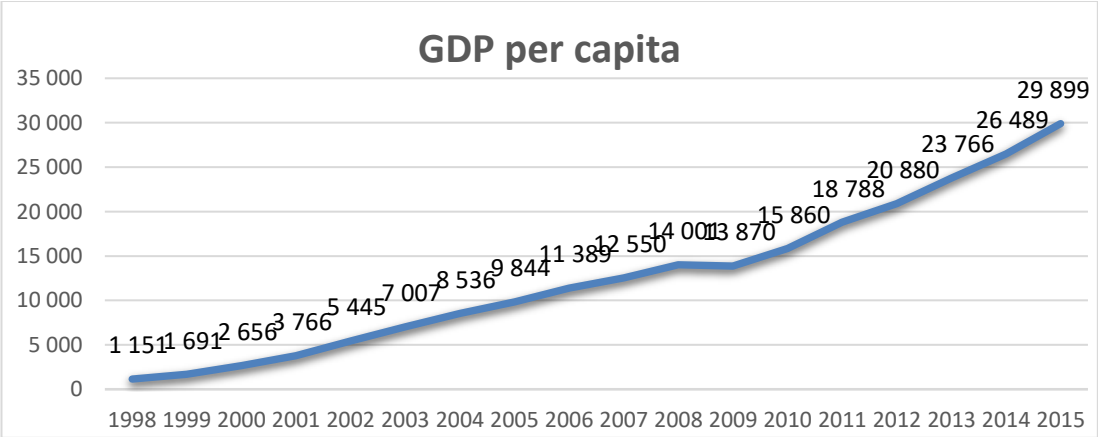


Figure 21: GDP Per Capita Change Over the Years

As seen in the figure 22, although the per capita GDP decreased between 2008 and 2009, it was 1151 TL in 1998 and increased to 30.000 TL in 2015. This indicator is especially important for developing countries. Because while

the population increases rapidly, the increase in GDP per capita is seen as a positive situation. However, in order for this indicator to be interpreted more properly, it is necessary to make calculations that include both inflation level and fair income distribution. GDP per capita in dollar is shown in the figure 23.

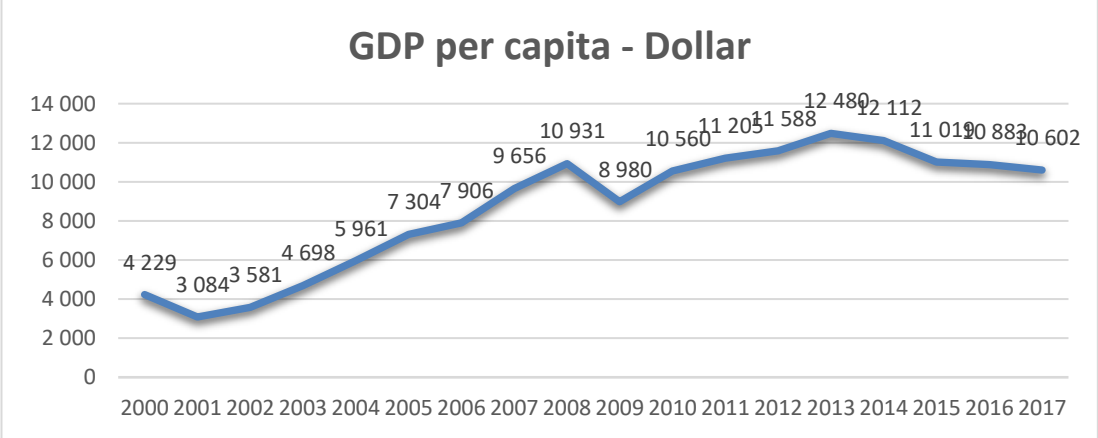


Figure 22: Per Capita GDP in Dollar Changes Over the Years

As can be seen in the figure 23, per capita GDP in dollar fluctuated from 2000 to 2017 and decreased between 2000-2001 and 2008-2009. Although it decreased again between 2013 and 2017, in general, the GDP increased from around 4 thousand dollars to 10 thousand dollars in 2017. The decreases are similar to the GDP indicator in dollar.

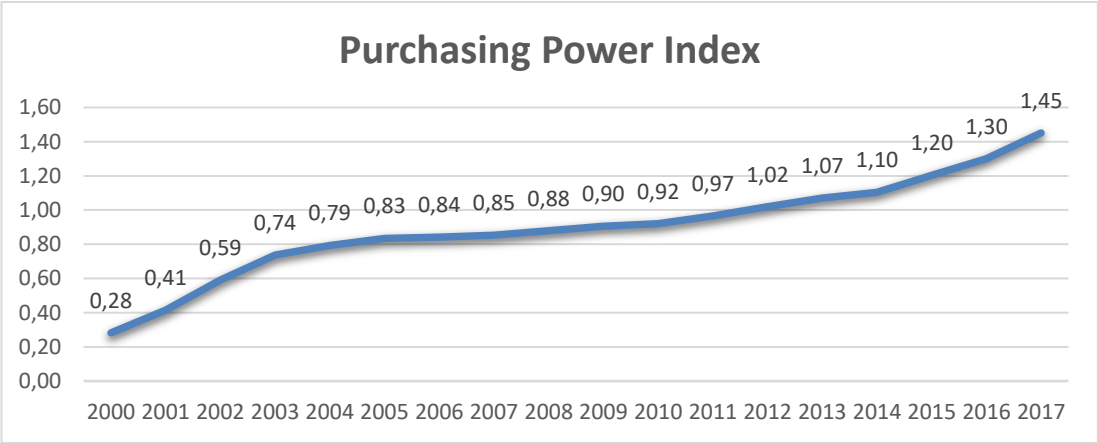


Figure 23: Purchasing Power Index Change Over the Years

As can be seen in the figure 24, the purchasing power index has been constantly increasing from 2000 to 2017. Although this increase is not that sharp, the upward trend tends to increase continuously.

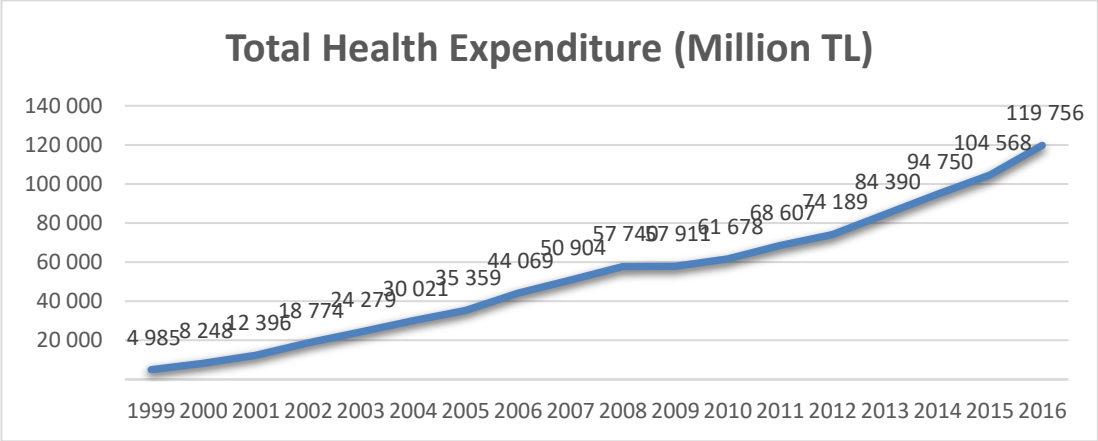


Figure 24: Total Health Expenditure Change Over the Years

When the course of total health expenditures over the years is analysed, it is seen that there is a continuous increase between 1999 and 2016. While it is close to 5 billion TL in 1999, it is around 120 billion TL in 2016. In order to examine how meaningful the change is in real terms, it is necessary to examine the ratio of health expenditures to GDP. The figure below shows the change in the rate of health expenditures in GDP over the years.

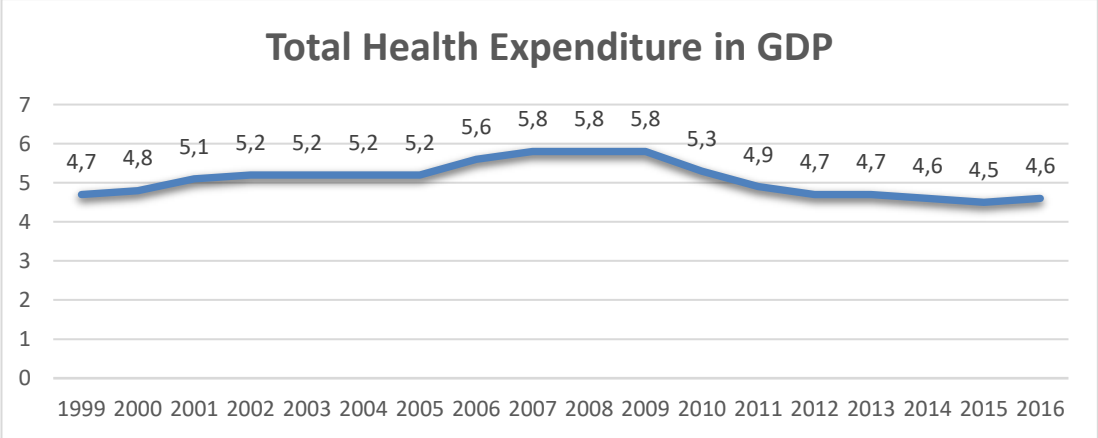


Figure 25: Total Health Expenditure Rate in GDP Change Over the Years

As seen in the figure 26, the increase in the amount of health expenditures can be explained by the increase in GDP in general. This is because the ratio of health expenditures in GDP was 4.7 in 1999, while this rate was 4.6 in 2016. Although it is seen that the share of health in GDP increased from time to time to 5.8, it basically remained at 4.6. It is difficult to say that budgets allocated to health have increased significantly. It can be stated here that the share

allocated to health services should be increased and tried to be kept parallel to the average levels of OECD countries.

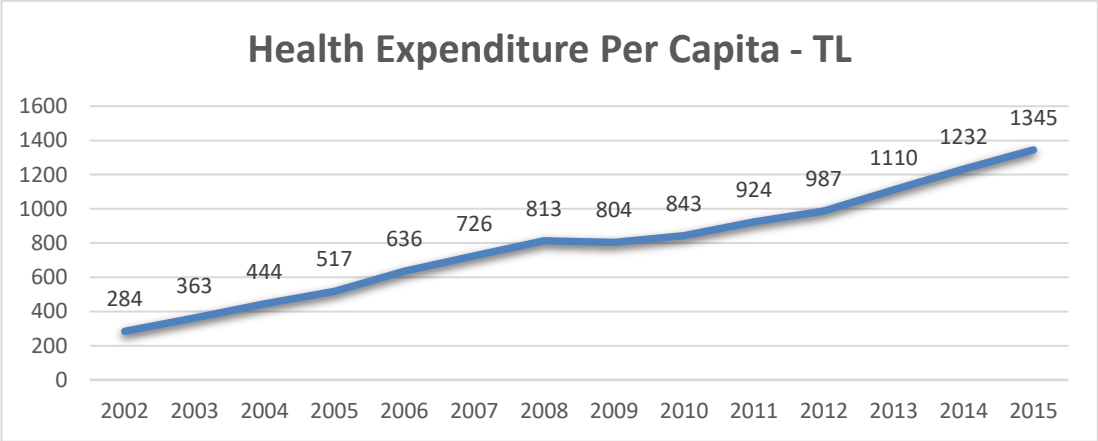


Figure 26: Health Expenditure Per Capita Change Over the Years

As can be seen in the figure 27, per capita health expenditures tend to increase continuously over the years, except for the 2008-2009 period.

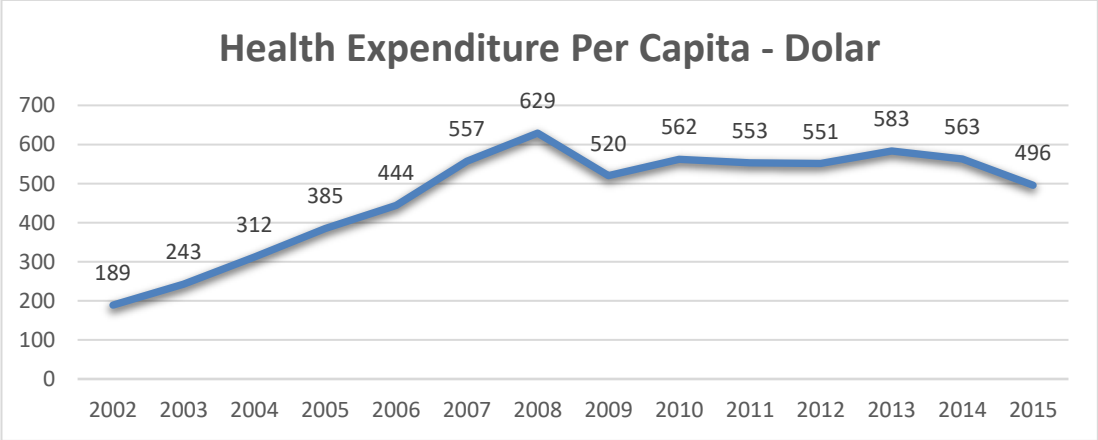


Figure 27: Health Expenditure Per Capita Change in Dollar Based Over the Years

Health expenditures per capita on TL basis tend to increase continuously, while health expenditures per capita in dollar basis have increased between 2002 and 2008 and have been following a fluctuating course since 2009. The health expenditure based on dollars per person, which was 189 dollars in 2002, reached 496 dollars in 2015.

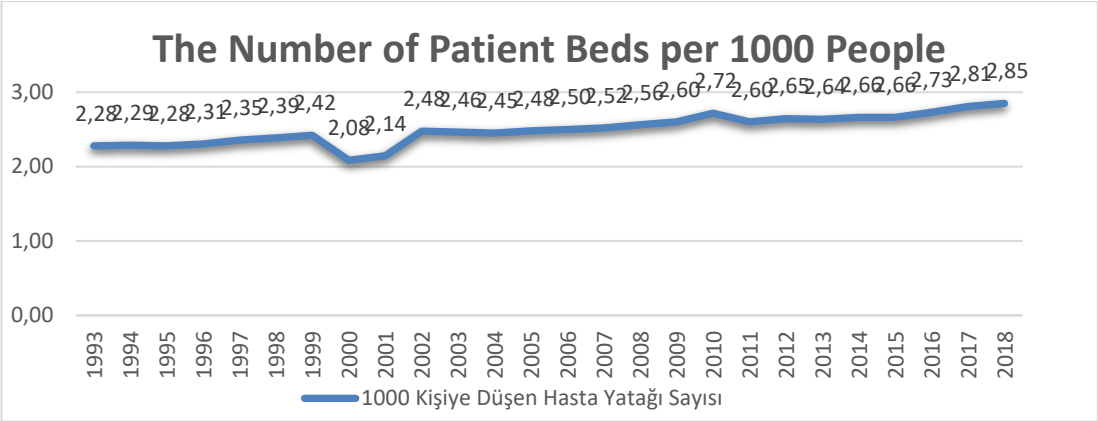


Figure 28: The Number of Patient Beds per 1000 People Change Over the Years

As can be seen in the figure 29, the number of patient beds per 1000 people was 2.28 in 1993, while it was 2.73 in 2016. It is observed that the number of patient beds per 1000 people cannot be increased significantly over the years. This situation is important for the development of health indicators. It is stated that the number of patient beds per 1000 people, which is a main health indicator, also contributes to the improvement of other health indicators as well. For this reason, increasing the number of patient beds is important in terms of improving other health indicators.

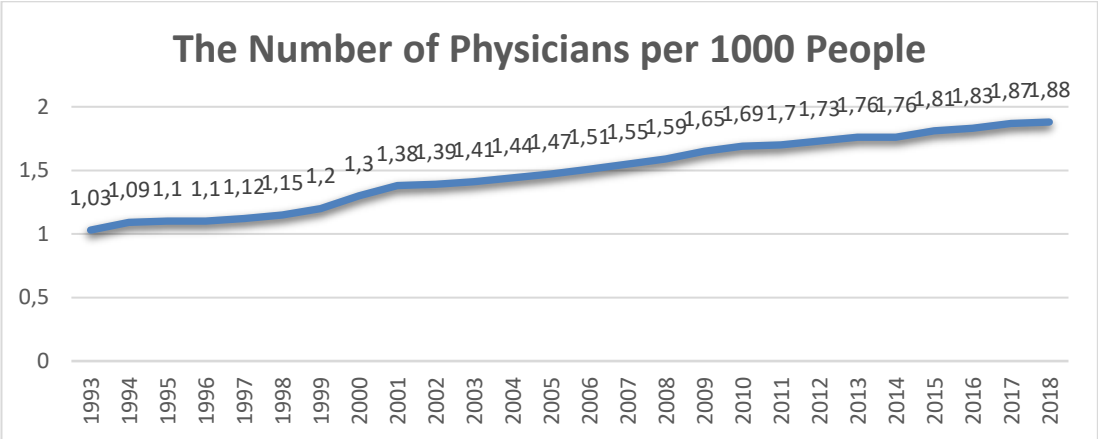


Figure 29: The Number of Physicians per 1000 People Change Over the Years

While the number of physicians per 1000 people was 1.03 in 1993, it increased to 1.88 in 2018. Although this rate falls behind the level of developed countries, it has been doubled over the years, especially with the increase in the number of medical faculties over the period of 25 years. However, as can be seen in the figure below, the rate of doctor consultation increased approximately 7

times in the same period. Therefore, efforts to increase the number of physicians should be improved.

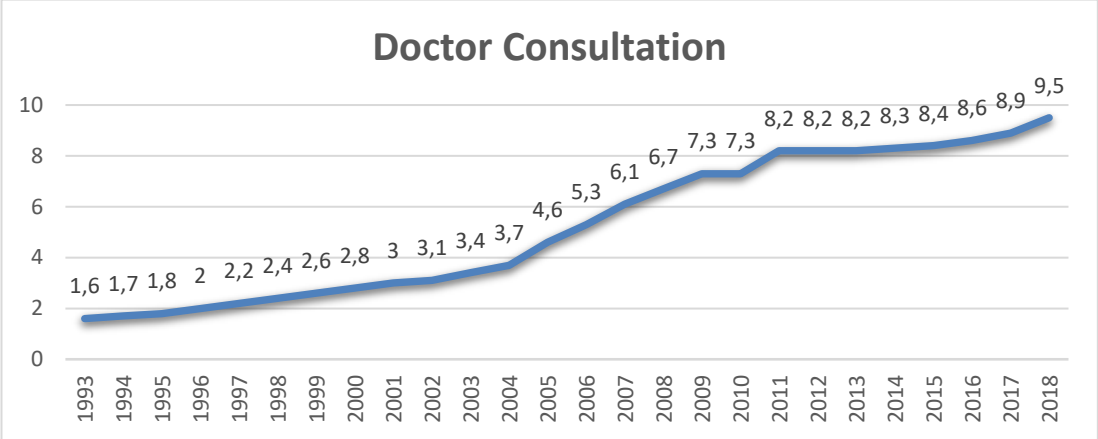


Figure 30: Doctor Consultation Change Over the Years

While the rate of doctor consultation was 1.6 in 1993, it increased to 9.5 in 2018. At this point, it is a remarkable indicator that the number of physicians per 1000 people and the number of patient beds per 1000 people does not increase at the same rate. Especially after 2004, there was an obvious increase in the speed of increase. In this context, it can be interpreted that the rate of doctor consultation has increased with the Health Transformation Program.

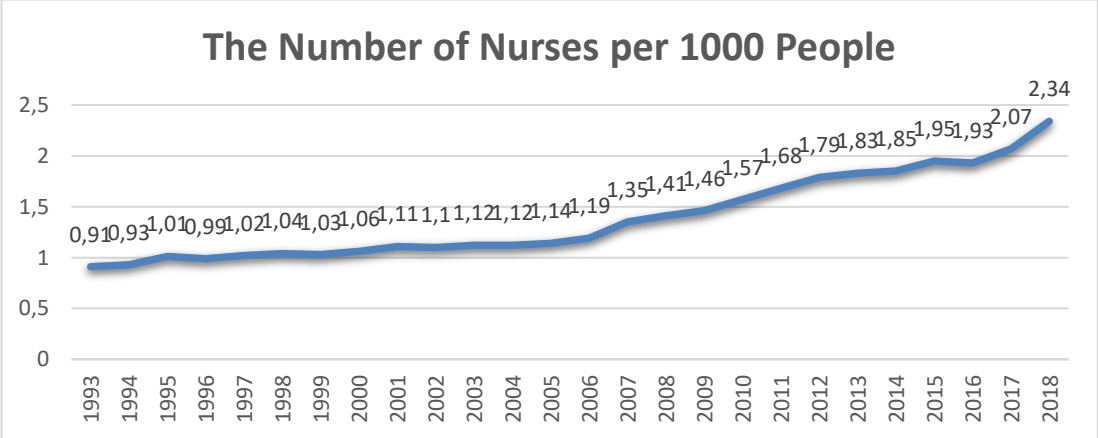


Figure 31: The Number of Nurses per 1000 People Change Over the Years

The number of nurses per 1000 people follows a similar course to the number of physicians per 1000 people over the years. This ratio, which was 0.91 in 1993, reached 2.34 in 2018. In general, it is in a continuous increase trend and has doubled in a similar way to the number of physicians. It is seen that there

is a constant ratio between nurses and physicians. However, it is obvious that the number of nurses should be increased faster than physicians.

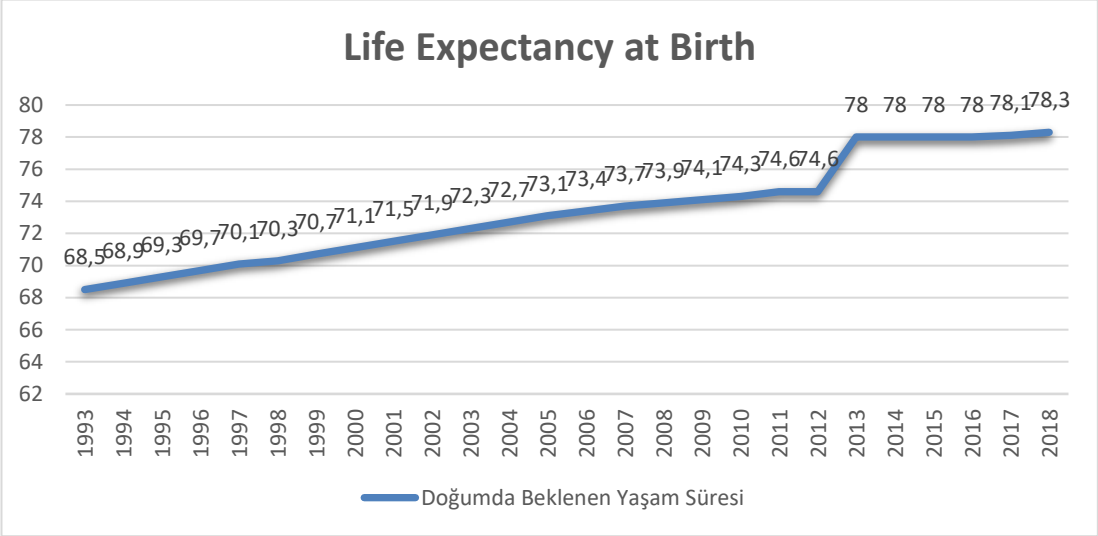


Figure 32: Life Expectancy at Birth Change Over the Years

Life expectancy at birth increased from 68 years in 1993 to 78 years in 2018. It is seen that this indicator shows a continuous increase trend over the years. Life expectancy at birth can be affected by a wide variety of factors. It is stated here that both health indicators and socio-economic factors affect this criteria. On the other hand, lifestyle is one of the factors affecting the life expectancy at birth. Characteristics such as the structure of a health system and accessibility to health services, the quality of health personnel, the quantity and quality of health institutions, individuals' having healthy lifestyle behaviours, and the state of health expenditures directly affect this variable. For example, Kutlu and Mut (2018) found in their study that there are statistically significant differences between life expectancy at birth and the variables of protein consumption and alcohol consumption. In the same study, one unit decrease in alcohol consumption will increase the life expectancy at birth by 0.10; It was found that one unit increase in protein consumption would increase the life expectancy at birth by 0.21.

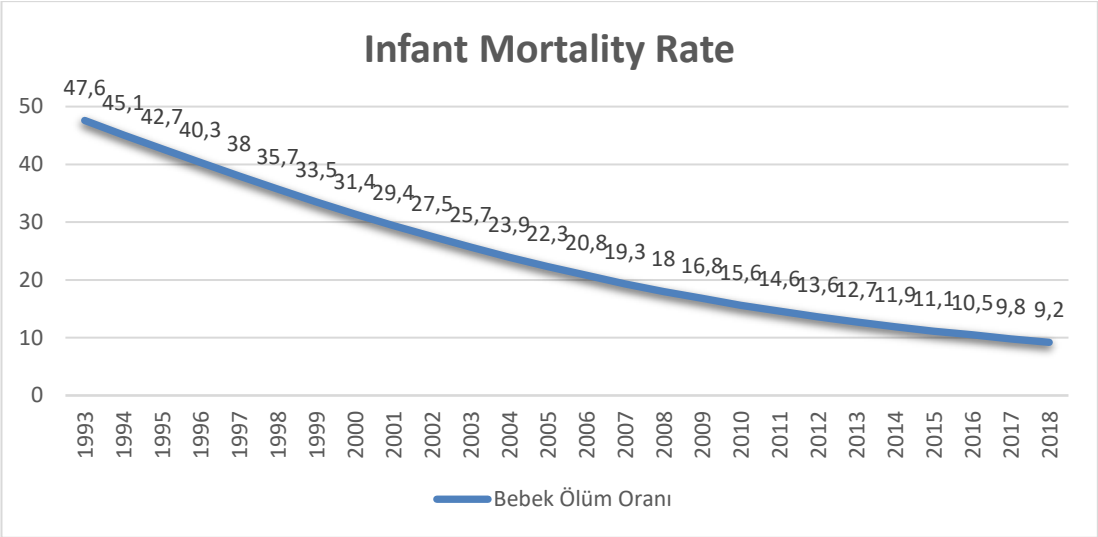


Figure 33: Infant Mortality Rate Change Over The Years

The infant mortality rate per 1000 live births fell from 47 in 1993 to 9.2 in 2018. It generally tends to decrease continuously. Like life expectancy at birth, infant mortality rates are affected by both health and socio-economic variables, and a wide range of studies have been conducted examining factors affecting infant mortality rate.

Health indicators are one of the indicators showing the development level of a country and they are in relation with various variables. It was previously stated that health indicators and economic indicators are mutually related. However, there are also variables such as technological development and R&D studies, epidemics, success in vaccination, cesarean rates, hospital infections, access to health services that may affect these indicators periodically. Health indicators also affect each other. In this sense, other factors affecting health indicators and health indicators that affect each other constitute the sub-elements in big picture.

4.1. VAR MODEL APPLICATION

The abbreviations and expansions used in the model are given in the table below before moving on to the models in which the relationships between variables are examined within the scope of the research;

BEBEKOL	Infant mortality rate
PHYSICIAN	Number of physicians per 1000 people
FHEMSIRE	Number of nurses per 1000 people
FLNGDP	Gross domestic product on a logarithmic basis
FMURACAT	Doctor consultation rate
PRICE	Number of hospital beds per 1000 people

Table 6: VAR Model Abbreviations and Explanations

4.1.1. Stationarity Analysis

Within the scope of the research, after the graphics of the change in the data over the years are presented, the application phase of the VAR model is explained in this section. In order to analyse the data in the VAR model, they must be stationary. For this reason, first of all, the unit root analysis of the data is examined with Augmented Dickey-Fuller (ADF). By taking the differences of the non-stationary data, it has been analysed again whether they become stationary or not. Then, the VAR Model that needs to be established in order to examine the relationships between the data is determined. The findings of the analysis are explained in the tables below.

		Stability	
		t-Statistic	Probe. *
Augmented Dickey-Fuller test statistic		-4.980338	0.0007
Test critical values	1% level	-3.737853	
	5% level	-2.991878	
	10% level	-2.635542	

Table 7: Infant Mortality Rate Stability Analysis

According to the result of the ADF, conducted for the infant mortality rate variable, this data is found to be stable.

Augmented Dickey-Fuller test statistic		Stability		1. Difference	
		t-Statistic	Probe. *	t-Statistic	Probe. *
		-1.974975	0.2946	-7.670051	0.0000
Test critical values	1% level	-3.788030		-3.752946	
	5% level	-3.012363		-2.998064	
	10% level	-2.646119		-2.638752	

Table 8: LNGDP Stability Analysis

According to the result of the ADF it was determined that the LNGDP variable is not static, and the difference should be taken. LNGDP data, which was determined not to be stable in the first difference, became stable with the second difference.

Augmented Dickey-Fuller test statistic		Stability		1. Difference	
		t-Statistic	Probe. *	t-Statistic	Probe. *
		-0.943097	0.7570	-3.575384	0.0144
Test critical values	1% level	-3.737853		-3.752946	
	5% level	-2.991878		-2.998064	
	10% level	-2.635542		-2.638752	

Table 9: Number of Physicians Stationary Analysis

As a result of the ADF, it was determined that the variable of the number of physicians is not stable and the difference should be taken. The number of physicians variable became stable at the first difference.

Augmented Dickey-Fuller test statistic		Stability		2. Difference	
		t-Statistic	Probe. *	t-Statistic	Probe. *
		2.830773	1.0000	-5.918707	0.0001
Test critical values	1% level	-3.737853	-3.752946	-3.752946	
	5% level	-2.991878	-2.998064	-2.998064	
	10% level	-2.635542	-2.638752	-2.638752	

Table 10: Number of Nurse Stationary Analysis

As a result of the ADF, it was determined that the variable of the number of nurses was not stable and the difference should be taken. Number of nurses determined to be unstable in the first difference, became stable at the second difference.

Augmented Dickey-Fuller test statistic		Stability		1. Difference	
		t-Statistic	Probe. *	t-Statistic	Probe. *
		0.441916	0.9808	-3.380503	0.0221
Test critical values	1% level	-3.737853	-3.737853	-3.752946	
	5% level	-2.991878	-2.991878	-2.998064	
	10% level	-2.635542	-2.635542	-2.638752	

Table 11: Doctor Consultation Rate Stationary Analysis

As a result of the ADF, it was determined that the doctor consultation rate variable was not stable, and the difference should be taken. The number of physicians variable became stable at the first difference.

Augmented Dickey-Fuller test statistic		Stability		1. Difference	
		t-Statistic	Probe. *	t-Statistic	Probe. *
		-0.454668	0.8845	-5.583013	0.0001
Test critical values	1% level	-3.737853		-3.752946	
	5% level	-2.991878		-2.998064	
	10% level	-2.635542		-2.638752	

Table 12: Life Expectancy Stationary Analysis

As a result of the ADF, it was determined that the life expectancy variable was not stable, and the difference should be taken. The life expectancy variable has become static at the first difference.

Augmented Dickey-Fuller test statistic		Stability		1. Difference	
		t-Statistic	Probe. *	t-Statistic	Probe. *
		-0.997128	0.7382	-5.623957	0.0001
Test critical values	1% level	-3.737853		-3.752946	
	5% level	-2.991878		-2.998064	
	10% level	-2.635542		-2.638752	

Table 13: Number of Beds Stationary Analysis

As a result of the ADF performed, it was determined that the number of beds variable was not stable, and the difference should be taken. The number of beds variable became stable at the first difference.

Following the stationary analysis, analyses are carried out on the model in which infant mortality rate is considered as the dependent variable. Then, variables related to life expectancy at birth are analysed and interpreted.

4.1.2. Estimating the VAR Model Where Infant Mortality Rate Is Dependent Variable

In the research, VAR (2) fixed term model is established. VAR parameter estimates and associated coefficients are summarized in the table below.

Vector Autoregression Estimates						
Included observations: 22 after adjustments						
Standard errors in () & t-statistics in []						
	BEBEKOL	PHYSICIAN	FHEMSIRE	FLNGDP	FMURACAT	PRICE
BEBEKOL (-1)	1.343195	-0.020579	-0.000244	0.551645	-0.412033	0.394490
	(0.24474)	(0.05817)	(0.18595)	(0.44638)	(0.83897)	(0.32340)
	[5.48830]	[-0.35377]	[-0.00131]	[1.23582]	[-0.49112]	[1.21981]
BABY (-2)	-0.378005	0.014484	0.001669	-0.503438	0.386736	-0.351213
	(0.22975)	(0.05461)	(0.17456)	(0.41904)	(0.78759)	(0.30360)
	[-1.64529]	[0.26524]	[0.00956]	[-1.20141]	[0.49104]	[-1.15684]
FHEKIM (-1)	1.541059	-0.302759	0.613790	0.241710	-1.739774	2.636045
	(1.36771)	(0.32508)	(1.03918)	(2.49457)	(4.68854)	(1.80733)
	[1.12675]	[-0.93132]	[0.59065]	[0.09689]	[-0.37107]	[1.45853]
FHEKIM (-2)	-2.477131	0.335000	-0.227720	-0.878094	-1.644891	-0.898946
	(1.12315)	(0.26696)	(0.85337)	(2.04852)	(3.85019)	(1.48417)
	[-2.20552]	[1.25489]	[-0.26685]	[-0.42865]	[-0.42722]	[-0.60569]
FHEMSIRE (-1)	0.613204	0.019798	-0.203697	0.003195	-1.731966	0.066879
	(0.48525)	(0.11534)	(0.36869)	(0.88505)	(1.66345)	(0.64122)
	[1.26369]	[0.17165]	[-0.55249]	[0.00361]	[-1.04119]	[0.10430]
FHEMSIRE (-2)	-0.257735	0.007304	0.068821	-0.879175	-3.267309	-0.135998
	(0.44783)	(0.10644)	(0.34026)	(0.81679)	(1.53516)	(0.59177)
	[-0.57552]	[0.06862]	[0.20226]	[-1.07638]	[-2.12832]	[-0.22982]
FLNGDP (-1)	-0.180371	0.141998	-0.003982	-0.083879	-0.862719	-0.685864
	(0.18468)	(0.04390)	(0.14032)	(0.33685)	(0.63310)	(0.24405)
	[-0.97664]	[3.23482]	[-0.02837]	[-0.24901]	[-1.36268]	[-2.81037]
FLNGDP (-2)	0.067277	0.133523	-0.192853	0.067752	0.436243	-0.407005
	(0.25774)	(0.06126)	(0.19583)	(0.47009)	(0.88354)	(0.34059)
	[0.26103]	[2.17957]	[-0.98480]	[0.14413]	[0.49374]	[-1.19502]
FMURACAT (-1)	-0.047033	0.038579	-0.016133	-0.113501	0.061146	0.020254
	(0.08802)	(0.02092)	(0.06688)	(0.16054)	(0.30174)	(0.11632)
	[-0.53433]	[1.84396]	[-0.24122]	[-0.70698]	[0.20264]	[0.17413]
FMURACAT (-2)	-0.132959	0.046492	0.041088	-0.047960	0.319979	-0.212470
	(0.09382)	(0.02230)	(0.07128)	(0.17111)	(0.32160)	(0.12397)
	[-1.41724]	[2.08497]	[0.57642]	[-0.28029]	[0.99495]	[-1.71387]
PRICE (-1)	0.310899	-0.068614	-0.081212	0.105095	0.652695	0.080584
	(0.25555)	(0.06074)	(0.19417)	(0.46611)	(0.87605)	(0.33770)
	[1.21656]	[-1.12960]	[-0.41825]	[0.22547]	[0.74505]	[0.23863]
PRICE (-2)	-0.224946	0.031042	0.002145	0.074405	0.227734	-0.441377
	(0.18883)	(0.04488)	(0.14347)	(0.34440)	(0.64731)	(0.24952)
	[-1.19127]	[0.69164]	[0.01495]	[0.21604]	[0.35182]	[-1.76888]
C	0.014292	0.034546	0.064030	0.081438	0.641449	-0.056878
	(0.09284)	(0.02207)	(0.07054)	(0.16932)	(0.31825)	(0.12268)
	[0.15394]	[1.56560]	[0.90776]	[0.48095]	[2.01558]	[-0.46364]
R-squared	0.999972	0.763609	0.523602	0.852747	0.692323	0.699373
Adj. R-squared	0.999934	0.448420	-0.111596	0.656410	0.282088	0.298537
Sum sq. resids	0.047473	0.002682	0.027406	0.157925	0.557874	0.082896
SE equation	0.072628	0.017263	0.055182	0.132466	0.248970	0.095973
F-statistic	26673.03	2.422703	0.824313	4.343286	1.687625	1.744787
Log likelihood	36.30831	67.91806	42.35179	23.08679	9.204671	30.17661
Akaike AIC	-2.118937	-4.992551	-2.668345	-0.916981	0.345030	-1.561510

Schwarz SC	-1.474230	-4.347844	-2.023638	-0.272274	0.989737	-0.916803
Mean dependent	20.51364	0.035455	0.048182	0.272425	0.340909	0.024545
SD dependent	8.966567	0.023243	0.052339	0.225988	0.293840	0.114589
Determinant resid covariance (dof adj.)		1.58E-15				
Determinant resid covariance		7.40E-18				
Log likelihood		246.6006				
Akaike information criterion		-15.32732				
Schwarz criterion		-11.45908				
Number of coefficients		78				

Table 14: VAR parameter estimates and associated coefficients

The model established for the situation in which the infant mortality rate is the dependent variable in the VAR Model;

BEBEKOL = C (1) * BEBEKOL (-1) + C (2) * BEBEKOL (-2) + C (3) * FHEKIM (-1) + C (4) * FHEKIM (-2) + C (5) * FHEMSIRE (-1) + C (6) * FHEMSIRE (-2) + C (7) * FLNGDP (-1) + C (8) * FLNGDP (-2) + C (9) * FMURACAT (-1) + C (10) * FMURACAT (-2) + C (11) * FYATAK (-1) + C (12) * FYATAK (-2) + C (13)

Probability values for the model are summarized in the table below.

Estimation Method: Least Squares
Included observations: 22
Total system (balanced) observations 132

	Coefficient	Std. Error	t-Statistic	Probe.
C (1)	1.343195	0.244738	5.488296	0.0000
C (2)	-0.378005	0.229750	-1.645290	0.1057
C (3)	1.541059	1.367708	1.126745	0.2648
C (4)	-2.477131	1.123151	-2.205518	0.0317
C (5)	0.613204	0.485250	1.263687	0.2118
C (6)	-0.257735	0.447826	-0.575525	0.5673
C (7)	-0.180371	0.184685	-0.976645	0.3331
C (8)	0.067277	0.257740	0.261028	0.7951
C (9)	-0.047033	0.088022	-0.534334	0.5953
C (10)	-0.132959	0.093816	-1.417242	0.1622
C (11)	0.310899	0.255555	1.216564	0.2291
C (12)	-0.224946	0.188829	-1.191272	0.2388
C (13)	0.014292	0.092837	0.153944	0.8782
C (14)	-0.020579	0.058171	-0.353771	0.7249
C (15)	0.014484	0.054608	0.265239	0.7918
C (16)	-0.302759	0.325084	-0.931323	0.3558
C (17)	0.335000	0.266957	1.254886	0.2149
C (18)	0.019798	0.115337	0.171652	0.8644
C (19)	0.007304	0.106442	0.068619	0.9455
C (20)	0.141998	0.043897	3.234817	0.0021
C (21)	0.133523	0.061261	2.179565	0.0337
C (22)	0.038579	0.020922	1.843958	0.0707
C (23)	0.046492	0.022299	2.084971	0.0418
C (24)	-0.068614	0.060742	-1.129604	0.2636
C (25)	0.031042	0.044882	0.691635	0.4921
C (26)	0.034546	0.022066	1.565603	0.1233
C (27)	-0.000244	0.185951	-0.001312	0.9990
C (28)	0.001669	0.174563	0.009564	0.9924

C (29)	0.613790	1.039181	0.590648	0.5572
C (30)	-0.227720	0.853367	-0.266848	0.7906
C (31)	-0.203697	0.368691	-0.552485	0.5829
C (32)	0.068821	0.340257	0.202262	0.8405
C (33)	-0.003982	0.140323	-0.028375	0.9775
C (34)	-0.192853	0.195830	-0.984797	0.3291
C (35)	-0.016133	0.066879	-0.241222	0.8103
C (36)	0.041088	0.071281	0.576419	0.5667
C (37)	-0.081212	0.194170	-0.418254	0.6774
C (38)	0.002145	0.143471	0.014951	0.9881
C (39)	0.064030	0.070537	0.907757	0.3680
C (40)	0.551645	0.446378	1.235824	0.2219
C (41)	-0.503438	0.419041	-1.201406	0.2348
C (42)	0.241710	2.494566	0.096894	0.9232
C (43)	-0.878094	2.048519	-0.428648	0.6699
C (44)	0.003195	0.885048	0.003610	0.9971
C (45)	-0.879175	0.816790	-1.076378	0.2865
C (46)	-0.083879	0.336847	-0.249012	0.8043
C (47)	0.067752	0.470093	0.144125	0.8859
C (48)	-0.113501	0.160544	-0.706980	0.4826
C (49)	-0.047960	0.171111	-0.280289	0.7803
C (50)	0.105095	0.466107	0.225474	0.8225
C (51)	0.074405	0.344405	0.216038	0.8298
C (52)	0.081438	0.169325	0.480955	0.6325
C (53)	-0.412033	0.838968	-0.491118	0.6253
C (54)	0.386736	0.787587	0.491039	0.6254
C (55)	-1.739774	4.688535	-0.371070	0.7120
C (56)	-1.644891	3.850189	-0.427224	0.6709
C (57)	-1.731966	1.663447	-1.041191	0.3024
C (58)	-3.267309	1.535156	-2.128323	0.0379
C (59)	-0.862719	0.633103	-1.362684	0.1786
C (60)	0.436243	0.883540	0.493744	0.6235
C (61)	0.061146	0.301742	0.202642	0.8402
C (62)	0.319979	0.321602	0.994953	0.3242
C (63)	0.652695	0.876047	0.745046	0.4595
C (64)	0.227734	0.647309	0.351817	0.7263
C (65)	0.641449	0.318246	2.015578	0.0488
C (66)	0.394490	0.323404	1.219805	0.2278
C (67)	-0.351213	0.303598	-1.156838	0.2524
C (68)	2.636045	1.807330	1.458530	0.1505
C (69)	-0.898946	1.484165	-0.605691	0.5473
C (70)	0.066879	0.641223	0.104300	0.9173
C (71)	-0.135998	0.591770	-0.229816	0.8191
C (72)	-0.685864	0.244048	-2.810370	0.0069
C (73)	-0.407005	0.340586	-1.195015	0.2373
C (74)	0.020254	0.116315	0.174133	0.8624
C (75)	-0.212470	0.123971	-1.713872	0.0923
C (76)	0.080584	0.337697	0.238629	0.8123
C (77)	-0.441377	0.249524	-1.768880	0.0826
C (78)	-0.056878	0.122677	-0.463637	0.6448
Determinant residual covariance		7.40E-18		

Table 15: VAR (2) Probability Values for the Model

Although the model includes probability values for the coefficients, it is not possible to interpret the coefficients estimated here. There are 78 parameters.

VAR Model generally looks at the impulse-response functions, variance decomposition and short-term causality relationship between series.

It is important to make the right decision on the number of lags in the VAR model. The table below is used to estimate the lag order;

VAR Lag Order Selection Criteria
Endogenous variables: BEBEKOL FHEKIM FHEMSIRE FLNGDP FMURACAT FYATAK
Exogenous variables: C
Included observations: 22

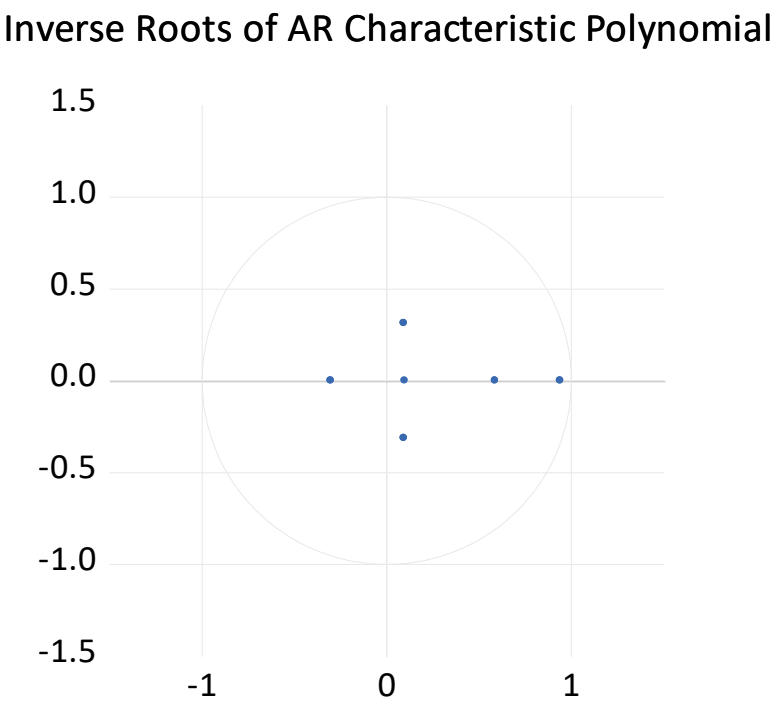
Lag	LogL	LR	FPE	AIC	SC	HQ
0	47.53721	NA	9.23e-10	-3.776110	-3.478553	-3.706015
one	185.1760	187.6893 *	1.03e-13	-13.01600	-10.93310	-12.52533
2nd	246.6006	50.25644	2.56e-14 *	-15.32732 *	-11.45908 *	-14.41608 *

* indicates lag order selected by the criterion
LR: sequential modified LR test statistic (each test at 5% level)
FPE: Final prediction error
AIC: Akaike information criterion
SC: Schwarz information criterion
HQ: Hannan-Quinn information criterion

Table 16: VAR (2) Lag Order Selection

As the result of the analysis, the points where the AIC and SC values are the smallest are shown with asterisks. Therefore, as a result of the analysis, it has been confirmed that the model to be established is VAR (2) Model.

In order to test the suitability of the selected VAR model, first of all, the fact that the autoregressive characteristic roots of the VAR equation system are less than 1 in absolute value indicates that the system consists of stationary variables. The graph below is used to test this situation;



Graph 2: Suitability of VAR Model 1

Graph 3: Suitability of VAR Model 2**Graph 4:** Suitability of VAR Model 1

As can be seen, all points remain within the circle. In this respect, it can be stated that the model used is correct.

After testing the accuracy of the model, LM Test is examined whether there is a delay-level autocorrelation problem selected for the model.

VAR Residual Serial Correlation LM Tests
Included observations: 23

Null hypothesis: No serial correlation at lag h

Lag	LRE * stat	df	Probe.	Rao F-stat	df	Probe.
one	54.66549	36	0.0238	1.859001	(36, 24.7)	0.0550
2nd	34.69345	36	0.5307	0.890555	(36, 24.7)	0.6313

Table 17: Autocorrelation LM Test 1

As a result of the LM test, it is determined that there is no autocorrelation problem in the model at the second delay.

4.1.2.1. Variance Decomposition

In the analysis of variance decomposition, the source of the change in the variance of each variable is investigated. The table contains the results of the variance decomposition for the ten-year period;

Variance Decomposition of BEBEKOL:

Period	SE	BEBEKOL	PHYSICIAN	FHEMSIRE	FLNGDP	FMURACAT	PRICE
one	0.072628	100.0000	0.000000	0.000000	0.000000	0.000000	0.000000
2nd	0.124688	90.28205	0.177593	3.902468	2.571955	1.272888	1.793051
3	0.172228	90.14956	0.330829	4.064185	1.922511	2.591606	0.941311
4	0.224223	85.58899	1.686813	6.218742	1.345297	4.507554	0.652602
5	0.273291	79.25261	2.984078	9.442250	0.994971	6.818182	0.507910
6	0.321401	75.63629	3.585821	11.25085	1.005307	8.071976	0.449757
7	0.365072	73.70515	3.808521	12.41355	0.989835	8.592144	0.490801
8	0.403892	72.97356	4.044056	13.17999	0.863623	8.368948	0.569821
9	0.433991	72.68216	4.197193	13.67080	0.783056	8.079041	0.587741
10	0.454866	72.85127	4.257242	13.68242	0.792154	7.838875	0.578036

Table 18: Variance Decomposition Results 1

As a result of the analysis carried out, it is determined that the total change in infant mortality rate is related to itself in the first year. It is determined that the total change in infant mortality rate in the second year is related to itself at a rate of 90%, and the remaining part is related to the number of nurses (3.9%) and to LNGDP (2.57%). At the end of ten years, 72% of the total change in infant mortality is related to itself, the part explained with the number of nurses variable is 13%, the part explained with the doctor consultation is 7.83% and the part explained with the number of physicians is 4.25%. Regarding the infant mortality rate, it is seen that the interaction is almost stabilized from the fifth year.

4.1.2.2. Causality Analysis

Within the scope of the research, causality analysis is carried out depending on the VAR Model. Since dependent variables and independent variables cannot be defined precisely here, simultaneous equation systems are needed. The causality analysis performed according to the model in which the infant mortality rate is dependent is as follows

VAR Granger Causality / Block Exogeneity Wald Tests
Included observations: 22

Dependent variable: BEBEKOL

Excluded	Chi-sq	df	Probe.
PHYSICIAN	4.885202	2nd	0.0869
FHEMSIRE	1.932173	2nd	0.3806
FLNGDP	0.987228	2nd	0.6104
FMURACAT	2.915672	2nd	0.2327
PRICE	2.833954	2nd	0.2424
All	8.463463	10	0.5837

Table 19: Infant Mortality Causality Analysis

As can be seen in the table, there is no causal relationship between the variables included in the model and infant mortality rate according to the analysis performed. However, when the number of physicians is considered as the dependent variable according to the model, a causal relationship is found between the variables;

Dependent variable: FHEKIM

Excluded	Chi-sq	df	Probe.
BEBEKOL	10.24279	2nd	0.0060
FHEMSIRE	0.034108	2nd	0.9831
FLNGDP	16.46095	2nd	0.0003
FMURACAT	10.59627	2nd	0.0050
PRICE	1.719317	2nd	0.4233
All	24.88135	10	0.0056

Table 20: Number of Physicians Causality Analysis

As can be seen in the table, a short-term causal relationship is found between the variables included in the model and the number of physicians according to the analysis performed. The direction of this causality can be accurately expressed to the number of physicians from the infant mortality rate, LNGDP and the number of doctor consultation.

4.1.3. Estimating the Var Model Where Life Expectancy Is Dependent Variable

VAR (1) constant term model is established in the research. VAR parameter estimates and associated coefficients are summarized in the table below.

The model established for the case where life expectancy is the dependent variable in the VAR Model;

FYASAMBEK = C (1) * FYASAMBEK (-1) + C (2) * FHEKIM (-1) + C (3) * FHEMSIRE (-1) + C (4) * FLNGDP (-1) + C (5) * FMURACAT (-1) + C (6) * FYATAK (-1) + C (7)

Probability values for the model are summarized in the table below.

Estimation Method: Least Squares
Included observations: 23
Total system (balanced) observations 138

	Coefficient	Std. Error	t-Statistic	Probe.
C (1)	-0.304527	0.236649	-1.286828	0.2012
C (2)	2.508193	7.174189	0.349613	0.7274
C (3)	4.627892	3.539269	1.307584	0.1941
C (4)	0.116675	0.673322	0.173282	0.8628
C (5)	-0.784677	0.570353	-1.375774	0.1721
C (6)	-0.141113	1.534008	-0.091990	0.9269
C (7)	0.435208	0.538082	0.808814	0.4206
C (8)	-0.010787	0.007183	-1.501833	0.1364
C (9)	0.300444	0.217749	1.379769	0.1709
C (10)	0.120585	0.107423	1.122525	0.2644
C (11)	0.039171	0.020436	1.916722	0.0582
C (12)	0.017640	0.017311	1.018976	0.3108
C (13)	-0.049422	0.046560	-1.061473	0.2911
C (14)	0.006053	0.016332	0.370657	0.7117
C (15)	-0.008748	0.017346	-0.504322	0.6152
C (16)	0.227831	0.525855	0.433258	0.6658
C (17)	-0.048526	0.259422	-0.187054	0.8520
C (18)	-0.098362	0.049353	-1.993017	0.0491
C (19)	0.011500	0.041806	0.275078	0.7838
C (20)	-0.029838	0.112440	-0.265365	0.7913
C (21)	0.075283	0.039440	1.908780	0.0593
C (22)	-0.006603	0.047410	-0.139268	0.8895
C (23)	-1.384779	1.437282	-0.963471	0.3377
C (24)	-0.354824	0.709059	-0.500415	0.6179
C (25)	0.741562	0.134894	5.497383	0.0000
C (26)	-0.103041	0.114265	-0.901777	0.3694
C (27)	-0.215217	0.307324	-0.700294	0.4854
C (28)	0.161733	0.107800	1.500309	0.1368
C (29)	-0.001031	0.094235	-0.010944	0.9913
C (30)	0.355155	2.856796	0.124320	0.9013
C (31)	-2.229699	1.409354	-1.582072	0.1169
C (32)	-0.420233	0.268120	-1.567334	0.1203
C (33)	0.267644	0.227117	1.178437	0.2415
C (34)	0.703058	0.610849	1.150952	0.2526
C (35)	0.453593	0.214267	2.116953	0.0368
C (36)	-0.003512	0.041518	-0.084584	0.9328
C (37)	1.036218	1.258646	0.823280	0.4124

C (38)	0.087483	0.620932	0.140890	0.8883
C (39)	-0.092289	0.118128	-0.781259	0.4366
C (40)	0.028415	0.100063	0.283973	0.7770
C (41)	-0.020242	0.269128	-0.075214	0.9402
C (42)	0.007551	0.094402	0.079984	0.9364
Determinant residual covariance		2.16E-13		

Table 21: VAR (1) Probability Values for the Model

Although the model includes probability values for the coefficients, it is not possible to interpret the coefficients estimated here. There are 42 parameters here. VAR Model generally looks at the impulse-response functions, variance decomposition and short-term causality relationship between series.

It is important to make the right decision on the number of lags in the VAR model. The table below is used to estimate the lag order;

VAR Lag Order Selection Criteria
Endogenous variables: FYASAMBEK FMURACAT FLNGDP FHEMSIRE FHEKIM FYATAK
Exogenous variables: C
Included observations: 22

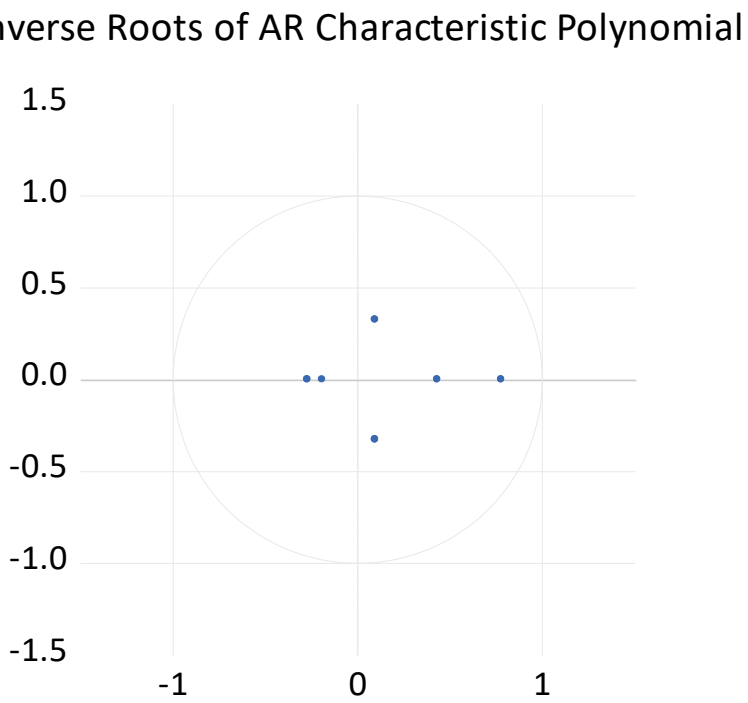
Lag	LogL	LR	FPE	AIC	SC	HQ
0	87.34634	NA	2.48e-11	-7.395122	-7.097565 *	-7.325027
one	134.3809	64.13797 *	1.04e-11	-8.398260	-6.315360	-7.907591
2nd	182.2706	39.18249	8.87e-12 *	-9.479142 *	-5.610901	-8.567901 *

* indicates lag order selected by the criterion
LR: sequential modified LR test statistic (each test at 5% level)
FPE: Final prediction error
AIC: Akaike information criterion
SC: Schwarz information criterion
HQ: Hannan-Quinn information criterion

Table 22: VAR (1) Delay Number Selection

As a result of the analysis, it has been confirmed that the model to be established is VAR (1) Model.

In order to test the suitability of the selected VAR model, first of all, the fact that the autoregressive characteristic roots of the VAR equation system are less than 1 in absolute value indicates that the system consists of stationary variables. The graph below is used to test this situation;



Graph 5: Suitability of VAR Model 2

Graph 6: Suitability of VAR Model 2

As can be seen, all points remain within the circle. In this respect, it can be stated that the model used is correct.

After testing the accuracy of the model, the presence of an autocorrelation problem at the delay level selected for the model is examined with the LM Test.

VAR Residual Serial Correlation LM Tests
Included observations: 23

Null hypothesis: No serial correlation at lag h

Lag	LRE * stat	df	Probe.	Rao F-stat	df	Probe.
one	37.18371	36	0.4143	0.987567	(36, 24.7)	0.5226
2nd	46.66425	36	0.1098	1.414732	(36, 24.7)	0.1850

Table 23: Autocorrelation LM Test 2

As a result of the LM test, it has been determined that there is no autocorrelation problem in the model.

4.1.3.1. Variance Decomposition

In the analysis of variance decomposition, the source of the change in the variance of each variable is investigated. The table contains the results of the variance decomposition for the ten-year period;

Variance Decomposition of FYASAMBEK:							
Period	SE	FYASAMBEK	PHYSICIAN	FHEMSIRE	FLNGDP	FMURACAT	PRICE
one	0.702684	100.0000	0.000000	0.000000	0.000000	0.000000	0.000000
2nd	0.780624	84.22125	0.808544	7.706270	0.097546	7.154586	0.011803
3	0.789940	82.37589	1.571056	7.958402	0.102529	7.616599	0.375524
4	0.790254	82.33453	1.602084	7.966734	0.107789	7.612270	0.376592
5	0.790329	82.32466	1.606703	7.971197	0.109033	7.611619	0.376786
6	0.790361	82.31808	1.609848	7.970888	0.109492	7.614914	0.376774
7	0.790366	82.31695	1.610086	7.971224	0.109713	7.615162	0.376871
8	0.790369	82.31637	1.610328	7.971241	0.109894	7.615270	0.376894
9	0.790371	82.31604	1.610495	7.971220	0.110012	7.615333	0.376900
10	0.790372	82.31582	1.610604	7.971207	0.110083	7.615381	0.376902

Table 24: Variance Decomposition Results 2

As a result of the analysis carried out, it is determined that the total change in life expectancy is related to itself in the first year. In the second year, it is determined that the total change in life expectancy is related to itself at a rate of 84%, is related to the number of physicians at a rate of 8%, is related to the number of nurses at a rate of 7%. At the end of ten years, 82% of the total change in life expectancy is related to itself, the part explained with the number of nurses variable is 13%, the part explained with the number of doctor consultation is 7.97% and the part explained with the number of physicians is 1.61%. Regarding life expectancy, it appears that from the third year on, the interaction is almost stabilized.

4.1.3.2. Causality Analysis

Within the scope of the research, causality analysis is carried out depending on the VAR Model. Since dependent variables and independent variables

cannot be defined precisely here, simultaneous equation systems are needed. The causality analysis performed according to the model in which life expectancy is the dependent variable is as follows;

VAR Granger Causality / Block Exogeneity Wald Tests
Included observations: 23

Dependent variable: FYASAMBEK

Excluded	Chi-sq	df	Probe.
PHYSICIAN	0.122230	one	0.7266
FHEMSIRE	1.709776	one	0.1910
FLNGDP	0.030027	one	0.8624
FMURACAT	1.892754	one	0.1689
PRICE	0.008462	one	0.9267
All	3.556992	5	0.6148

Table 25: Life Expectancy Causality Analysis

As can be seen in the table, there is no causal relationship between the variables included in the model and life expectancy according to the analysis.

DISCUSSION

Within the scope of the research, first of all, the VAR (2) model, in which infant mortality rate is the dependent variable, is established. According to this model, a causal relationship could not be determined between the number of physicians, number of nurses, LNGDP, doctor consultation, hospital beds (independent variables) and infant mortality rate. In addition, the VAR (1) model, in which life expectancy is the dependent variable, is established in the second step within the scope of the research. According to the VAR(1) model, a causal relationship could not be found between the number of physicians, number of nurses, LNGDP, doctor consultation, hospital beds (independent variables) and life expectancy. On the other hand, it is an obvious fact that some indicators considered as independent variables in this research model can be considered as dependent variables in another model. In addition, in order to interpret the results more healthily, it can be considered as an idea that the data of countries with characteristics similar to Turkey can be included in the model. However, examining health indicators by considering the situation in countries that have similar and different various characteristics than Turkey can provide a more detailed framework on the subject.

There are many studies on the subject in the literature. Sonğur (2016) examined how OECD countries cluster according to various health indicators and analysed the differences in health indicators among clusters. In the study, 12 health indicators are analysed, and it is found that there are statistically significant differences between the clusters in terms of 10 indicators. According to the study, Turkey is in the same cluster as Israel, Chile and Mexico, and the health system of the countries in the same cluster, with exceptions, is very similar. In addition, in this study, it is found that although the USA has the highest per capita health expenditure level among OECD countries, it is behind the countries with much lower per capita health expenditure in many health indicators. In this context, it would not be wrong to say that health expenditures can only increase the health level together with other efforts (Sonğur, 2016). A similar study was carried out by Ersöz (2009).

According to this study, Turkey is among the 10 countries that later joined the OECD countries and is similar to these countries in terms of health indicators (Ersöz, 2009).

In the study conducted by Şener and Yiğit (2017), it is aimed to measure the technical efficiency of the health systems of OECD countries with the data envelopment analysis method. Thus, as a result of the research, some suggestions are made by determining the productive countries and the non-productive countries. In the study, the number of hospital beds per person, the number of physicians per person, the health expenditure per person, the number of MRIs per person and the rate of smoking are used as inputs, while infant mortality rate and healthy life expectancy are used as outputs. In this study, it is determined that Turkey was among the efficient countries (Sener and Yigit, 2017).

In their study, Gürbüz and Karabulut (2009) examined the relationship between the average life expectancy indicator in post-communist countries and the socio-economic variables thought to affect this indicator. In this study, linear regression models are used to examine the functional relationships between dependent variable and independent variables. As a result of the research, it is revealed that there are statistically significant relationships between many demographic, environmental and socio-economic variables and average life expectancy (Gürbüz & Karabulut, 2009).

Bayın (2016) conducted a study to determine the factors affecting the life expectancy at birth and at the age of 65 for men and women. In this study, life expectancy at birth and at the age of 65 are the dependent variables, perceived health status, number of hospital beds, per capita national income, per capita health expenditure, drug consumption expenditure per capita, maternal mortality rate, infant mortality rate, number of days of hospitalization, number of doctor visits, urban population ratio are determined as independent variables in the regression model. As a result of the analyses, it is determined that the variable that affected the life expectancy at birth mostly is the infant

mortality rate and the variable that has the most impact on the life expectancy variable at age 65 is the health expenditures per person and the level of health care use (number of doctor visits and hospitalization days) (Bayın, 2016). Some of the variables included in the model in this study are also included in the current research model, but a causal relationship between variables could not be determined.

In a similar study, Tüylüoglu and Tekin (2009) examined the relationship between income level and health expenditures with the life expectancy at birth and infant mortality rate. With the data from 176 countries in 2003, a multiple regression model is established and it is founded that health expenditures are more effective than income level on life expectancy and infant mortality rate. Therefore, it has been concluded that increasing the income level alone is insufficient to improve these health indicators and health expenditures should also be increased (Tuyluoglu & Tekin, 2009).

Barlas et al. (2014) examined in his studies the variability of infant mortality rates in different regions of Turkey and conducted correlation analysis in the examination of variables associated with infant mortality rate. Accordingly, in 2012, the Middle East Anatolia is the region with the highest infant mortality rate. In addition, a statistically significant negative strong relationship is found between the infant mortality rate and the birth rates in health institutions, antenatal care and primary care physician consultation between 2009-2012. In the regression model conducted with these three variables and infant mortality rate, the model was found to be significant, and it is found that three variables explained the infant mortality rate variance by 94% (Barlas et al., 2014).

Kabir (2008) classified countries as having low-medium-high life expectancy at birth in his study aiming to examine the socio-economic determinants of life expectancy at birth in 91 developing countries, and then included the explanatory variables affecting these indicators to the model. Accordingly, it is revealed that most of the explanatory variables are not statistically significant; This means that socioeconomic factors such as per capita income, education,

health expenditures, access to safe water and urbanization are not always effective in determining life expectancy in developing countries. Therefore, it is stated in the study that countries should apply social policies that will increase access to the health services, improve health literacy and prevent poor eating conditions with these explanatory variables (Kabir, 2008).

CONCLUSION

There are many studies that reveal the effects of both socio-economic indicators and health indicators on life expectancy at birth and infant mortality rates in a country. In this study, the relationship of variables such as GDP, patient bed, number of physicians and nurses, number of physician visits, with life expectancy at birth and infant mortality rate is examined, and it is found that there is no statistically significant, causal relationship between the variables. On the other hand, this study has left the health system, Turkey's unique geographical-social characteristics, risks, lifestyle and behaviors out of the model. In addition, the most up-to-date data on the variables belong to 2018, and it can be very difficult to access comprehensive, complete data of long-term series in terms of many variables. In this sense, data related to a period that is not considered too long in terms of time series could be examined in the study.

In future studies, it is recommended to examine the relationship between variables that are not included in this study and health indicators, and the use of long-term data of the variables in models will make the results more reliable. In addition, health and economic policies should be implemented to increase the level of health, as well as municipal services such as access to clean water, treatment, waste management should be in line with health policies. On the other hand, it should be aimed to bring health facilities and health workforce to the level of developed countries both in terms of quantity and quality. In addition, improvements such as ensuring access to basic health goods and services need to be made. Efforts should be made to increase the human capital stock by investing in the health system in order to raise the public health to a much better level. Obstacles to a sustainable growth should be removed by having a healthy society and Turkey's economy must be improved to the to the level of developed countries. First of all, critical regions in the country should be given priority in order to reduce and prevent infant mortality. It is recommended to increase the number of healthcare personnel, increase the number of beds, and ensure efficient use of beds in hospitals. In addition to

the general education in health services, it is necessary to increase the education and awareness of mothers, increase the education of health personnel, increase the medical faculties and health schools, increase the preventive health services, make the income distribution as fair as possible in the country, and increase the number of insured individuals. Comparisons made with health indicators are very important in terms of revealing the success of the health service and taking necessary precautions.

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2000 – Present Acıbadem International Hospital - Neonatal Nurse

PUBLICATIONS

Articles published in international journals:

Effects of Some Indicators on Life Expectancy at Birth and Infant Mortality Rates in Turkey

Authors: Songül CAN, Barış KOYUNCU, Abdulkadir ISIK

Revista Argentina de Clínica Psicológica 2020, Vol. XXIX, N°5, 911-981

DOI: 10.24205/03276716.2020.7012.

A Review on the Economic Effects of Tobacco Consumption and Tobacco Control Policies

Authors: Emel Basol, Songül Can

BJSS Balkan Journal of Social Sciences / Volume: 4, No/Issue:7, 2015

SPEECHES

6th International Health and Hospital Management Congress/Antalya (16-19 December 2015)

Subject: Comparison Of The Health Systems in Brazil, Portugal, Turkey

Subject: Workload in Neonatal Nursing

International Health Administration and Education Congress /Istanbul (March 2015)

Subject: Financing of Health Services, Alternatives and Trends

17th National Neonatology Congress/Izmir (UNEKO-17) (27-30 April 2009)

Subject: Congenital Thrombophilia Case

26th National Neonatology Congress/TRNC (14-18 April 2018)

Subject: Neonatal Nursing Course / What should we pay attention to in the care of the premature baby?

Subject: Individualized Developmental Care

CERTIFICATES

Ministry of Health Neonatal Resuscitation Program Practitioner Certificate (June 2006)

Ministry of Health Neonatal Resuscitation Program Practitioner Information Update
(April 2009)

Ministry of Health Neonatal Resuscitation Program Practitioner Educator Training
(April 2009)

Ministry of Health Neonatal Intensive Care Nursing
(March–April 2012)

Provincial Health Directorate Breast Milk Promotion and Baby Friendly Hospitals Program
(May 2007-2014)

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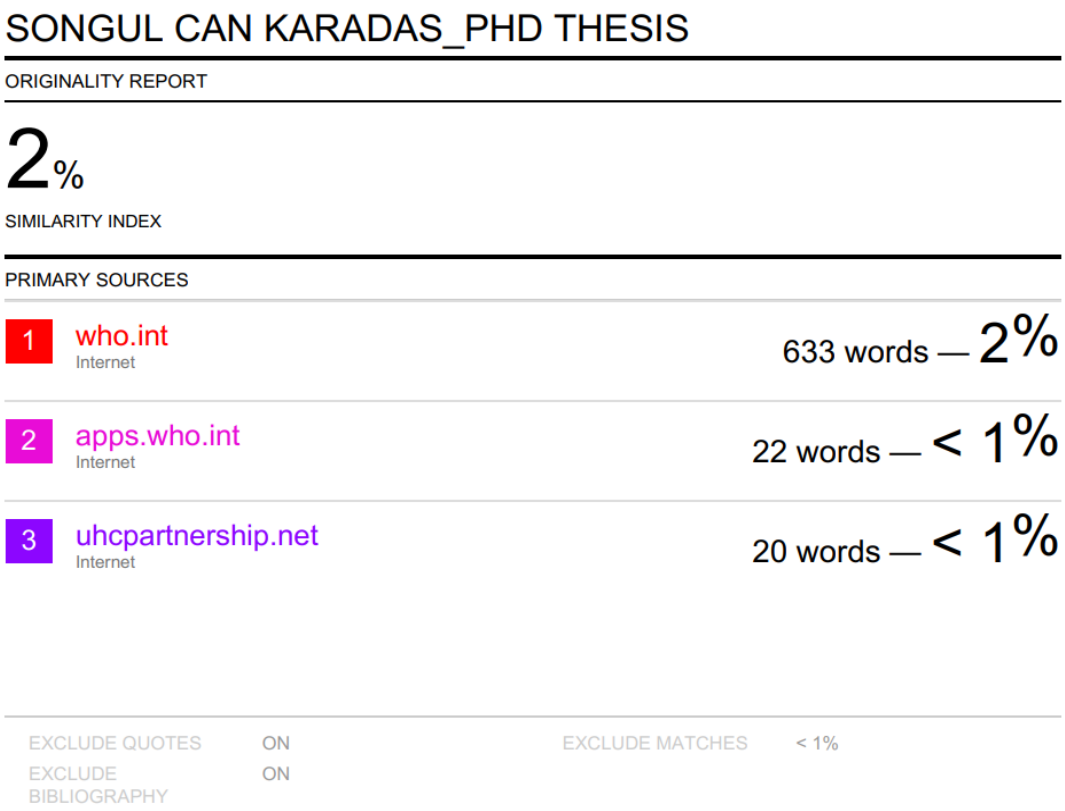

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