

An Analysis of the Last 50 Years of Oral and Dental Health Services in Turkey from a Health Management Perspective¹

Türkiye'deki Ağız Diş Sağlığı Hizmetlerinin Son 50 Yılı'nın Sağlık Yönetimi Bakış Açısıyla Analizi

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ABSTRACT

This study was conducted to analyze the oral and dental health services in Turkey from the perspective of health management in the last 50 years.

This study is a cross-sectional study made in the form of a registry scan. Data were obtained by examining the statistical annuals for the years 1970-2019 published by the Ministry of Health. The data obtained are presented in tables and graphs.

The ratio of dentists working under the Ministry of Health in Turkey to all dentists in the country increased from 5.4% to 34.6% in 50 years. It was determined that the rate of dentists working in public institutions increased from 12.6% to 47.9%. Again, while the number of dentists per 100,000 people has increased approximately 4 times in 50 years, the number of applications to the dentist per capita has increased 670 times and the number of dental units has increased approximately 25 times. In 1970, 60% of the patients who applied to oral and dental health services had tooth extraction; It was determined that this number decreased to 20% in 2017. In the last 50 years, there has been an increase in canal, filling, implant and orthodontic treatments in dental treatment services. It has been determined that there has been a significant increase in the number of dental faculties and student quotas in the last 20 years.

In the statistical annuals published by the Ministry of Health in the last 50 years, it has been determined that the statistics on oral and dental health services do not have a standard format and the data are not regular. It has been determined that the number of dentists is insufficient when compared to developed countries. Although there have been significant improvements in public oral and dental health services over the years, there is still an unmet demand; For this reason, it is thought that increasing the number and capacity of public institutions and the Social Security Institution's agreement with private health institutions will provide a significant improvement in terms of health management and public health.

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ÖZET

Bu çalışma, son 50 yılda Türkiye'deki ağız diş sağlığı hizmetlerini sağlık yönetimi bakış açısıyla analizi etmek amacıyla yapılmıştır.

Bu çalışma; kayıt tarama şeklinde yapılmış kesitsel bir çalışmadır. Sağlık Bakanlığının yayınlamış olduğu 1970-2019 yıllarına ait istatistik yıllıkları incelenerek veriler elde edilmiştir. Elde edilen veriler tablolar ve grafikler halinde sunulmuştur.

Türkiye'de Sağlık Bakanlığı bünyesinde çalışan diş hekimlerinin ülkedeki tüm diş hekimlerine oranının 50 yılda %5,4'ten %34,6'ya; kamu kurumlarında çalışan diş hekimlerinin oranının ise %12,6'dan %47,9'a yükseldiği tespit edilmiştir. Yine 100.000 kişiye düşen diş hekimi sayısı 50 yılda yaklaşık 4 kat artmış iken, kişi başı diş hekimine başvuru sayısı 670 kat, diş üniti sayısı ise yaklaşık 25 kat artmıştır. 1970 yılında ağız diş sağlığı hizmetlerine başvuran hastaların %60'ında diş çekimi yapılırken; bu sayının 2017 yılında %20'ye düştüğü tespit edilmiştir. Diş tedavisi hizmetlerinde son 50 yıllık süre içerisinde kanal, dolgu, implant, ortodonti tedavilerinde artış tespit edilmiştir. Son 20 yılda diş hekimliği fakülte sayısı ve öğrenci kontenjan sayılarında da çok belirgin artış olduğu tespit edilmiştir.

Sağlık Bakanlığı'nın son 50 yıl içerisinde yayınlamış olduğu istatistik yıllıklarında ağız diş sağlığı hizmetleri konusundaki istatistiklerin standart bir formatının olmadığı ve verilerin düzenli olmadığı görülmüştür. Diş hekimi sayısının gelişmiş ülkelerle kıyaslandığında yetersiz olduğu tespit edilmiştir. Kamu ağız diş sağlığı hizmetlerinde yıllar içerisinde belirgin iyileşmeler olmakla birlikte halen karşılanmayan bir talebin olduğu; bu nedenle kamu kurumlarının sayısının ve kapasitesinin artırılmasının, Sosyal Güvenlik Kurumu'nun özel sağlık kurumlarıyla da anlaşma yapmasının sağlık yönetimi ve halk sağlığı açısından önemli bir iyileşme sağlayacağı düşünülmektedir.

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INTRODUCTION

Oral dental health is one of the basic parts of general health (Ekici, 2013). Protection of oral and dental health, positively affects human health and life. When oral and dental problems are not treated, they cause various health problems, pain, nutritional disorders, bad breath and even cancer around the mouth (Kavşur and Sevimli, 2021).

Oral and dental health is a service area which is growing day by day. Within the historical development of this field; a health management perspective, planning, financing and situation analysis are needed.

The aim of the health system is to provide service to all segments of society in an equitable manner within the scope of a program, irrespective of the social, economic and geographical conditions of the individuals in the society (Ekici, 2013).

Health services and healthcare in Türkiye and European countries when we compare the level, there is a huge difference, to the detriment of Turkey. In order to reduce this difference, a very rapid and radical team changes are required. First of all, the financing of healthcare increasing the share of national income allocated to health by determining the model and source must. Additionally, the share of health and social welfare investments in overall investments should be upgraded. In addition, making the organizational structure healthy it is imperative to take a series of measures as soon as possible, including the employment of personnel has (Aktur, 1999).

The World Health Organization and the World Dental Association have added oral and dental health as preventable diseases to the common risk factor approach. Within the scope of the Global Control Strategy, data management and planning problems are generally stated in line with the 2020 targets. Notifications regarding the work to be done have been published (Petersen, 2003, Hoptell, 2003).

In Turkey, there is a significant lack of planning in the number of dentist faculties, student quotas and lecturers in the field of oral and dental health (Atasever, 2018).

There is an urgent need to plan the workforce in the field of oral and dental health in Turkey. The number of dentistry faculties and student quotas should be rearranged. Efforts should be made to reach the standards set by the European Union and the World Health Organization (TDA, 2022).

In order to deliver and sustain the oral and dental health services offered through the public and private sectors in Turkey to all segments of the society, a feasible planning is needed. This planning can only be possible by revealing the historical process and current situation of oral and dental health services.

The majority of the studies carried out under the title of "Dentistry, Oral and Dental Health" in the thesis records of the Council of Higher Education (CHE) it is a clinical case study. The number of studies on oral and dental health within the scope of health management is limited. There aren't any archival research studies on oral dental health. From this point this study is going to provide a very important opportunity to evaluate oral and dental health services from a health management perspective. It will contribute to the improvement of the oral and dental health plan in the country.

Other important studies are researches which are conducted by Hacettepe University under the leadership of the Ministry of Health (MoH). These studies which are carried out, was titled "Oral/dental health level in Turkey: country profile" and data on decay, filling and missing tooth index (DMFT) were recorded across the country in three separate studies conducted in 2004, 2010 and 2018 according to age groups. In these studies, according to age groups, the oral dental profile in the country was examined.

As a result of the literature review; Studies examining how oral and dental health services have developed over the years in Turkey have been found to be insufficient.

In this study, it is aimed to analyze how oral and dental health services in Turkey have developed over the years from a health management perspective, through official

statistical data with variables such as the number of institutions, number of units, number of dentists, number of dentistry faculties providing services in the field of oral and dental health in Turkey in the last 50 years.

MATERIALS AND METHODS

This study is a cross-sectional study conducted in the form of record scanning. It is also a secondary data analysis study.

This study has been prepared by summarizing the published thesis topic.

Data used in the study, consists of official document data related to the field of oral and dental health. The data of the study were obtained from MoH health statistics yearbooks. Other country data used in comparisons were obtained from World Health Organization's statistical database. Additionally, data from the Dental Association yearbooks were also included in the study. In the analysis of data, appropriate statistical methods were used. The data is presented in the form of tables and graphs for easy understanding.

In light of these data; oral and dental health service data were analyzed from a health management perspective, deficiencies were tried to be identified and suggestions for solutions were offered.

As the data used in this research was conducted in the form of record scanning, the official data announced online was collected

between June 2021 and May 2023. Relevant analyzes were made by computer by taking the averages and percentages of the data.

Because the data used in this study are document data that has been previously disclosed to the public; Since it complies with the conditions explained in the context of the "Scientific Research and Publication Ethics Directive" of the Council of Higher Education (CHE), it does not require ethics committee permission and institutional permission.

No recorded data could be found regarding oral and dental health services provided in the private sector. It was studied based on the data announced by the MoH within the scope of private sector data for 2012 and later.

The whole data in the examined MoH statistical yearbooks "Health Statistics Yearbook 1970-2022, Inpatient Treatment Institutions Bulletin 1923-1983, 1984-2017" were examined.

Statistical yearbook wasn't published between 1982 and 1986. The 2005 statistical yearbook is not accessible. The 2006 and 2007 statistical yearbooks are among the statistics announced in later years.

FINDINGS

In the examined MoH Statistical Yearbooks; oral and dental health service data for the years 1970-2022 are included.

The findings of this study, which aims to analyze Turkey's oral and dental health services in the last 50 years from a health management perspective, are presented below.

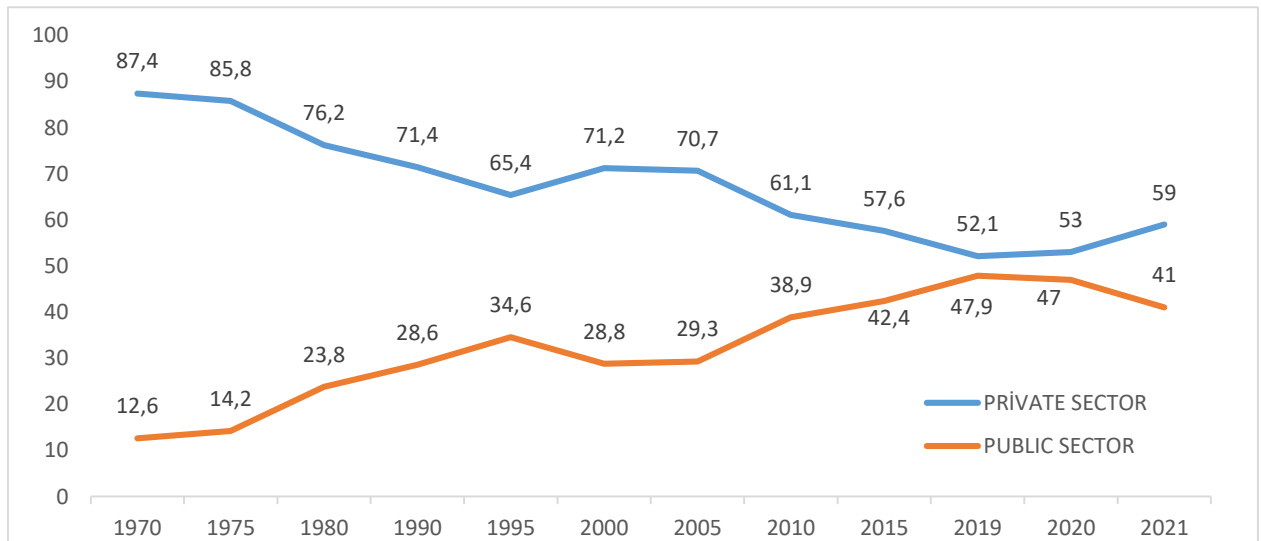
Because the statistical yearbooks of the MoH were not published between 1980 and 1986, data for these years could not be shown. Yet, the total number of dentists for these years was compiled from the statistical yearbooks published in subsequent years and added to the table. While the number of dentists in Turkey was 3245 in 1970, it reached 39581 in 2021. While the rate of dentist

per 100,000 people in Turkey was 0.91 in 1970, it became 4.7 in 2021. In Turkey, the dentist/population ratio per dentist as of 2021 is 2141 (SB, 1970-2021).

While only 175 (5.4%) of the dentists in Turkey were working within the Ministry of Health in 1970, it was determined that by 2019, 11387 (34.6%) of 32 925 dentists were working within the Ministry of Health.

It is seen that there have been great changes in the number of dentists working in the sectors over the years. While the number of dentists working in the public sector was 406 in 1970, it increased to 16673 in 2021. The number of dentists working in the private sector was 2,832 in 1970 and increased to 23,778 in 2021.

Figure 1. Change in the Distribution of Dentists in the Public and Private Sectors in Turkey by Years (1970-2019).



Source: Ministry of Health; Statistical Yearbooks of the Research and Planning Coordination Directorate and Strategy Development Directorate (1956–2020), Turkish Dentists Association, 2021)

*Since 1985 statistical data has not been announced, 1985 data has not been added.

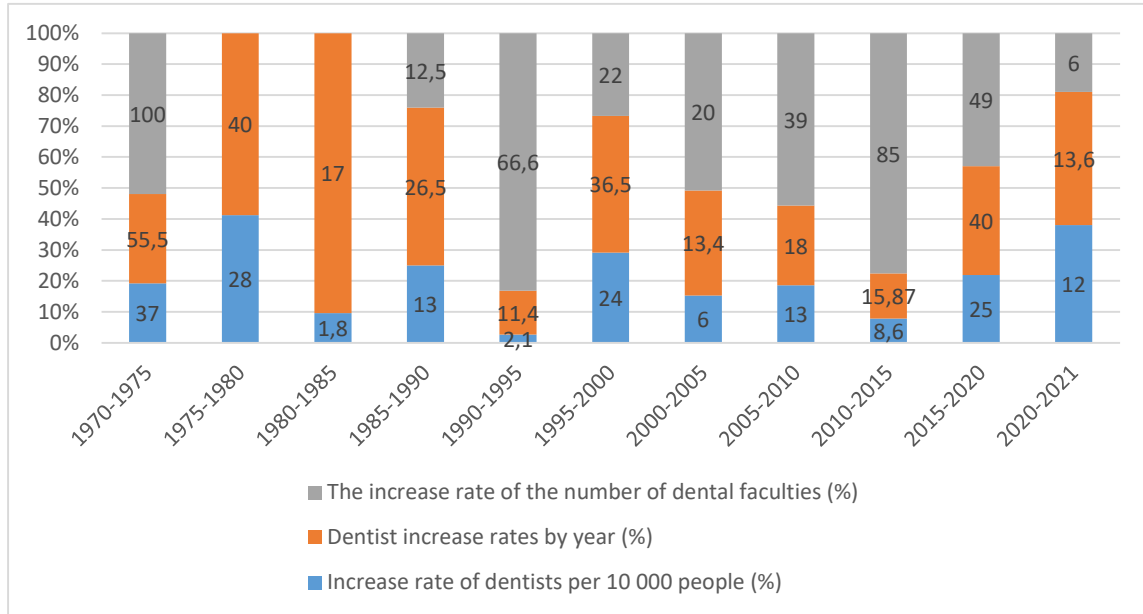
While only 12.6% of dentists worked in public health institutions in Turkey in 1970, this rate increased to 47.9% in 2019. In parallel, the rate of dentists working in the private sector decreased from 87.6% to 52.1% between these years. In the sectoral context, it is seen that oral and dental

health services have been provided mostly by the private sector in the last 50 years.

According to MoH data; According to 1974 data, it is reported that 70.2% of all dentists in the country work in three major cities: Ankara, Istanbul and Izmir.

It has been determined that the rate of increase in the number of dentists in proportion to the population has been considerably higher in the last 5 years compared to previous years.

Figure 2. Increase Rates in Total Dentists, Number of Dentists, and Dentist Faculty Numbers per 10,000 People by Years, All Sectors.



Source: Ministry of Health (2021)

When we look at the distribution of the number of dental prosthesis technicians/technicians employed in oral and dental health services in the Ministry of Health by years, it is recorded that while 142 people were working in 1975, there were 937 people in 2007.

In the statistical yearbooks of the MoH; after 2007, the number of dental prosthesis technicians/technicians is given as the total number of employees within the MoH under the heading of other health workers. For this reason, the number of dental prosthesis technicians/technicians after 2007 is not included in the statistical yearbooks published by the MoH. It has been determined that no data has been published about health technicians/technicians working in public and private health institutions other than MoH.

While there were 797 636 outpatient clinics in public health institutions in 1982; It was determined that this number reached 40 356 437 in 2017. It is seen that the number of outpatient

clinics increases regularly over the years. There was a decrease in the number of outpatient clinics in 2000. It has been determined that the data for this year is not compatible with the records of other years.

While the number of tooth extractions/surgical interventions was 631 441 in 1983; It was determined that this number increased to 7 974 314 in 2017.

While 7 593 dental canals were performed in dental canal treatment in 1983, the number reached 3 442 321 in 2017.

In dental stopping treatment, 52 032 tooth fillings were made in 1983; It reached 13 294 901 in 2017.

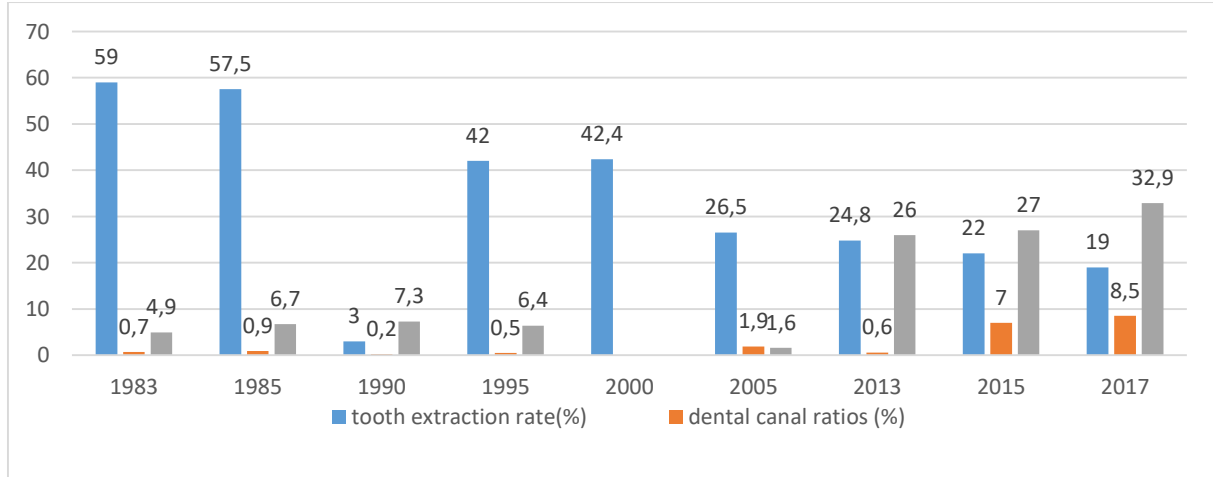
In dental prosthesis treatment, while 14 508 fixed dental prostheses and 20 527 removable dental prostheses were made in 1983; In 2017, the number of fixed dental prostheses was 7 095 850 and the number of removable dental prostheses was 1 156 405.

Under the title of other treatments, 133 184 procedures were performed in 1983 and the number was 458 206 in 2017.

Orthodontic treatments seem to have been recorded since 2002. While the number of orthodontic treatment procedures performed for

the same year was 23 772; It was determined that the number reached 104 726 in 2017 (general directorate of public hospitals, 2017).

Figure 3: Rates of Tooth Extractions, Fillings and Root Canals Performed on Patients Applying to Public Institutions



Source: general directorate of public hospitals (2017)

While the tooth extraction rate for patients who applied to the dentist over the years was previously close to 60%, it has been observed that the tooth extraction rate has dropped below 20% in recent years. On the other hand, filling and channel etc. It is observed that there is a significant increase in the number of transactions..

Oral dental health service data provided by the private sector have not been published in any source.

There has been a decrease in the number of oral and dental health center after 2014. Instead, it has been determined that there is an increase in the number of oral and dental health hospitals. In the Statistical Yearbook of the General Directorate of Public Hospitals (GDPH), while there were 20 beds in 1 dental hospital in 2002, and 58 beds in 6 dental hospitals in 2014, there were 106 beds in 14 dental hospitals in 2015, and 127 beds in 19 dental hospitals in 2016. The number of beds in dental hospitals for the following years is not given.

In the health statistics yearbook, only 4 years' data are given under the heading "Other", and it is stated in the statistical yearbook that 42 polyclinics provided services with 391 units in 2012, 44 polyclinics provided services with 209 units in 2013, 35 polyclinics provided services with 185 units in 2014, and 35 polyclinics provided services with 194 units in 2015. These polyclinics, which were located within different ministries and institutions, were transferred to the MoH in the following years.

The number of Oral and Dental Health Centers was first opened in 1999, and while it was 14 in the Ministry of Health in 2002, it increased to 132 in 2019. While Provincial Hospital Dental Treatment and Prosthesis Centers were 103 in 2002, they increased to 99 in 2013, and it is seen that they did not continue under the same title after 2013. According to data from 2013, there is an increase in the number of hospital outpatient clinics.

It is seen that dental prosthesis centers continue as polyclinics within the hospital. The number of "Dental Polyclinic (Hospital)" within the Ministry of Health was 477 in 2003 and increased to 820 in 2019.

While the number of applications to Oral and Dental Health services was 5 462 923 in 2002, it reached 55 356 549 in 2019. While the total number of dental units was 1 071 in the MoH in 2002, it increased in 2019. While the population per dental unit was 61 632 in 2002, it became 8 357 in 2019 (SB 1970-2019).

In Turkey, oral and dental health data began to be included under a separate heading in the data table announced in the MoH Statistical Yearbooks after 2012. Data on the number of units in universities before 2012 are not included in the published records. While the number of dental training hospitals was 22 in 2012, this number became 50 in 2019. Dental hospitals turned into dental training hospitals in this process. The total number of units within university hospitals was 2 973 in 2012 and reached 5 530 in 2019. The number of units increased by 86% in a short period of 8 years.

Oral and dental health service data in the private sector began to be published in statistical yearbooks in 2012 and later. No recorded data could be found in this area before 2012. These disclosed data include only institutional and unit data regarding oral and dental health data. Other services performed: Service data regarding fillings, root canals, dental prosthesis, surgery and other similar procedures have not been disclosed.

While the number of private dental polyclinics centers was 1 009 in 2012, it reached 2,123 in 2019. While the number of dental units was 4 474 in 2012, it increased to 10 172 in 2019. In terms of the number of dental units, the private sector has more dental units in the MoH, according to 2019 data. Most dental units are in the private sector.

There has been a rapid decline in the population per dental unit ratio in the last 18

years. While it was 61,613 per unit in 2002, this number increased to 7,931 in 2018 and became 8,412 according to 2021 data (SB 2022).

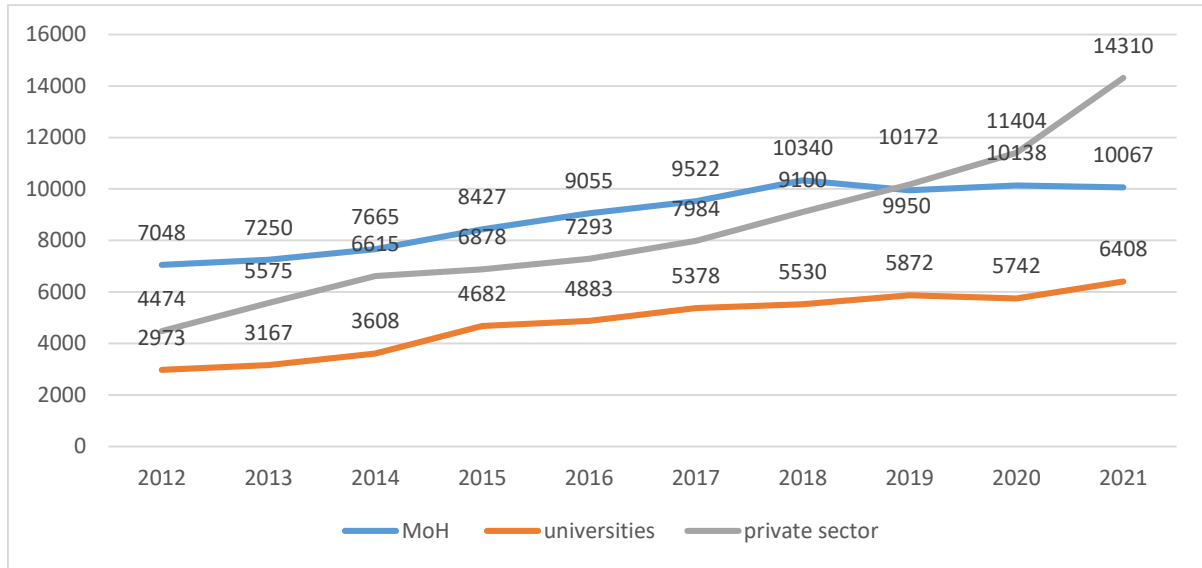
While the number of applications to the dentist was 5 462 923 in 2002, it was 55,356,659 in 2019. These data are published as data for all sectors. The share of the private sector and dental faculties among these data is not specified. It was observed that there were 26,880,405 applications in 2020 and 35,513,585 patient applications in 2021 due to the pandemic, and it was observed that their numbers decreased.

Because oral and dental health services are provided within provincial hospitals in Turkey, it has been determined that the number of institutions has increased with the opening of dental hospitals and Oral and Dental Health Centers. The number of institutions in 1970 was only 4. This number is the number of dentistry faculties. In the following years, dental hospitals began to be established. With the implementation of the health transformation program, oral and dental departments in provincial hospitals have turned into institutions in the form of Oral and Dental Health Center. As of 2019, the total number of public and private institutions providing oral and dental health services is 3 565. Since the number of institutions providing services in the private sector (doctor's office, polyclinics, etc.) was not included in the statistical records published until 2005, it was not added to the number of institutions before 2005.

Education continues in 88 of 103 dentistry faculties in Turkey (Turkish Dentists Association, 2022).

The distribution of the number of dental units in institutions providing Oral and Dental Health services in MoH, universities and private sectors is shown in Figure 4.

Figure 4. Distribution of the Number of Units in Institutions Providing Oral and Dental Health Services by Sector (2012-2019)



Source: Ministry of Health (2002-2019).

In terms of the number of dental units, it is seen that the number of units in the private sector exceeds the number of units in the MoH as of 2019. The number of units is 61.0% in the public sector and 39.0% in the private sector.

In terms of the total number of dental units and institutions, a rapid increase in the number of units as well as the number of institutions has been detected in the last 20 years.

While the number of dentistry faculties in Turkey was 4 in 1970, the total number of provincial and private university dentistry faculties reached 103 in 2019.

It was determined that the number of dentistry faculty quotas was 971 in 2001-2002, and reached 8 866 in 2019-2020.

While the number of students graduating from the faculties of dentistry was 1,001 in 2000-2001, it was found to be 3,119 in 20019-2021.

While the number of faculty members in dentistry faculties was 597 in 2001-2002, it became 2 118 in 2019-2020.

While the ratio of students per faculty member in dentistry was 12.7 in 1983-1984, it was

7.5 in 2019-2020. When the number of student quotas is examined, it has been determined that the number of faculty members has increased in recent years.

The ratio of faculty members to students in Turkey varies over the years. It is seen that there has been an increase in the number of lecturers in the last 5 years.

It has been determined that the number of dental faculties in Turkey has increased very rapidly in recent years. 76 of the faculties are public universities and 27 are private universities. It has been announced that there are 15 new dentistry faculties planned to start education (Turkish Dentists Association, 2020).

There is no data on oral and dental health expenditures in the MoH Health Statistics Yearbooks.

DISCUSSION

Health management perspective is the basic principles of good management in the health sector, which is a multidisciplinary field; To organize a dynamic process that can use scarce resources effectively and efficiently, balance supply and demand, be open to development, carry out the current health service with its financial, economic and social dimensions, organize proactive programs and develop solutions to problems. When viewed from this perspective, it has been observed that the number of studies examining oral and dental health service management is limited. Since private sector data records are not published anywhere, the data collected was limited to the data announced by the MoH and WHO.

Oral and dental health service data for the years 1970-1981, 1987,1991, 2006, 2010-2012, 2018 and 2019 are not included in the examined MoH statistical yearbooks. For this reason, it is not possible to compare and interpret the oral and dental health of these years. In addition, the statistical yearbook of the MoH was not published between 1980 and 1986. However, the total number of dentists and other service data for these years were obtained by compiling the statistical yearbooks published in the following years.

Although oral and dental health service data in public institutions have been collected by the MoH under the name of "Basic Health Statistics Modules" after 2011, these data are not included in the published official statistical yearbooks (MoH, 2022).

Although we requested the oral and dental health service data and financing data provided in Turkey in the last 50 years in writing from the Ministry of Health, General Directorate of Health Statistics on 24.03.2022, the data was not given to us and our written request was not even answered.

When the last 50 years of oral and dental health services in Turkey are examined; It is seen that this field is led by the private sector and to a small extent by the public. Oral and dental health services have been increasingly offered by the provinces since 2003 with the opening of oral and

dental health centers. With the rapid increase in the number of dental faculties, especially in the last 20 years, the share of oral and dental health services provided by the public has gradually increased.

While the number of dentists in Turkey was 3 245 in 1970, it reached 32 925 in 2019. While the rate of physicians per 1000 thousand people was 0.91 in 1970, it became 4.7 in 2021. The number of dentists per dentist in Turkey is 2 141 in the dentist/population ratio (Ministry of Health, 2022). In European countries, there are 1 265 people per dentist on average (Ministry of Health, 2020).

But, when the number of dentists in Turkey is compared to developed countries, especially EU countries, it is understood that it has not reached the desired level yet. As a matter of fact, the EU average is 83 and the Organization for Economic Cooperation and Development is 78 (Ministry of Health, 2022).

It has been determined that the rate of increase in the number of dentists in proportion to the population has been considerably higher in the last 5 years compared to previous years. It is understood that this rate of increase is due to the increase in the quotas of faculties and the corresponding increase in the number of graduates.

However, in recent years, there are concerns that the opening of a faculty of dentistry will increase the number of dentists and decrease the quality. Turkish Dentists Association reveals similar concerns on this issue; It is reported that the number of dentistry faculties and student quotas are high. In Germany, which has approximately the same population as Turkey, the total number of dental faculties is 31, while the number of quotas is around 2,500. It is reported that there are 103 dentistry faculties in Turkey and around 8 thousand student quotas, and if there was no planning, the number of dentists in Turkey would exceed the average of EU and OECD countries by 2028 at the latest (Turkish Dentists Association, 2022). It states that the number of dentists in Turkey is sufficient, while per capita

applications to the dentist are 5 per year in EU countries, it is around 1 in Turkey (Turkish Dentists Association, 2020). When we compare these data, we argue that the number of dentists in the country is sufficient. In addition, it is stated that if the number of dentists is high, the value and quality of dentist labor will decrease. It is stated that increasing public services in the field of oral and dental health reduces the competitiveness of the private sector (Ekinçi, 2013).

It is reported that the density of dentists working in the public sector is high. In terms of public health, the number of dentists and specialist dentists is not sufficient, there is no primary oral and dental health service, and there is a planning problem (Ekinçi, 2013). We believe that organizations such as these are far from achieving their goals.

While the number of dentists working within the Ministry of Health in Turkey was only 175 (5.4%) in 1970, it is seen that this number reached 11 387 (34.6%) in 2019. While the share of dentists working in the public sector among total dentists was 12.6% in 1970, it increased over the years and reached 47.9% in 2019. Contrary to this increase, the number of dentists working in the private sector has decreased over the years since 1970, falling from 87.4% to 52.1% as of 2019. According to the data obtained from the MoH statistical yearbooks, in the 1970s, 70.2% of all dentists in the country were working in three major cities: Ankara, Istanbul and Izmir. Although the number of dentists working in small provinces has increased over the years, a balanced distribution has still not been achieved (Turkish Dentists Association, 2020).

While there were only a small number of dentists and dental units in public hospitals in provincial centers in 1970 in Turkey, oral and dental health centers started to be open in 1999 (Ekinçi, 2013). Thus, the number of dentists working within the MoH has increased in parallel with the opening of new institutions providing oral and dental services. Again, in parallel with the opening of new dentistry faculties, the number of dentists working at the university has increased significantly in recent years. Thus, the total percentage of dentists working in universities and MoH, which we define as public, reached 47.6%. Although this rate varies in developed countries,

it is stated to be lower. In EU countries, 83% of oral and dental health services are provided by the private sector (Turkish Dentists Association, 2015). Although this rate is higher than developed countries, in our opinion, it is not sufficient when evaluated in terms of Turkey's health system and our people's expectations from public health institutions.

As a matter of fact, there are large crowds in Oral and Dental Health Centers. The waiting time to make an appointment is increasing. Waiting periods vary between 3 months and 2 years in dental faculties. Increasing waiting times in hospitals and extending appointment times cause patients to go to other institutions (Tekinalp and Şahinöz 2021) and this negatively affects patient satisfaction (Taşlıyan and Akyüz, 2010).

While the total number of applications to oral and dental health services was 5 462 923 in 2002, this number reached 55 356 549 in 2019. Among these application numbers, in the 2017 data announced by general directorate of public hospitals, the total number of applications for all sectors is 49 637 355. 40 356 437 of these applications were in institutions affiliated with the MoH (general directorate of public hospitals, 2017). When these application numbers are compared to the number of units and physicians in the sectors, we come to the conclusion that the data records of dentistry faculties and institutions in the private sector do not follow the same course. If the data published by the MoH belongs to the faculty of dentistry and the MoH, it follows that there are no private sector records.

The total number of dental units in the institutions of the MoH in the country was 1 071 in 2002 and reached 9 950 in 2019. In the last 17 years in Turkey, the number of units belonging to the Ministry of Health and thus the number of applications to dentists have increased approximately 10 times. Despite this, as discussed above, there is still an unmet service demand in public institutions.

While the number of dental units in faculties of dentistry was 2 973 in 2012, it increased to 5 530 in 2019. It increased by 86% in seven years. The biggest reason for this increase is the opening of new dentistry faculties.

The number of dental units in private sector institutions was 4 474 in 2012 and reached 10 172 in 2019. As of 2019, the total number of dental units across Turkey was 25 925, and the number of dental units in the private sector has become more than the number of dental units in institutions belonging to the MoH. The total population per dental unit throughout the country was 61 632 in 2002; While this figure decreased to 8 348 in 2019 (Ministry of Health, 2019).

While the number of applications to the dentist per capita throughout the country was 0.03 in 1983 when calculated according to dentists working in public health institutions; This number increased to 0.67 in 2019. The annual number of visits to the dentist per person is 3.2 in Japan; Netherlands 2.8; 1.5 in Germany; United States of America 1.0; 0.7 in the United Kingdom The OECD average is 1.1 and the EU average is 1.2 (WHO, 2021).

Although there has been a significant increase in the number of applications to the dentist per capita in Turkey over the years; This rate is still below the average of EU and OECD countries. This low number of applications may be an indication that the public does not benefit from adequate preventive services for oral and dental health, inadequate service in public institutions, and unmet demand. In this regard, it may be recommended to increase the health literacy level of the public (Şahinöz, 2019). Although there is an increase in the number of dentists and the number of applications to the dentist, the number of dental units does not increase at the same rate.

It is known that the number of applications to the dentist per capita is lower in densely populated cities and regions (such as Istanbul, Mediterranean Region) (Ministry of Health, 2019). The main reason for this may be that oral and dental health service data provided in the private sector are not included in the registered data. The lack of oral and dental health data both annually and sectorally makes accurate analysis difficult.

When the number of institutions providing oral and dental health services in the last 50 years was examined, it was determined that there was a significant increase, especially in the institutions belonging to the MoH. The first oral and dental health center within the Ministry of Health was

opened in 1999 and its number reached 132 as of 2019. Again, the first oral and dental health hospital within the Ministry of Health was opened in 1986, and in 2019, this number became 29. The number of dental hospitals with beds increased while there was only one dental hospital with 20 beds in 2002; In 2017, there were 19 dental hospitals with a total of 127 beds. Again, all polyclinics within other ministries were included within the scope of MoH in 2016 (MoH, 2018). Dental prosthesis centers located in Provincial Hospitals within the Ministry of Health were closed in 2013. With the closure of these centers, there has been an increase in the number of outpatient clinics in MoH hospitals. The number of outpatient clinics in MoH affiliated hospitals was 820 as of 2019. The number of institutions providing oral and dental health services in the public and private sectors has reached 4 409 as of 2021. The increase in the number of institutions and dental units providing oral and dental health services in the public and private sectors shows that applications for oral and dental health services have increased.

While important standards called "basic health indicators" were determined in the Alma-ata Declaration of 1978, under the leadership of WHO, to improve the problems in the field of health, similar standards were determined in the field of oral and dental health in the following years. WHO developed solutions and programs for oral and dental health together with World Dental Federation in 1980. With the participation of International Association of Dental Research in 2004, the programs were revised within the scope of "2020 oral and dental health targets" in 2005 (Hobdell, 2003).

Making comparisons between countries is considered an important measurement tool in management science (Çatı et al., 2007). This important tool indicates that there is a need for new programming in the field of oral and dental health in Turkey (Ekici, 2013) and that especially preventive dentistry practices should be given importance (Kuzu, 2019). Within the scope of WHO's recommendation that "1 dollar of preventive service has the effect of reducing the cost of treatment between 8-50 dollars", it is clear that there is a need for a policy that will minimize future costs with preventive activities (Eliaçık, 2021).

It is known that the "Family Physician-Family Dentist" system cannot be established in primary health care services and this service is provided by oral and dental health centres. The lack of sufficient preventive oral and dental health services forces the public to seek treatment services for oral and dental health. This situation causes overcrowding in secondary and tertiary healthcare services.

The absence of primary oral and dental health services causes dentists and specialist dentists to provide the same level of health care in the field of oral and dental health. In our opinion, distinguishing between first and second step services would be a constructive development in order to increase the quality of the oral and dental health service.

It is known that oral and dental health services are not covered by insurance in most OECD countries (Kavsur and Sevimli, 2021). It is stated that in the Netherlands and Israel, which exclude oral and dental health services, there is at least a 6-fold increase in the rate of use of oral and dental health services between those with high and low welfare levels. On the contrary, it is stated that oral and dental health service problems decrease in countries that include oral and dental health services within the scope of general health insurance (OECD, 2015).

The number of dental prosthesis technicians/technicians working within the MoH increased from the 1970s to 1990. There has not been much change in the number of personnel employed after 1990, although the number of institutions providing oral and dental health services has increased. The most important reason for the increase in this number is that institutions providing public oral and dental health services receive service from laboratories in the private sector. The majority of graduates in this field work in the private sector.

"Oral and Dental Health" departments were opened after 2010 to provide employment in dentistry assistant positions. "Number of Oral and Dental Health Technician/Technician quotas in Vocational High Schools" has increased rapidly in 10 years. There were 9 928 in 2020. In 2021, this

quota number was reduced to 4 913 (Turkish Dentists Association, 2022). Although both the Ninth Development Program and Turkish Dentists Association's opinion that 1 oral and dental health (hygienist) position for every 2 dentists is ideal, it is reported that the number of people employed in this field is around 2 thousand, and around 30 thousand graduates are waiting to be employed in the public sector. (Turkish Dentists Association, 2022). In this context, it is pointed out that there is a planning problem.

Publishing the numbers and rates of non-physician health personnel working within the scope of oral and dental health under a separate heading in the health statistical yearbooks will provide the opportunity to evaluate the oral and dental health service in terms of human resources.

There is no official data recorded in published health statistical yearbooks or elsewhere regarding oral and dental health services expenditures in Turkey. The data found in academic studies consist of estimated calculations on health practice notification prices using the projection method (Atasever, 2018). Oral and dental health expenses are included in general health expenses. In this case, it is not possible to evaluate oral and dental health financing. Although we officially requested financing data from the relevant units of the MoH, no response was received. Turkish Dentists Association also reports that although it requested the financing data of the oral and dental health service for 2014 from the MoH in an official letter, no response was received (Turkish Dentists Association, 2015).

The share allocated to health in GDP in Turkey ranks last among OECD countries with 4.7% in 2019 (OECD, 2020). It is seen that it is far behind the average of 8.8% in OECD countries. We believe that the share of GDP in the health sector in Turkey should be increased according to the needs of the country. In our opinion, it would be positive if oral and dental health data were shared with the public at regular intervals in health statistical yearbooks under a separate heading, including financing.

CONCLUSION AND RECOMMENDATIONS

This study was conducted to evaluate the oral and dental health service in Turkey in the last 50 years from a health management perspective, and the following results were obtained;

It has been determined that in the statistical yearbooks published by the MoH in the last 50 years, the statistics on the oral and dental health service are not a standard, but are published as random data, and there is no data for some years.

While the number of dentists in Turkey was 3 245 in 1970, it reached 32 925 in 2019. While the ratio of dentists per 10 thousand people was 0.91 in 1970, it became 3.94 in 2019. However, it is understood that the number of dentists in Turkey has not yet reached the desired level compared to developed countries, especially EU countries.

While only 12.6% of dentists were working in public health institutions in Turkey in 1970, this rate increased to 47.9% in 2019.

While the population per dental unit was 61 632 in 2002, it was 8 357 in 2019.

While the number of institutions providing oral and dental health services in Turkey was only 4 in 1970; As of 2021, the total number of public and private institutions providing oral and dental health services is 4 409.

While the number of dentistry faculties was 4 in 1970; In 2019, this number was 103, 76 in public and 27 in private universities. Since the student quota in dentistry faculties was not included in the statistical data before 2001, the student quota for 2001 was 971. This number was 8 866 in 2020.

In Turkey no health statistical yearbooks or any other official data source regarding oral and dental health expenditures could be found.

According to 2019 data, the private sector has more dental units than the MoH in terms of the number of dental units.

While the number of applications to the dentist per capita throughout the country was 0.03 in 1983 when calculated according to dentists working in public health institutions; This number increased to 0.67 in 2019. While the total

number of applications to oral and dental health services was 5 462 923 in 2002, this number reached 55 356 549 in 2019. This number has increased 10 times in 17 years.

When 2017 health statistics data are examined in terms of the number of applications to the dentist, 81% of the total applications were made to institutions belonging to the MoH.

In this context, the following suggestions can be made in line with the results obtained;

So as to evaluate oral and dental health services scientifically; It is recommended that oral and dental health services be shared at regular intervals as public, private and dentistry faculty data under a separate heading in health statistical yearbooks.

In terms of preventive oral and dental health services in Turkey, there is a need for a program at a globally acceptable level, such as employing dentists in family health centres. Family dental health service should be provided just like family medicine. We may recommend providing oral and dental health services in family health centers with at least two dental units. Access to the service should be facilitated. In this way, it is essential to provide dental health services to all segments of society, which seems to be a service that can be postponed and depends on people's welfare levels, in order to prevent patient density in secondary and tertiary care.

In addition to dentists, employment should be increased in nurses, oral and dental health hygienists, imaging and prosthesis technical staff, as needed.

The number of institutions, dental units and physicians that facilitate access to public services should be increased.

Public oral and dental health institutions should not be the only alternative for insured people. Including institutions providing private oral and dental health services within the scope of SSI will increase access to services and reduce the density in public institutions.

Public service announcements, trainings, etc. are carried out in order to increase public awareness of oral and dental health. Various activities should be increased.

In order to increase the effectiveness of the health service in Turkey and provide better service, the share allocated to health in the Gross National Product should be increased sufficiently.

Türkiye should develop its oral and dental health service in all aspects in terms of health tourism. There should be cooperation with the public and private sectors in this field. In this field, both oral and dental health professionals should be employed, the health tourism sector should reach a level that can compete with other

countries, and the sector should be adequately benefited from.

It is predicted that the aging population of Turkey and its oral and dental health problems will increase, and programs for the elderly population should be implemented.

Interregional distributions should be taken into account and a balanced program should be created in the population/physician ratio.

This study will constitute an important resource for new studies to be conducted in the light of these data. New research is needed to solve the problems in oral and dental health services.

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