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TOTAL HEALTH EXPENDITURE AND TOTAL SPINE RELATED PROCEDURE EXPENDITURE IN A FIVE-YEAR PERIOD (2008-2012) IN TURKEY

2008-2012 YILLARI ARASINDA ÜLKEMiZDE TOTAL SAĞLIK HARCAMALARI VE TOTAL OMURGA CERRAHİSİ HARCAMALARI

Özlem Nihal NADERİ[1], Sait NADERİ[2]

SUMMARY

Objective: Total health expenditure may vary due to a variety of factors. The aim of this study is to analyze many parameters including total health expenditures, its rate per gross domestic product, health expenditures paid per person, and total spine related procedure expenditure.
Materials and methods: Based on statistics of Turkish Statistics Administration and Social Security Administration, many parameters including total health expenditure, and spine related procedure expenditure performed between 2008 and 2012 were analyzed.
Results: Total health expenditure increased by 32 % between 2008 and 2012. In the same time period total health expenditure per person increased by 25.6 % in Turkish Lira and decreased by 10.2 % in US Dollars. The rate of total health expenditure per person was found to be decreasing. It decreased from 6.1% in 2008 to 5.4 % in 2012. Total spine related procedure expenditure increased by 79.3 % between 2008 and 2012.
Conclusion: It is concluded that total health expenditure increases steadily, and gross domestic product decreases. Similarly, the number and expenditures of spine related procedures increase. However, due to many reasons, the increase in the expenditures of spine related procedures has been more prominent than increase in the total health expenditure.

Keywords: Expenditures of spine related procedures, gross domestic product, total health expenditure

Level of evidence: Retrospective statistic study, Level III

ÖZET

Amaç: Toplam sağlık harcaması birçok etkene bağlı olarak değişebilmektedir. Bu çalışmanın amacı 2008-2012 yılları arasında ülkemizde yapılan toplam sağlık harcamaları, bunun gayri safi yurt içi hasıladaki payı, yıllık kişi başına düşen sağlık harcaması, omurga sağlığı için yapılan harcamaları belirlemektir.
Gereç ve yöntem: 2008 ile 2012 yılları arasındaki Türkiye İstatistik Kurumu ve SGK verilerine dayanarak, toplam sağlık ve toplam omurga harcamaları analiz edilmiştir.
Bulgular: 2008'den 2012'ye gelindiğinde toplam sağlık harcaması % 32'lik bir artış göstermektedir. 2008'den 2012'ye gelindiğinde kişi başına sağlık harcaması TL bazında % 25,6 artış göstermişken, dolar bazında % 10,2 azalma göstermiştir. Gayri safi yurtiçi hasıla içindeki toplam sağlık harcamasının payında da azalma dikkati çekmektedir. Bu oran 2008'de % 6,1 iken 2012'ye gelindiğinde % 5,4'e düşmüştür. Toplam omurga harcaması 2008'den 2012'ye gelindiğinde % 79,3'lük bir artışı göstermiştir.
Sonuç: Ülkemizde toplam sağlık harcaması düzenli bir şekilde artarken, gayri safi yurtiçi hasıla içindeki sağlık harcamaları payında azalma görülmektedir. Omurga operasyon sayıları ve harcamalarında da artış görülmekle beraber, omurga harcamalarındaki artış, birçok nedene bağlı olarak, toplam sağlık harcamasındaki artıştan daha belirgin olmuştur.

Anahtar Sözcükler: Gayri safi yurtiçi hasıla, toplam omurga harcaması, toplam sağlık harcaması

Kanıt Düzeyi: Retrospektif istatistik çalışma, Düzey III

INTRODUCTION:

The health service is provided to all layers of the society. As in a number of countries, this service is a constitutional right in our country. The health service not only is for recovering the patients but also includes the enhancement of the health conditions and protection from diseases.

All the expenditures for all protection, development, maintenance, nutrition and emergency program which adopts the aim of development and protection of the health are accepted as "**Health Expenditure**". The health expenditures are one of the main expenditures of countries and it might change depending on a number of variables such as develop-

[1] Department of Anesthesia, Üsküdar State Hospital, İstanbul
[2] Department of Neurosurgery, Ümraniye Training and Research Hospital, İstanbul

ment rate, population rate, composition of the population and the applied socio-economical program. A successful health service presentation satisfies both the population and the administrators managing the population. However, there is a cost of a successful health service presentation. All of those costs constitute the health expenditures. The health expenditures consist of the expenditures of the diagnosis and treatment in hospital, drugs and consumables used and the surgical consumables implanted into the body. Besides, although the health expenditures, terminologically, include the expenditures made for health, this concept was described in other ways. Thus, while making analysis of the literature about this issue, not only the total health expenditure are compared but also the current and general health expenditures are mentioned.

While the **Current health expenditure (CHE),** is defined as the expenditures apart from the investment expenditures for providing the health services (salary, consumable and so on), **total health expenditure (THE)** is defined as the current expenditures + investment expenditures (*the limit of OECD health expenditure*) and the **general health expenditure (GHE)** is expressed as total health expenditure + expenditures for the services related to health (research, development, environmental health services, education, food, sanitation and hygiene) (*the limit of Turkey health expenditure*) (3, 6, 8).

The percentage of CHE in THE in our country was 95.5% in 2009, 95% in 2010, 94.9% in 2011 and 95.5% in 2012. This shows that the investment percentage is in fact approximately 5% (1).

While qualifying the staff and increasing the health service quality with technological equipments is aimed in the health service, the health expenditures are tried to be decreased. The main reason for that is the financial crisis and limitations in the health budget. In a number of countries, health expenditures became the center of saving measures. As in a number of developing countries, health system in our country is having a transformation. In this environment, the health expenditures and policies are regularly being monitored and analyzed. As a natural result of this process, decrease of the costs for different items of health expenditures is being tried. This requires knowing the costs of each health subunit.

In our country, the health expenditures are analyzed and published mainly in SGK database, Turkish Statistical Institute, TEPAV Life Sciences and Health Policies Institute (2).

Besides there are a number of variables in the cost reduction process, among those variables, the surgery costs are the leading. In this level, SGK, which is the largest health insurance institute in our country, has the leading role and directs the health economy. Thus, the role of SGK in health expenditures and cost analyses gain importance.

The aim of this study to show the health expenditures made in our country in last 5 years, to determine the percentage of the spinal surgeries in those expenditures and to present the percentage of the spinal surgeries in the annual health expenditures in our country.

MATERIAL AND METHOD:

The study includes 2008, 2009, 2010, 2011, and 2012. The data analyzed in the study are given below:

1- The quantity of the total and current health expenditure and hospital expenditures in the analyzed years

2- The percentage of the total health expenditure in Gross National Product (GNP) in the analyzed years

3- The total health expenditure, population relation and the quantity of health expenditure per capita in the analyzed years

4- The number of total spinal surgery and its expenditure in the analyzed years

5- The types of the surgery and their costs in the analyzed years

6- The percentage of the spinal surgeries in the total health expenditure and other expenditures in the analyzed years

7- The emergent unit price of the spinal surgeries in the analyzed years

For the total health expenditures, the data of Turkish Statistical Institute (TUIK) were based on. By determining the codes for the basic spinal surgeries and the operations having those codes were documented. The data of those codes were obtained from SGK Presidency, General Health Insurance General Management. Accordingly, the types of the major spinal surgeries and their SGK codes were determined firstly (**Table-1**).

Table-1. Analyzed applications and their codes

Operation	Related codes
Lumbar discectomy	P615880, P615890, P615900, P615910, P615920, P615930
Spinal Instrumentation	P613690, P613700, P613710, P613720, P613730, P613920, P613930, P613880, P614040, 614050
ACD, ACDF	P615940, P615950
Kyphoplasty	P614150
Vertebroplasty	P614140
Laminectomy	P616010, P616020
Lumbar fusion	P613870, P613880
Thoracic discectomy	P615980, P615990

Then, the numbers of specific operations and the corresponding health expenditure quantity were determined. Here the point that is especially desired to be expressed is that the expenditures made for the operations whose codes are indicated and which are performed by brain surgeons and orthopedic surgeons. The operations performed with algology, physical therapy, neurology, family physician, rheumatology or medical treatment were not included into the study.

More clearly, the concept described as total spinal expenditure (TSE) in this study includes on the spine patients operated due to specific pathologies. It does not include the spine patients who are except for the analyzed codes and the limited number of non-evaluated patient group and the spine patients who were not operated. Likewise, it does not include the cases operated with their own budget in the private sector and could not benefit from SGK.

RESULTS:

1- The quantity of the total and current health expenditure and hospital expenditures in the analyzed years:

According to information provided by TUIK depending on SGK data, the total health expenditure in our country was 57 billion 740 TL in 2008 (current expenditure is 52 billion 320 million TL, hospital expenditure is 22 billion 984 million TL), 57 billion 911 million TL in 2009 (current expenditure is 55 billion 294 million TL, hospital expenditure is 23 billion 241 million TL), 61 billion 678 million TL in 2010 (current expenditure is 58 billion 623 million TL, hospital expenditure is 24 billion 933 million TL), 68 billion 607 million TL in 2011 (current expenditure is 65 billion 372 million TL, hospital expenditure is 28 billion 543 million TL), and it reached to 76 billion 358 million TL in 2012 (current expenditure is 72 billion 820 million TL, hospital expenditure is 32 billion 801 million TL). An increase in the total health expenditure was observed as 0.29% in 2009 when compared to 2008, 6.5% in 2010 when compared to 2009, 11.5% in 2011 when compared to 2010, and 10.7% in 2012 when compared to 2011 (**Table-2**). There is a 32% increase in the total health expenditure from 2008 to 2012. A similar expenditure increase is also valid for the current health expenditure and hospital expenditure.

Table-2. Total health expenditure (THE), current health expenditure (CHE) and hospital expenditure (HE) amounts (TL x1000.000)

Year	THE	Increase	CHE	Increase	HE	Increase
2008	57.740	-	52.320	-	22.984	-
2009	57.911	0,29 %	55.294	5,6 %	23.241	1,11 %
2010	61.678	6,5 %	58.623	6,02 %	24.933	7,2 %
2011	68.607	11,5 %	65.372	11,5 %	28.543	14,4 %
2012	76.358	10,7 %	72820	11,3 %	32.801	14,9 %

2- The percentage of the total health expenditure in GNP in the analyzed years:

According to information provided by TUIK depending on SGK data, despite the increase in the total health expenditure in our country, the percentage of total health expenditure in GNP decreased from 6.1% to 5.4% from 2008 to 2012 (**Table-3**).

3- The relationship of the total health expenditure with the population in the analyzed years:

Turkish population was calculated as 71.517.100, 72.561.312, 73.722.988, 74.724.269 and 75.627.384 people in 2008, 2009, 2010, 2011 and 2012, respectively. The health expenditures per capita is shown in **Table-4** in both TL and dollars. Accordingly, the health expenditures per capita (HEPC) was 812 TL (624 $) in 2008, 804 TL (521 $) in 2009, 845 TL (563 $) in 2010, 928 TL (553 $) in 2011 and 1.020 TL (566 $) in 2012.

Here, there is a fact when considered carefully. HEPC showed a 25.6% increase in TL from 2008 to 2012, but it showed a 10.2% decrease in dollars.

Table-3. The ratio of the total health expenditure to gross national product (GNP)

Year	Ratio to GNP
2008	6,1 %
2009	6,1 %
2010	5,6 %
2011	5,3 %
2012	5,4 %

Table-4. The health expenditure per capita (HEPC)

Year	HEPC TL	HEPC $
2008	812	624
2009	804	521
2010	845	563
2011	928	553
2012	1020	566

4- The number of total spinal surgery and its expenditure in the analyzed years:

According to SGK data, the spinal surgery numbers in our country was 84.615 in 2008, 92.843 in 2009, 91.662 in 2010, 110.520 in 2011 and 137.756 in 2012 (**Table-5**). There is a 62.8% increase in the total surgery number from 2008 to 2012.

When the economical aspect of the applications are considered, the against invoice of the applications was 94.844.931 TL in 2008, 89.227.521 TL in 2009, 108.439.736 TL in 2010, 136.834.179 TL in 2011 and 170.117.734 TL in 2012 (**Table-6**).

Accordingly, the total spinal expenditure increased from 94.844.931 TL to 170.117.734 TL from 2008 to 2012 and this shows a 79.3% increase.

Table-5. The operations performed in 2008, 2009, 2010, 2011 and 2012 and their numbers (LD: Lumbar discectomy, CD: Cervical discectomy, TLI: Thoracolumbar instrumentation, KP: Kyphoplasty, VP: Vertebroplasty, TD: Thoracic discectomy)

	2008	2009	2010	2011	2012
LD	54.354	59.619	60.868	71.397	82.426
	64,2%	64,2%	66,40%	64,60%	59,83%
CD	5.902	6623	6.024	7.713	10.142
	7%	7%	6,57%	6,98%	7,36%
TLI	13.209	13498	14.076	18.736	25.725
	15%	14,4%	15,36%	16,95%	18,67%
KP	693	723	447	163	390
	0,8%	0,8%	0,49%	0,15%	0,28%
VP	-	-	698	1.298	2.211
			0,76%	1,17%	1,61%
Laminectomy	10.201	11.587	7.920	9.206	13.333
	12%	12,4%	8,64%	8,33%	9,68%
Arthrodesis	1.044	1.409	1.608	1.976	3.489
	1,2%	1,5%	1,75%	1,79%	2,53%
TD	14	32	21	31	40
	0,01%	0,03%	0,02%	0,03%	0,03%
Total	84.615	92.843	91.662	110.520	137.756

Table 6. The costs of the operations performed in 2008, 2009, 2010, 2011 and 2012 in TL (LD: Lumbar discectomy, CD: Cervical discectomy, TLI: Thoracolumbar instrumentation, KP: Kyphoplasty, VP: Vertebroplasty, TD: Thoracic discectomy)

	2008	2009	2010	2011	2012
LD	52.791.708	59.324.921	70.025.091	84.136.115	96.432.380
	55,6%	66,4%	66,5%	61,4%	56,6%
SD	9.656.546	10.947.920	13.221.525	17.696.412	23.239.925
	10.1%	12,2%	12,1%	12,9%	13,6%
TLE	31.038.945	16.417.704	19.116.477	27.418.379	36.906.618
	32,7%	18,3%	17,6%	20,3%	21,6%
KP	668.777	774.738	550.729	201.948	876.519
	0,7%	0,8%	0,5%	0,14%	0,51%
VP	-	-	1.086.657	2.058.468	4.014,194
	-	-	1%	1,5%	2,3%
Laminectomy	1.902.579	2.087.848	2.487.565	2.976.790	4.442.756
	2%	2,3%	2,29%	2,17%	2,61%
Arthrodesis	781.050	1.630.275	1.910.463	2.273.955	3.835.677
	0,8%	1,8%	1,76%	1,66%	2,2%
TD	25.545	56.918	41.239	61.621	69.671
	0,02%	0,06%	0,03%	0,04%	0,04%
Total	94.844.931	89.227.521	108.439.736	136.834.179	170.117.734

5- The types of the surgery and their costs in the analyzed years:

1. Lumbar discectomy:

While 54.354 discectomies were performed in 2008, this number reached to 59.619 in 2009, 60.868 in 2010, 71.397 in 2011 and 82.426 in 2012. Accordingly, lumbar discectomy consisted of 64.2% of all spinal surgeries in 2008, and this value was 64.2% in 2009, 66.4% in 2010, 64.6% in 2011, and 59.83% in 2012 (**Table-5**).

On the other hand, when the economical aspect of lumbar discectomies is considered, the amount of invoice for discectomy was detected as 52.791.708 TL in 2008, 59.324.921 TL in 2009, 70.025.091 TL in 2010, 84.136.115 TL in 2011 and 96.432.380 TL in 2012. Those amounts were calculated as 55.6% in 2008, 66.4% in 2009, 66.5% in 2010, 61.4% in 2011 and 56.6% in 2012 as the percentage in total spinal surgery amount (**Table-6**).

2. Cervical discectomy with and without fusion:

5.356 anterior cervical discectomy and fusion (ACDF) were performed in 2008, 5.857 in 2009, 5.447 in 2010, 7.147 in 2011 and 9.366 in 2012.

546 simple anterior cervical discectomy without fusion (ACD) were performed in 2008, 766 in 2009, 577 in 2010, 566 in 2011 and 776 in 2012.

As a result, the total number of the cervical discectomy either with fusion or without fusion (ACD + ACDF) was calculated as 5.902 in 2008, 6.623 in 2009, 6.024 in 2010, 7.713 in 2011 and 10.142 in 2012.

Accordingly, the number of ACD + ACDF consisted of 7% of all spinal surgeries both in 2008 and 2009, 6.57% in 2010, 6.98% in 2011 and 7.36% in 2012 (**Table-5**).

When we consider the economical aspect of ACD and ACDF, the invoice amount for ACDs were 622.507 TL, 923.120 TL, 825.004 TL, 845.865 TL, and 1.124.267 TL in 2008, 2009, 2010, 2011 and 2012, respectively.

In the same years, the invoice amount for ACDF were 9.034.039 TL and 10.024.799 TL, 12.396.520 TL, 16.850.546 TL and 22.115.658 TL, respectively.

More clearly, in the indicated periods, the invoice amount for all cervical discectomy operations (ACD + ACDF) was 9.656.546 TL, 10.947.920 TL, 13.221.525 TL, 17.696.412 TL and 23.239.925 TL, respectively.

Those amounts were calculated as 10.1% in 2008, 12.2% in 2009, 12.1% in 2010, 12.9% in 2011 and 13.6% in 2012 as the amount in total spinal surgery (**Table-6**).

3. Thoracolumbar instrumentation:

13.209 thoracolumbar instrumentations were performed in 2008, and this number was 13.498 in 2009, 14.076 in 2010, 18.736 in 2011 and 25.725 in 2012. Accordingly, the number of performed thoracolumbar instrumentation consisted of 15% of total spinal surgeries in 2008, 14.4% in 2009, 15.36% in 2010, 16.95% in 2011 and 18.67% in 2012 (**Table-5**).

When the economical aspect of the thoracolumbar instrumentation was considered, the amount of the invoice was 31.038.945 TL in 2008, 16.417.704 TL in 2009, 19.116.477 TL in 2010, 27.418.379 TL in 2011 and 36.906.618 TL in 2012. Those amounts were calculated as 32.7 % in 2008, 18.3 % in 2009, 17.6 % in 2010, 20.03 % in 2011 and 21.6 % in 2012 as the amount in total spinal surgery (**Table-6**).

4. Kyphoplasty: 693 kyphoplasty surgeries were performed in 2008, 732 in 2009, 447 in 2010, 163 in 2011 and 390 in 2012. Accordingly, the number of kyphoplasty operation consisted of 0.8% of all spinal surgeries in 2008, 0.8% in 2009, 0.49% in 2010, 0.15% in 2011 and 0.28% in 2012 (**Table-5**).

The amount of the invoice for the kyphoplasty operations was 668.777 TL in 2008, 774.738 TL in 2009, 550.729 TL in 2010, 201.948 TL in 2011, and 876.519 TL in 2012. Those amounts were calculated as 0.7% in 2008, 0.8% in 2009, 0.5% in 2010, 0.14% in 2011 and 0.51% in 2012 as the amount in total spinal surgery (**Table-6**).

5. Vertebroplasty:

The data for vertebroplasty operations could not be reached in 2008 and 2009. 698 vertebroplasty operations were performed in 2010, 1298 in 2011, and 2211 in 2012. Accordingly, the percentage of the vertebroplasty operations in all spinal operations was calculated as 0.76% in 2010, 1.17% in 2011 and 1.61% in 2012 (**Table-5**).

The amount of the invoice for vertebroplasty applications was 1.086.657 TL in 2010, 2.058.468 TL in 2011 and 4.014,194 TL in 2012.

Those amounts were calculated as 1% in 2010, 1.5% in 2011 and 2.3% in 2012 as the amount in total spinal surgery (**Table-6**).

6. Lumbar Laminectomy:

10.201 total laminectomy in 2008, 11.587 total laminectomy in 2009 and 5.125 total laminectomy and 2.795 hemi-laminectomy in 2010 (7.920 in total) were performed. 7.387 total and 1.819 hemi-laminectomy in 2011 (9.206 in total) and 11.365 total and 1.968 hemi-laminectomy were performed in 2012 (13.333 in total). Accordingly, the total lumbar laminectomy number (total and hemi-laminectomy) consisted of 12% of all surgeries in 2008, 12.4% in 2009, 8.64% in 2010, 8.33% in 2011 and 9.68% in 2012 (**Table-5**).

The total invoice of the laminectomy and hemi-laminectomy applications was 1.902.579 TL in 2008, 2.087.848 TL in 2009, 2.487.565 TL in 2010, 2.976.790 TL in 2011, and 4.442.756 TL in 2012.

Those amounts were calculated as 2% in 2008, 2.3% in 2009, 2.29% in 2010, 2.17% in 2011 and 2.61% in 2012 as the amount in total spinal surgery (**Table-6**).

7. Arthrodesis operation:

Arthrodesis codes were entered in 1044 cases in 2008, 1409 cases in 2009, 1.608 cases in 2010, 1.976 cases in 2011 and 3.489 cases in 2012. Accordingly, the percentage of the arthrodesis in all spinal operations was calculated as 1.2% in 2008, 1.5% in 2009, 1.75% in 2010, 1.79% in 2011 and 2.53% in 2012 (**Table-5**).

The invoice amount in the indicated periods between 2008 and 2012 are 781.050 TL, 1.630.275 TL, 1.910.463 TL, 2.273.955 TL and 3.835.677 TL for arthrodesis operations, respectively. Those amounts were calculated as 0.8% in 2008, 1.8% in 2009, 1.76% in 2010, 1.66% in 2011 and 2.2% in 2012 as the amount in total spinal surgery (**Table-6**).

8. Thoracic discectomy:

13 thoracic discectomies were performed in 2008, 32 in 2009, 21 in 2010, 31 in 2011 and 40 in 2012. Accordingly, the percentage of the intervention into thoracic discs in all spinal operations was calculated as 0.01% in 2008, 0.03% in 2009, 0.02% in 2010, 0.03% in 2011 and 0.03% in 2012 (**Table-5**).

The invoice amount in the indicated periods are 25.545 TL, 56.918 TL, 41.239 TL, 61.621 TL and 69.671 TL for thoracic discectomy operations, respectively. Those amounts were calculated as 0.02% in 2008, 0.06% in 2009, 0.03% in 2010, 0.04% in 2011 and 0.04% in 2012 as the amount in total spinal surgery (**Table-6**).

6- Total health expenditure in the analyzed years and the percentage of the spinal surgeries in other expenditures:

The total spinal expenditures consisted of the 0.14% of total health expenditure in 2008, 0.16% in 2009, 0.14% in 2010, 0.16% in 2011 and 0.18% in 2012 (**Table-7**).

The percentage of the total spinal expenditure in the current health expenditure was calculated as 0.16% in 2008, 0.16% in 2009, 0.15% in 2010, 0.16% in 2011 and 0.18% in 2012 in the indicated years (**Table-7**).

The percentage of the total spinal expenditure in hospital expenditure was calculated as 0.36% in 2008, 0.35% in 2009, 0.32% in 2010, 0.33% in 2011 and 0.31% in 2012 (**Table-7**).

VII. The unit price of the spinal operations in the analyzed years:

When the available data are evaluated, the amount which was paid for each surgery shows up (Table 8). This evaluation includes a margin of error due to a number of factors. Namely, the short segment and long segment instrumentation operations, whose prices are different, were put into same basket and their mean value was taken into consideration. Similar case is also prevalent for the cervical discectomy with and without fusion, hemi-laminectomy and total laminectomy and single level or multi-level discectomy.

Table-7. The amount of total health expenditure (THE) and total spinal expenditure (TSE). The percentage of TSE in THE, the percentage of TSE in current health expenditure (CHE) and the percentage of TSE in hospital expenditures (HE) are also seen in the list.

Year	THE	TSE	THE/TSE	CHE/ TSE	HH/TSE /TOH
2008	57.740.000.000	84.615.000	0,14%	0,16%	0,36%
2009	57.911.000.000	92.843.000	0,16%	0,16%	0,35%
2010	61.678.000.000	91.662.000	0,14%	0,15%	0,32%
2011	68.607.000.000	110.520.000	0,16%	0,16%	0,33%
2012	76.358.000.000	137.756.000	0,18%	0,18%	0,31%

Table-8. The paid amount for each surgery type by SGK in the analyzed years (LD: Lumbar discectomy, CD: Cervical discectomy, TLI: Thoracolumbar instrumentation, KP: Kyphoplasty, VP: Vertebroplasty, TD: Thoracic discectomy)

	2008	2009	2010	2011	2012
LD	971	995	1150	1178	1169
SD	1636	1653	2194	2294	2291
TLE	2349	1216	1358	1463	1434
KP	965	1071	1232	1238	2247
VP	-	-	1556	2585	1815
Laminectomy	186	180	314	323	3332
Arthrodesis	748	1157	1188	1150	1099
TD	1824	1778	1963	1987	1741

Table-9. Total health expenditures of each year since 1999

Year	THE (Million TL)	THE (Million dollar)
1999	4.985	11.790
2000	8.248	13.140
2001	12.396	10.052
2002	18.774	12.389
2003	24.279	16.159
2004	30.021	20.975
2005	35.359	26.205
2006	44.069	30.599
2007	50.904	30.864
2008	57.740	44.364
2009	57.911	42.270
2010	61.678	47.440
2011	68.607	49.357
2012	76.358	59.654

DISCUSSION:

The dominant role of the government in health makes it necessitates for the government to allocate from the budget to this field. While the government is the largest heath presenter (with the health minister), it also has the largest insurance institute role (with SGK). This necessitated that the government protects both the balance of income and expenses and a number of social aspects of the health.

While the health expenditures are being analyzed, one should know that the expenditures show variations depending on a number of parameters. Some of those parameters are the income level of the country, the population and thus the expenditure status per capita, the amount of the expenditure to public and private sector and the expense items.

According to World Bank data, the GNP of Turkey increases approximately 3.5 % annually since 1998 (4). Although those percentages hit rock bottom due to the crisis in March 2009, the general trend is in positive direction. In summary, the income status of our country gets better regularly.

When the percentage of the health expenditures in GNP is considered, there is an increase in those percentages between 1999 and 2008. In addition, the public expenditures are the leading in this increase.

Unfortunately, this increase in the health expenditures in GNP until 2008 did not continue in the last years in a similar way. When the health expenditures and its percentage in GNP is considered, while this value was 6.1 % in 2008, it decreased to 5.4 % in 2012 (5). In summary, when the total health expenditures are considered, there is an increasing expenditure in last year's in our country (**Table-9**).

In 2008 and 2012, which is the interest of our study, it can be seen that the 57 billion 740 million TL total health expenditure increased to 76 billion 358 million TL. This was found as equal to a 32.2 % increase. In the same periods, it is seen that the current health expenditure increased from 52 billion 320 million TL to 72 billion 820 million TL (**Figure-1**) and the hospital expenditure increased from 22 billion 984 million to 32 billion 801 million TL (**Figure -2**).

Can we also see this increasing trend of the health expenditures for the surgical treatment of the spinal

diseases? The answer of this question is possible by looking at the expenditures for the spinal surgeries and whether it follows this trend or not.

In this study, the total spinal expenditure is seen to increase from 94.844 million TL to 170.734 million TL between 2008 and 2012. This was found as equal to a 79.3 % increase (**Figure-3**).

How can those increases be explained? Although this situation is a research subject independently, the available data are not enough to present all the reasons. This increase cannot only be explained with the increase in the public. It is obvious that the private sector has also a significant role in this sense. According to the data of Ministry of Health the percentage

Figure-1. The increase-decrease trend of the current health expenditures (1000.000 TL)

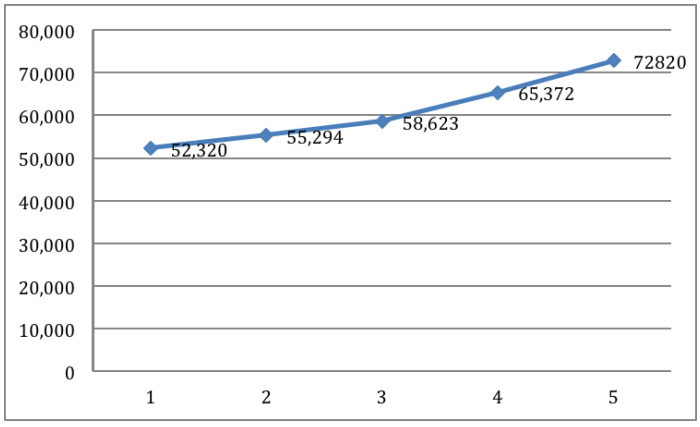


Figure-2. The increase-decrease trend of the hospital expenditures (1000.000 TL)

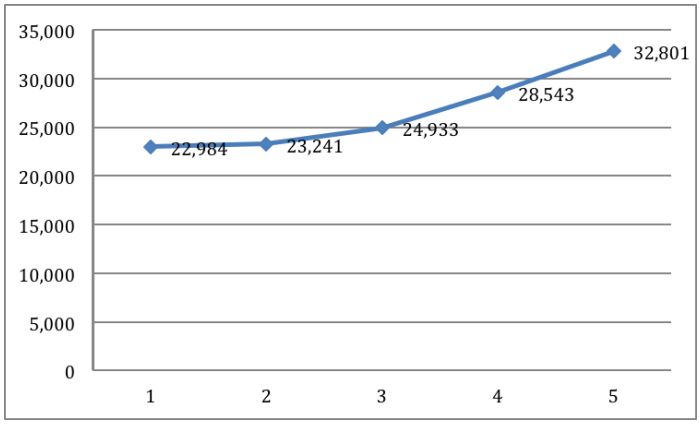
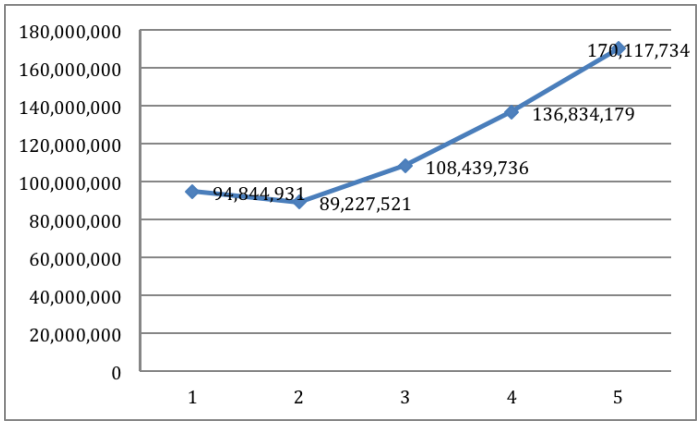


Figure-3. The increase-decrease trend of total spinal expenditures



of the private sector increased from 6.2% (2001) to 17.3 % (2008) (5), and according to the report prepared by Ministry of Development the percentage of the private sector in total application was 4.6 percent in 2002 but it increased to 18.8 % in 2012 (7). Unfortunately, there is no differentiation of the private sector and public in the present study.

When the number and the expenditure percentages of the spinal surgeries are considered, there is limited number of comprehensive studies (10, 11). In a study reported by Naderi, the numbers of the surgeries in last 5 years were presented in detail (10, 11). In those studies, the spinal surgeries were slightly mentioned in terms of the costs.

Those studies showed that the operations such as cervical discectomy, thoracic discectomy, lumbar discectomy and lumbar laminectomy performed for the degenerative cases consists of the largest group of all the spinal surgeries and they consist of 81.63 % of all spinal surgeries in 2010, 79.94 % in 2011, and 76.9 % in 2012 (10-11).

According to this study, the number of discectomy increased from 54.354 in 2008 to 82.426 in 2012. The total spinal operation number was increased from 84.165 to 137.756 in the same period. In other words, while the total spinal operations increased 62.8 % in 5 years, the discectomy number increased as 51.6 %. In addition, when the population number and lumbar discectomy number is considered, the 0.07 %, 0.002 %, 0.08 %, 0.09 % and 0.01 % of the population was administered herniated disc surgery between 2008 and 2012, respectively.

It should be indicated there is an increase in laminectomy operation number (30.7%) similar and less than that of total operation number, there is an increase in cervical discectomy (71.8%), thoracolumbar instrumentation (94.7 %), thoracic discectomy (185.7 %) and arthrodesis (234.1 %) and those percentages are over the increase of the total spinal operation.

When the expenditures for the spinal surgeries are considered, it can be seen that the total spinal expenditure increased from 94.844 million TL to 137.756 TL between 2008 and 2012 as mentioned above. This was found as an increase equal to 79.3 %.

When the increase in the spinal surgery number and the expenditures made in those surgeries are collocated, it can be seen that there is a 62.8 % increase in the number of spinal surgery and 79.3 % increase in the expenditures.

How can the increase of the spinal surgery and expenditures be explained?

Firstly, there might be the role of the increase of the degenerative diseases seen in geriatric age group together with the increase in the age of population. However, since the time period is short, the role of this factor should not be exaggerated. In addition, the increase of the country population and getting easier of reaching the physician due to the social policies might have role in this process.

Another reason might be the increase in surgeon number. The increase in the number of the surgeons performing the degenerative spinal surgeries might have role in this issue. Indeed, spinal surgeries consist of a large portion of the brain surgery and the most easily performed operations of the brain surgeons, whose number increase gradually, in both training institutes and public and private hospitals are degenerative spinal operations. Due to both this reason and tending of some orthopedic surgeons to spinal surgeries led to an increase in the number of those surgeries.

Another issue to be emphasized is that there might be other reasons besides the increase of the country population, increase of the geriatric population, getting easy to reach the physician and increase in the surgeon number.

One of those reasons is the easy request of diagnostic modalities such as MR and changes in the surgical indications. In other words, the administration of surgery to a number of degenerative spine patients, who do not require surgery with MR might lead to an increase in the operation numbers. Basically, this number, although it is not too high, cannot be detected. This issue can only be overcome with education.

The increase in the spinal expenditures might be due to the decrease of the disc surgery percentages and the increase in the instrumentation percentages. However, this also cannot be the only reason. The fact that the spinal surgeries were low previously and recovery of it, although minor, might have a role in this process.

However, those explanations made with both the increase in the spinal surgeries and the increase in the expenditures requires more comprehensive analyses at the end of detailed evaluations. The major limitation for the studies is that we do not have the data of other countries as in the case for the items such as total health expenditure. In other words, since there

are no data of other countries to compare our data about the spine, it is not reliable to identify our spinal expenditures as high or low in reality.

The health expenditure made in our country show increases in last years. It is obvious that a number of factors are effective in this increase. The most significant ones of those factors are the increase of the geriatric population in parallel with this increase, increase in the private health institutions and increase in reaching to those institutions and also relative increase in the physician number.

The total health expenditure shows a 32 % increase from 2008 to 2012. While the health expenditure per capita showed a 25.6 % increase in TL, it showed a 10.2 % decrease in dollars from 2008 to 2012. The fact that the increase in total health expenditure is higher than the increase in expenditure per capita might be explained with the imbalance of the expenditures and the population increase rate.

Another data showing this situation is the percentage of the total health expenditure in GNP. Indeed, when the statistics in recent years is analyzed, the decrease of total health expenditure in GNP is remarkable. While this percentage was 6.1 % in 2008, it decreased to 5.4 % in 2012.

When the total spinal expenditure is considered, on the other hand, there is a 79.3 % increase in the expenditure from 2008 to 2012.

When the spinal operations and the expenditures are considered, there was an increase in the total operation numbers and it was seen that the increase in lumbar discectomy is less than that of all spinal operations, and the rate of increase in thoracolumbar instrumentation is more than that of all spinal operations. This might be explained with performing different new surgical techniques in some different cases. This necessitates the review of the studies of the specialties working on the spinal health and the civil society organizations about those branches.

In summary, there might be a number of reasons of the increase in the number and costs of the spinal surgeries. Presentation of those reasons is obligatory for decreasing the SGK cost analyses in following years.

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Address: Dr. Sait Naderi,
Department of Neurosurgery, Ümraniye Training and Research Hospital, İstanbul
Phone: +90 532 262 13 18
Email: saitnaderi@yahoo.com

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