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PATIENT CARE COSTS IN THE STATE TRAINING AND RESEARCH HOSPITALS IN ISTANBUL IN YEARS 2000- 2007

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ABSTRACT

The application of neoliberal policies that began to spread all over the world and Turkey at least since 1980s as it is commonly accepted. The latest applications of the neoliberal policies mainly observed in the service sector and especially in the health sector. After the year 2000, the important reforms in health sector has been applied by the Ministry of Health in Turkey like "privatization", "autonomy", "decentralization", "family medicine" and "general health insurance" implementations.

These research aims to find out how these implementations of the neoliberal policies in health sector affect the treatment costs of the patients in public research and training hospitals in Istanbul, Turkey, which represent 60% of the hospitals in Istanbul. Document analysis has been applied in order to figure out the effect. There is time limitation in the research due to the time limitations and difficulties in reaching the old documents. This study is valid for the years 2000 and 2007, and 2003 is accepted as the turning point since the implementations of the neoliberal policies in health care industry in Turkey has been put into practice at the time.

The treatment services given in public hospitals and the changes in these services and in treatment expenses were analyzed from the 7253 invoices of the patients that were treated at Lütfi Kırdar Educational and Research Hospital and Şişli Etfal Educational and Research Hospital. The invoices of the patients were separated into: laboratory, drugs, medical materials, radiologic studies and general services, and respectively into: price, procedure numbers, costs per procedure, and the percentage of each costs in the invoices for two periods as the years 2000-2003 (first/ pre-implementation period) and 2004-2007 (second/ post-implementation period). The expenses were separated into price, procedure numbers, costs per procedure, and the percentage of each cost in total, and the two periods were compared to observe whether there is a difference pre-implementation and post-implementation periods of the neoliberal policies in the health sector.

Even though there is a believe that the neoliberal policy has increased the expenses in the health sector, in this study the increase has been more visual in the medicines and materials used and in the number of investigations, more than the increase of the prices. Evaluating the expense items that were analyzed in the research by years, the costs per procedure between 2004 and 2007 increased compared to the other period 2000-2003. The percentage of this rise was of 300% per procedure and of 400% per procedure for each invoice.

INTRODUCTION

After the Second World War, it has been observed that neoliberal policies, which propose reduced state intervention leading to privatization, and decreased state presence in the social arena, have become increasingly common, replacing Keynesian economics, which was dominant in the world (Baskaya 2004: 125-126). As national borders lost their significance and multinational capital expands throughout the world, the state's role in social and economic issues has being accepted to decrease as well. Consequently, multinationals may become more influential in determining national policies as a result of neoliberalism, the predominant idea of the present day economics in the world (Yalcin 2005: 274-275).

After the 1980s, neoliberal policies have begun to be adopted in Turkey. The principal elements of neoliberal economic policies are privatization, deregulation, trade liberalization, establishment of independent audit

committee, free flow of capital, strong reserve policy, and primary surplus (Kozanoglu 2008: 67-90; Baskaya 2004: 132-144 and Senkal 2005: 251).

"Liberalization of foreign trade" and "financial liberalization" have been regarded along with "structural adjustment programs" as key instruments used by the World Bank (WB), the World Trade Organization (WTO), and the International Monetary Fund (IMF) in directing the policies of developing countries (Kozanoglu 2008: 85; Maguire and Barney 2007: 2).

While liberal policies have been implemented to encourage the development of private enterprises in the early years of the Turkish Republic, the state has adopted protective economic policies to help develop the national industry in the ensuing period. Between 1960 and 1980, Turkey has been governed through development plans, and import substitution for industrialization has been adopted. From the establishment of the republic to the 1980s, healthcare policies were implemented to create infrastructure and organization in public healthcare, and efforts were made to abate epidemics, to improve the standard of healthcare given and to provide preventive healthcare.

It is claimed that neoliberal policies have begun to be implemented in Turkey since 24 January 1980 when a stability program and a new development strategy based on export-based liberal policies were adopted (Sener, 2005: 39-41). Similarly, it is reported that reforms in healthcare started in the 1980s in Turkey, consistent with the developments in the way healthcare was financed and provided throughout the world, with the aim of creating a new healthcare industry, which is competitive both domestically and internationally, since providing healthcare with the purpose of obtaining financial profit would have a favorable effect on the efficiency of the healthcare services provided (Leys, 2007: 96).

Healthcare services could not be reached the desired standard in the period extending from the 1980s to the 2000s. However, considerable progress has been made since then, and particularly in 2002 and after, with privatization/autonomization, decentralization, and the family practice, all within the framework of neoliberal policies. In 2002, "Turkey Health Transformation Program" defined the outline of the work that needed to be carried out (T.C. Saglik Bakanligi, 2003: 26). The purpose of "Transformation in Health Program" was indicated in the Ninth Development Plan as easy access to healthcare services, improve the quality of services provided, increase the part of the Ministry of Health in planning and inspection, develop healthcare information systems, ensure rational use of medicine and materials, and establish a general health insurance system (Turkiye Buyuk Millet Meclisi, 2006: 41).

"Transformation in Health Program" may also be regarded as the initiation point of the implementation of neoliberal policies in healthcare in Turkey. Although efforts had been made earlier to implement such policies, they have not been stressed sufficiently. Therefore, in this respect, 2003 is considered to be the reference point of the implementation of neoliberal policies in healthcare in Turkey. A number of legal and administrative changes have been made after 2000 in order to bring all healthcare institutions under a single structure and to establish a general health insurance system, as well as to decentralize and give autonomy to hospitals.

METHODOLOGY

The main aim of this study was to investigate the impact of neoliberal policies that are being implemented in Turkey on treatment costs of inpatients in state training and research hospitals in Istanbul. Industry/technology oriented expenses, such as radiology, laboratory and drugs, and general services, including the physicians' share along with other healthcare workers', were calculated proportionately to the overall services provided over the years. Furthermore, by comparing patient care costs before and after 2003, which is the starting point for the implementation of neoliberal policies in healthcare in Turkey, the impact of neoliberal policies was observed. Since the study is exploratory in nature, the changes observed cannot be directly associated with neoliberal policies, but an interpretation of their relationship can may be made.

According to this, a total of 7,253 invoices for inpatients at Dr. Lutfi Kirdar Kartal Training and Research Hospital and Sisli Etfal Training and Research Hospital between 2000 and 2007 were examined in terms of changes over the years with respect to number of items on the invoices and overall sums. There were two main elements of the study. The first element consisted of the inpatient invoices itemized as costs of a bed, laboratory tests, drugs, medical materials, radiologic examinations, and general services. The prices, number of procedures, cost of each procedure, and the ratio of each item to the total invoice were evaluated with respect to change over the years. The second element of the study was based on the fact that the "Transformation in Health Program," planned by the Ministry of Health in 2002 and implemented in 2003, and is accepted as the starting point of the implementation of neoliberal policies in healthcare in Turkey. Consequently, two separate periods were established; namely, the period between 2000 and 2003, and the period between 2004 and 2007. Similarly, itemized invoices indicating bed, laboratory tests, drugs, medical materials, radiologic examinations, and general

services were evaluated in terms of prices, number of procedures, cost of each procedure, and the ratio of each item to the total invoice for the periods 2000-2003 and 2004-2007.

Therefore, a sampling procedure was carried out by obtaining three inpatient invoices each month from Sisli Etfal Training and Research Hospital and five inpatient invoices from the Dr. Lutfi Kirdar Kartal Training and Research Hospital from the Departments of Internal Diseases, General Surgery, Neurosurgery, Orthopedics and Traumatology, Obstetrics and Gynecology, Pediatrics, Ophthalmology, Chest Diseases, Neurology, and Urology. Since the investigator works at Dr. Lutfi Kirdar Kartal Training and Research Hospital, it was possible to obtain five invoices monthly from each department in that hospital. In the selection of departments, the Departments of Internal Medicine and Surgery were given balanced representation. As Sisli Etfal Training and Research Hospital does not have a department for chest diseases, that particular department was not represented in the sample of invoices collected from the hospital. Even though it was not possible to examine an equal number of invoices from the two hospitals due to time and personnel constraints, all the invoices in the sample were selected randomly. The costs of certain drugs, medical supplies, tests, and some examinations (all of the 5-C Group large prostheses) listed in the Budget Implementation Plan are covered by patients themselves, and as a result, were not included in the examined invoices. Likewise, as dictated in the Budget Implementation Plan, although 5-B group supplies are provided by the hospitals, they are not included in the invoices. Therefore, 5-B group supplies were not assessed in the present study.

A total of 7,253 invoices were collected for the study. The distribution of the invoices according to years was as follows: 12.9% from 2000, 12.8% from 2001, 12.1% from 2002, 12.3% from 2003, 12.1% from 2004, and 12.6% from 2005, 2006, and 2007.

Since the hospital software did not itemize invoices into drugs, medical supplies, laboratory, and other services (itemized invoices did not give grand totals), the investigator classified the invoices manually and entered data into SPSS software for statistical analyses. The data from the study were analyzed against a normal distribution by using one sample Kolmogorov-Smirnov test. Furthermore, non-parametric tests, Mann-Whitney U Test and one sample Kolmogorov-Smirnov (K-S) Test, were used for all of the analyses, as the standard deviation values were much greater than mean values, and as variables were not homogenous. Variables were also tested in one sample and against a normal distribution by using histograms.

FINDINGS AND EVALUATION

A total of 7,253 invoices of inpatients from Dr. Lutfi Kirdar Kartal Training and Research Hospital and Sisli Etfal Training and Research Hospital were examined. Of the invoices, 53.1% belonged to male patients, while the remaining 46.9% belonged to female patients. When the invoices were categorized in terms of their social security institutions, it was observed that the highest ratio was that of the *Yesil Kar*[4]*t* group, with 31.3%. *Yesil Kart* group was followed by *Bag-Kur* with 15.8%, *SSK* with 12.6%, and *Emekli Sandig*[5]*i* with 12.5%. The remaining patients were from various social security systems, such as private funds, 2022, military service personnel, traffic fund, veterans, and private bank foundations (Table 1). The distribution of the invoices with respect to departments was about 10.4% for each, with the exception of chest diseases, which was 6.3%. As invoices were collected in approximately equal numbers, the distribution of invoices was approximately the same. Since the Sisli Etfal Training and Research Hospital did not have a department of chest diseases, the invoices for chest diseases could only be collected from the Dr. Lutfi Kirdar Kartal Training and Research Hospital. Consequently, the ratio for chest diseases was established to be 6.3%.

Table 1. Distribution of the invoices analyzed in terms of gender and social security status

Characteristics	Categories	N	%
Gender	Male	3851	53.1
	Female	3402	46.9
Social Security	SSK	913	12.6
	Emekli Sandigi	908	12.5

[4] Green card

[5] Retirement fund

Bag-Kur	1148	15.8
Yesil Kart	2269	31.3
Paying Patients	620	8.5
Other	484	6.7
Undefined	911	12.6
Total	7253	100.0

The mean data for the inpatients included in the study for the inclusive period between 2000 and 2007 were established as follows: hospitalization period, 7.7 days; cost of a bed, 65.53 TL; laboratory costs, 208.76 TL; drug costs, 167.93 TL; cost of medical supplies, 139.62 TL; radiology costs, 66.30 TL; general service costs, 384.99 TL; and total invoice cost, 843.16 TL. According to these findings, general services were the largest share in the total cost of an inpatient invoice and the second largest share was attributed to laboratory tests. The mean duration of hospitalization was established to be 7.7 days (Table 2).

Table 2. Statistical evaluation of inpatients in the years 2000-2007 with respect to costs per patient (TL)

		Hospitalization (day)	Cost of Bed	Laboratory Costs	Drug Costs	Medical Supplies Costs	Radiology Costs	General Services Costs	Total Invoice Cost
Mean		7.70	65.53	208.76	167.93	139.62	66.30	384.99	843.16
Median		5.00	40.00	106.00	66.00	29.00	34.00	210.00	528.00
STD. Deviation		8.98	112.77	377.73	444.91	588.65	91.14	546.71	1290.63
Min. value		1.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00
Max. value		221.00	3043.00	11511.00	10182.00	22704.00	969.00	12836.00	27219.00
Percentile values	25 %	2.00	17.00	43.00	20.00	5.50	15.00	65.00	232.00
	75 %	10.00	78.00	241.00	175.00	106.00	79.00	539.50	1015.25

The mean number for the inpatients included in the study for the inclusive period between 2000 and 2007 were 45.59 for laboratory procedures, 41.13 for drugs administered, 22.76 for types of medical supplies used, 3.47 for radiologic examinations, 30.20 for general services administered, and 117.35 for the total procedures (Table 3). According to the findings, the highest number of procedures was laboratory tests, followed by the number of drugs administered.

Table 3. Statistical evaluation of inpatients in the 2000-2007 period with respect to the number of transactions per patient

		Number of laboratory procedures	Number of drug transactions	Types of medical supplies	Number of radiologic procedures	Number of general services	Total procedures
Mean		45.59	41.13	22.76	3.47	30.20	117.35
Median		28.00	21.00	14.00	2.00	16.00	72.00
STD. Deviation		85.69	69.49	34.60	3.58	49.02	174.17
Min. value		1.00	1.00	1.00	1.00	1.00	0.00
Max. value		4095.00	1343.00	804.00	46.00	1040.00	4164.00
Percentile values	25 %	11.00	9.00	5.00	1.00	7.00	32.00

75 %	55.00	47.00	30.00	4.00	35.00	145.00

The laboratory data revealed that laboratory costs, the number of procedures, and the distribution in the total invoice cost steadily increased until 2003, but decreased after 2003 and remained stable for the following 3 years (Table 4).

Table 4. Comparison of laboratory data per patient with respect to years

Years	Lab. Cost	No of Lab. Procedures	Cost per Lab. Procedure	Lab. Cost in Total (%)
2000	63	28	2,15	0,28
2001	97	34	3	0,3
2002	161	38	4,37	0,32
2003	174	32	5,79	0,27
2004	145	27	5,36	0,21
2005	116	25	4,37	0,18
2006	79	20,5	3,84	0,15
2007	84	22	3,32	0,15
Chi-square	358.774	84.917	1117.205	471.012
P*	**0.000**	**0.000**	**0.000**	**0.000**

* Kruskall-Wallis test was used.

Similarly, the cost per laboratory procedure increased until 2004, and then remained stable with a slight decrease. While the distribution of laboratory costs in the total invoice cost was about 35% in the early 2000s, laboratory costs decreased to about 20% in the late 2000s.

When the laboratory data was examined over the years, it was also observed that drug costs continued to increase until 2003, decreased slightly after 2003, and remained stable around 174 TL (Table 5). A number of drug transactions per inpatient and costs per drug fluctuated, reaching over 40 transactions in the last 3 years. While the distribution of drug costs in the total invoice cost continued to decrease until 2004, it started rising after 2004, reaching 16% in 2007.

Table 5. Comparison of drug data per patient in the years 2000-2007

	Drug Cost	No. of Drug Transactions	Cost per Drug	Drug Cost Total (%)
2000	32	16	1,61	0,11
2001	70	25,5	2,43	0,15
2002	89	25	3,30	0,14
2003	80	19	3,44	0,1
2004	56	15	3,42	0,06
2005	75	23	2,85	0,11
2006	64	23	2,54	0,1
2007	84	23	3,20	0,12
Chi-square	172.555	87.287	279.840	152.186
P*	**0.000**	**0.000**	**0.000**	**0.000**

* Kruskall-Wallis test was used.

Comparison of medical supplies data in terms of years demonstrated that while the mean value for medical supply costs was 13 TL in 2000, it reached 176 TL in 2007 (Table 6). The number of medical supply items used for each inpatient increased until 2004 and after a slight drop in 2004 remained stable at over 20 per inpatient.

However the costs for medical supplies followed a fluctuating course, it was 1.52 TL in 2000 while it raised to 11.13 TL in 2007. The distribution of costs of medical supplies in the total invoice cost continued to rise until 2004, and after a slight drop in 2004, it remained around 0.9%.

Table 6. Comparison of medical supplies data per patient with respect to the years

	Price of Medical Supplies	No. of Types of Medical Supplies	Cost of Medical Supplies	Medical Supplies in Total (%)
2000	6	8	0,50	0,01
2001	15	12	1,13	0,03
2002	33	17	1,98	0,04
2003	28	15	2	0,04
2004	63	20	2,62	0,06
2005	42,50	15	2,21	0,06
2006	29	15	1,71	0,05
2007	29,50	11	2,32	0,05
Chi-square	283.872	118.628	248.287	195.874
S.D.	7	7	7	7

* Kruskall-Wallis test was used.

Comparison of radiologic findings with respect to years revealed that the radiology costs increased until 2003, remained stable with a slight drop between 2003 and 2007, and the mean cost reached 88.32 TL in 2007 (Table 7). Although the number of radiologic procedures decreased in general, the cost per procedure increased over the years. While the distribution of radiologic costs decreased in the total invoice cost until 2004, it started to rise after 2004, reaching about 10%.

Comparison of data concerning the general services provided demonstrated that the cost increased steadily until 2004, and remained stable after a slight drop in 2004 (Table 8). The number of procedures carried out decreased between 2000 and 2003, but reached a peak in 2003 with 39.87 procedures. There was a slight drop after 2003. The cost of general services per procedure increased steadily between 2000 and 2007. The distribution of general services in the total invoice cost was observed to have increased after 2003.

Table 7. Comparison of radiologic data per patient with respect to years

	Price of Radiologic Exam	No. of Radiologic Procedures	Cost per Radiologic Procedure
2000	20	3	5
2001	23	3	6,67
2002	33	2	12
2003	45	2	15,63
2004	40	2	17,67
2005	34	2	15
2006	38	2	15,5
2007	37	2	13,83
Chi-square	203.158	48.512	795.839
S.D.	7	7	7
P*	**0.000**	**0.000**	**0.000**

* Kruskall-Wallis test was used.

Table 8. Comparison of general services data per patient with respect to the years

	Price for General Services	No. of General Services Transactions	Cost per General Service Provided	General Services in Total (%)
2000	87	17	3,29	0,43
2001	114	17	4,65	0,39
2002	169	17	12,11	0,38
2003	234	19	9,89	0,42
2004	355	17	17,54	0,51
2005	330,5	14	4,11	0,49
2006	280,5	14	13,63	0,51
2007	272,5	13	11,11	0,48
Chi-square	666.182	80.877	1.191.649	118.360
S.D.	7	7	7	7
P*	**0.000**	**0.000**	**0.000**	**0.000**

* Kruskall-Wallis test was used.

When the invoices for inpatients were compared, it was noted that the mean total invoice cost per inpatient and the mean number of transactions increased until 2004 and decreased to a stable level after 2004 (Table 9). The cost per invoiced procedure increased steadily from 2000 to 2007.

Table 9. Comparison of general inpatient data per patient with respect to years

	Total Invoice Cost	No. of Transactions	Total Cost per Transaction
2000	246,5	57	3,32
2001	335,5	69	4,13
2002	502,5	78	5,55
2003	682	75	7,44
2004	732	78	9,11
2005	692,5	76	7,90
2006	660	74	7,25
2007	690	69	8,44
Chi-square	886.674	39.905	1.183.368
S.D.	7	7	7
P*	**0.000**	**0.000**	**0.000**

* Kruskall-Wallis test was used.

Comparison of total invoice cost with bed, laboratory, drugs, medical supplies, radiology, and general services with respect to social security status revealed statistically significant differences ($p<0.05$) (Table 10). Comparison of the inpatient invoices in terms of social security institutions demonstrated that the highest number and cost for drugs and medical supplies belonged to patients with *Yesil Kart*. The highest total invoice cost per patient was also in patients with *Yesil Kart* (1,094.60 TL), while the Paying Patients group, who paid their own invoices themselves, had the lowest sums (342.25 TL).

Table 10. Distribution of inpatient invoices between the years 2000 and 2007 with respect to social security status and cost elements

		Cost of Bed	Laboratory Cost	Drugs Cost	Medical Supply Cost	Radiology Cost	Total Invoice Cost
SSK	Mean	78.21	234.39	109.45	101.38	81.28	960.66
	n	801.00	678.00	560.00	626.00	471.00	913.00
	S.D.	104.74	436.25	206.06	177.19	101.25	1143.83
Emekli Sandigi	Mean	63.57	226.69	125.37	116.73	62.21	863.92
	n	868.00	705.00	751.00	637.00	471.00	907.00
	S.D.	70.36	525.80	213.00	314.56	89.15	982.03
BAG-KUR	Mean	66.89	250.70	150.86	100.78	63.54	869.67
	n	1116.00	942.00	877.00	671.00	665.00	1148.00
	S.D.	91.29	343.92	332.98	400.62	83.58	1095.48
Yesil Kart	Mean	77.49	216.62	230.00	216.94	74.72	1094.60
	n	2198.00	1912.00	1930.00	1653.00	1355.00	2267.00
	S.D.	147.94	397.65	586.08	872.35	104.35	1744.85
Paying Patients	Mean	32.45	105.80	59.79	35.87	51.73	342.25
	n	593.00	582.00	230.00	177.00	418.00	620.00
	S.D.	50.31	133.93	77.10	48.09	67.60	369.51
Other	Mean	63.13	221.12	217.63	105.54	46.08	769.33
	n	472.00	411.00	325.00	192.00	333.00	484.00
	S.D.	154.34	376.50	696.36	219.75	57.41	1477.63
	Chi-square	367.67	184.67	164.30	48.00	56.27	491.56
	S.D.	5.00	5.00	5.00	5.00	5.00	5.00
	P*	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**

* Kruskall-Wallis test was used.

Comparison of total invoice cost with cost for bed, laboratory, drugs, medical supplies, radiology, and general services showed statistically significant differences ($p<0.05$) (Table 11). When the inpatient invoices were classified with respect to departments and costs, the lowest mean cost per inpatient was noted in the Department of Obstetrics and Gynecology (455.04 TL), while the highest mean cost was observed in the Department of Neurosurgery (1.546.90 TL).

Table 11. Distribution of inpatient invoices between the years 2000 and 2007 with respect to departments and cost elements

		Cost of Bed	Laboratory Cost	Drug Cost	Medical Supplies Cost	Radiology Costs	General Services Cost	Total Invoice Cost
Pediatrics	Mean	64.27	195.76	242.35	44.77	48.55	159.57	581.56
	n	724.00	687.00	428.00	412.00	382.00	732.00	754.00
	S.D.	96.62	406.28	689.18	169.01	80.06	398.12	1258.06
Obstetrics and Gynecology	Mean	31.70	87.97	71.49	45.44	33.92	256.68	455.04
	n	714.00	687.00	465.00	463.00	466.00	768.00	770.00
	S.D.	38.01	129.39	91.49	60.35	38.99	294.68	462.71

	Mean	95.02	265.46	223.21	84.98	47.06	364.20	962.64
Chest Diseases	**n**	454.00	437.00	359.00	167.00	405.00	455.00	457.00
	S.D.	153.35	313.05	476.00	503.95	52.32	464.37	1299.57
	Mean	46.77	190.20	191.64	125.28	61.57	411.90	852.83
Surgery	**n**	722.00	574.00	599.00	517.00	289.00	761.00	772.00
	S.D.	55.30	327.70	545.97	414.91	91.17	481.74	1217.61
	Mean	77.99	390.62	238.93	102.28	65.35	200.26	887.62
Internal Diseases	**n**	732.00	726.00	533.00	370.00	391.00	731.00	754.00
	S.D.	160.29	670.19	586.10	535.49	88.53	598.46	1532.39
	Mean	68.74	186.09	106.52	35.13	90.46	164.61	546.24
Neurology	**n**	719.00	706.00	565.00	321.00	424.00	701.00	744.00
	S.D.	139.96	298.49	227.77	149.97	82.28	389.95	975.56
	Mean	99.99	237.02	252.52	315.69	141.45	732.93	1546.90
Neurosurgery	**n**	717.00	661.00	574.00	528.00	501.00	742.00	753.00
	S.D.	165.90	342.55	627.20	1181.90	140.62	763.03	2053.47
	Mean	40.85	47.78	56.09	238.17	21.33	487.50	711.30
Ophthalmology	**n**	705.00	206.00	424.00	457.00	60.00	733.00	745.00
	S.D.	38.14	62.78	90.79	422.92	46.70	359.66	565.09
	Mean	86.79	220.40	171.73	231.73	64.80	545.59	1109.40
Orthopedics	**n**	690.00	624.00	517.00	484.00	522.00	736.00	752.00
	S.D.	110.17	336.20	269.57	843.49	82.31	686.34	1529.17
	Mean	54.03	152.38	120.54	73.15	31.74	506.35	829.17
Urology	**n**	709.00	550.00	576.00	542.00	376.00	746.00	749.00
	S.D.	49.12	216.64	225.82	180.27	55.63	504.04	804.88
	Chi-square	602.30	893.97	359.78	765.12	664.08	1463.87	808.62
Significancy	**S.D.**	9.00	9.00	9.00	9.00	9.00	9.00	9.00
	P*	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**

* Kruskall-Wallis test was used.

Comparison of total number of procedures with laboratory, drugs, medical supplies, radiology, and general services with respect to departments demonstrated statistically significant differences ($p<0.05$) (Table 12). When the inpatient invoices were compared with respect to departments and costs in terms of the number of

transactions, it was established that the lowest number of transactions was in the Department of Ophthalmology (34.03), while the highest number of transactions was in the Department of Internal Diseases (174.68). The number of drugs administered and the mean drug costs were lowest in the Department of Ophthalmology. The Department of Neurosurgery had the highest mean drug cost (252.52 TL). In terms of items of the medical supplies used, the Department of Neurosurgery topped the list, followed by the Department of Orthopedics and Traumatology.

Table 12. Comparison of inpatient invoices between the years 2000 and 2007 with respect to departments and cost elements in terms of number of transactions

		Number of Laboratory Procedures	Number of Drug Transactions	Number of Types of Medical Supplies	Number of Radiologic Procedures	Number of General Services	Total Number of Procedures
	Mean	44.98	44.43	18.67	3.09	28.46	113.09
Pediatrics	**n**	687.00	428.00	412.00	382.00	732.00	754.00
	S.D.	77.28	87.06	39.34	3.95	44.70	191.83
	Mean	13.98	20.42	24.75	2.67	15.20	60.03
Obstetrics and Gynecology	**n**	687.00	465.00	464.00	466.00	766.00	770.00
	S.D.	19.27	23.67	23.88	3.33	13.57	58.91
	Mean	71.69	75.60	17.68	3.53	77.06	225.49
Chest Diseases	**n**	437.00	359.00	167.00	405.00	455.00	457.00
	S.D.	77.84	103.81	72.53	2.83	113.33	263.48
	Mean	41.80	41.58	25.68	3.51	25.42	112.69
Surgery	**n**	574.00	599.00	517.00	289.00	761.00	772.00
	S.D.	76.80	61.08	23.66	3.51	28.76	157.72
	Mean	87.24	55.06	14.84	3.15	37.93	174.68
Internal Diseases	**n**	724.00	533.00	370.00	391.00	731.00	754.00
	S.D.	173.42	104.19	35.41	2.97	54.11	251.53
	Mean	46.41	36.91	18.10	2.48	29.60	116.40
Neurology	**n**	705.00	565.00	321.00	423.00	701.00	743.00
	S.D.	53.99	50.86	49.34	1.98	42.66	154.91
	Mean	46.75	57.95	36.08	5.03	40.92	163.46
Neurosurgery	**n**	657.00	574.00	528.00	499.00	741.00	753.00
	S.D.	73.41	86.62	39.73	4.39	42.64	193.44
	Mean	10.04	15.96	12.61	1.43	9.55	34.03
Ophthalmology	**n**	205.00	424.00	457.00	60.00	731.00	745.00

	S.D.	9.84	15.26	10.79	0.83	11.43	28.42
	Mean	42.97	40.52	31.56	5.10	36.79	133.48
Orthopedics	n	624.00	517.00	484.00	522.00	736.00	752.00
	S.D.	53.07	46.64	33.31	4.50	51.61	162.30
	Mean	28.01	27.02	18.86	2.18	19.71	82.94
Urology	n	550.00	576.00	542.00	376.00	746.00	749.00
	S.D.	37.87	34.88	16.29	1.88	24.40	92.81
	Chi-square	1422.71	405.04	703.32	471.21	922.29	1293.25
Significancy	S.D.	9.00	9.00	9.00	9.00	9.00	9.00
	P*	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**

* Kruskall-Wallis test was used.

After the data of laboratory, drug, medical supplies, and general services in the inpatient invoices were assessed with respect to years, departments, and social security institutions, they were classified into two groups by designating 2003 as the point of reference when neoliberal policies began to be implemented in healthcare. Therefore, in order to assess the items on invoices, two groups, the period between 2000 and 2003, and the period between 2004 and 2007, were formed. The analyses aimed to compare the data until 2003 with data after 2004 in order to evaluate specifically the impact of a performance-based revolving fund system initiated in 2003, along with the impact of other changes on costs and the number of transactions.

Number of laboratory procedures, cost per laboratory procedure, and ratio of cost-total invoice cost with respect to years revealed statistically significant differences ($p<0.05$) (Table 13). When the inpatient invoices were analyzed with respect to periods in terms of laboratory costs, the number of transactions, the cost per transaction, and the price-total invoice ratio, it iss observed that laboratory costs and the number of transactions were decreased in the 2004-2007 period compared to 2000-2003 years, while the cost per laboratory procedure increased by 42.52% in the 2004-2007 period compared to the previous period. On the other hand, the laboratory price-total invoice ratio dropped in the period 2004-2007 compared to the period 2000-2003.

Table 13. Comparison of laboratory costs, number of laboratory procedures, cost per procedure, and ratio of laboratory cost-total invoice cost with respect to years

		Laboratory Cost (TL)	Number of Laboratory Procedures	Cost per Laboratory Procedure (TL)	Distribution of Laboratory Cost in The Overall Invoice (%)
	Mean	209.2906	50.2747	5.3082	0.3498
2000-2003	Median	109.0000	32.0000	4.0351	0.2936
	S.D.	396.53729	103.11424	5.31286	0.23937
	Mean	208.2057	40.6717	7.5651	0.2312
2004-2007	Median	103.0000	24.0000	4.3333	0.1687
	S.D.	356.93786	62.01057	9.14966	0.19843
	U	4254900.500	3790040.500	3699402.500	2939724.000
	Z	-0.492	-7.517	-8.919	-20.784
	P*	0.623	**0.000**	**0.000**	**0.000**

* The Mann-Whitney U test was used.

Comparison of drug cost, number of drug transactions, cost per drug, and ratio of drug cost- total invoice cost with respect to years revealed statistically significant differences, except for the number of drug transactions ($p<0.05$) (Table 14). Comparison of drug data with respect to years investigated revealed that drug costs, transactions for drugs and cost per drug were increases in the 2004-2007 period compared to the 2000-2003 period. However, the distribution of drug costs in the total inpatient invoices was decreased in 2004-2007 period compared to 2000-2003 period.

Table 14. Comparison of drug costs, number of drug transactions, cost per drug transaction, and ratio of drug cost-total invoice with respect to years

		Drug Cost	Number of Drug Transactions	Cost per Drug	Distribution of Ratio of drug cost in The Overall Invoice (%)
	Mean	162.2812	39.2052	4.8773	0.1628
2000-2003	Median	63.0000	21.0000	2.7572	0.1232
	S.D.	466.76152	59.97966	23.40940	0.15537
	Mean	172.2121	42.5943	5.2498	0.1363
2004-2007	Median	69.0000	21.0000	3.0000	0.1001
	S.D.	427.63820	75.87921	21.36487	0.12973
	U	2962988.500	3063665.500	2916942.500	2842501.000
Significancy	Z	-2.971	-1.004	-3.872	-5.267
	P*	**0.003**	0.316	**0.000**	**0.000**

* The Mann-Whitney U test was used.

Comparison of medical supplies prices, types of medical supplies, cost for medical supplies, and ratio of medical supplies price-total invoice cost with respect to years revealed statistically significant differences ($p<0.05$) (Table 15). Comparison of medical supplies data with respect to years demonstrated that the price of medical supplies, the number of transactions related to medical supplies, the cost of medical supplies, and the distribution of medical supplies price in the total invoice cost for inpatients significantly rose in the 2004-2007 period when compared with the 2000-2003 period. The price of medical supplies rose by about 125% in the 2004-2007 period when compared with the 2000-2003 period.

Table 15. Comparison of medical supplies prices, types of medical supplies, cost for medical supplies, and ratio of medical supplies price-total invoice with respect to years

		Price of Medical Supplies	Number of Types of Medical Supplies	Cost of Medical Supplies	Distribution of Medical Suppy Price in Total (%)
	Mean	76.6729	21.3087	5.4828	0.0637
2000-2003	Median	18.0000	13.0000	1.5000	0.0324
	S.D.	262.39253	35.32191	23.58113	0.10566
	Mean	173.3207	23.5391	8.6241	0.0917
2004-2007	Median	41.0000	15.0000	2.2083	0.0561
	S.D.	701.43326	34.19492	37.57757	0.13073
	U	1694522.500	1959623.000	1679906.500	1673436.500
Significancy	Z	-9.604	-2.707	-9.981	-10.099
	P*	**0.000**	**0.007**	**0.000**	**0.000**

* The Mann-Whitney U test was used.

Comparison of radiologic examination price, number of radiologic procedures, cost per radiologic procedure, and ratio of radiologic examination price- total invoice cost with respect to years revealed statistically significant differences ($p<0.05$) (Table 16). Comparison of radiologic examination data with respect to years revealed that the price of radiologic examinations and the cost per radiologic examination were significantly higher in the 2004-2007 period when compared with the 2000-2003 period. On the other hand, the number of radiologic examinations and the distribution of radiologic examination costs in the total inpatient invoice cost declined.

Table 16. Comparison of radiologic examination prices, number of radiologic procedures, cost per radiologic examination, and ratio of radiologic examination price- total invoice cost with respect to years

		Radiologic Examination Price (TL)	Number. of Radiologic Procedures	Cost per Radiologic Procedure (TL)	Distribution of Radiologic Examination Price in the Overall Invoiced Cost (%)
	Mean	54.8373	3.8548	15.4039	0.1222
2000-2003	Median	30.0000	2.0000	10.0000	0.0648
	S.D.	75.71306	4.07972	15.84063	0.15299
	Mean	77.2293	3.0983	23.5875	0.0984
2004-2007	Median	39.0000	2.0000	15.0000	0.0497
	S.D.	102.56262	2.97740	21.51946	0.12558
	U	1553001.500	1651731.000	1226342.000	1625784.500
Significancy	Z	-7.826	-4.959	-17.367	-5.634
	P*	**0.000**	**0.000**	**0.000**	**0.000**

* The Mann-Whitney U test was used.

Comparison of price for general services, number of general services, cost per general service provided, and ratio of general services price-total invoice cost with respect to years demonstrated statistically significant differences ($p<0.05$) (Table 17). When the data regarding general services were compared with respect to years, it was noted that while the number of general services provided decreased, the price of general services, the cost per general services provided, and the distribution of the price of general services in the total inpatient invoice significantly increased in 2004-2007 when compared with the 2000-2003 period. The price of general services increased by approximately 80%, and the cost per general service provided increased by 300% in the 2004-2007 period compared with the 2000-2003 period.

Table 17. Comparison of price for general services, number of general services, cost per general service provided, and ratio of general services price- total invoice cost with respect to years

		General Services Price (TL)	Number of General Services	Cost per General Service Provided (TL)	Distribution of General Service Price in Total-Invoice Cost (%)
	Mean	274.0205	35.4853	15.4512	0.4289
2000-2003	Median	134.5000	17.0000	5.8065	0.4041
	S.D.	411.10587	61.50539	29.04646	0.28139
	Mean	493.2127	25.0592	61.0880	0.4923
2004-2007	Median	302.0000	14.0000	16.0000	0.4985
	S.D.	633.96748	31.72681	164.70252	0.26388
	U	4397306.500	5631171.000	3572138.500	5416633.500
Significancy	Z	-22.117	-7.750	-31.593	-10.289

	P*	0.000	0.000	0.000	0.000

* The Mann-Whitney U test was used.

Comparison of invoiced total, number of transactions, and ratio of cost per transaction-total invoice cost with respect to years revealed statistically significant differences except for the total number of transactions ($p<0.05$) (Table 18). Comparison of data regarding price and the number of transactions in invoices of each inpatient with respect to years demonstrated that the total invoice cost was about 70% increased in the 2004-2007 period when compared with the corresponding value in the 2000-2003 period. However, the number of total transactions was found to decrease in the 2004-2007 period. On the other hand, the cost per transaction in the invoices rose by around 400%. However, the overall number of transactions was slightly lower in the 2004-2007 period than the 2000-2003 period.

Table 18. Comparison of invoiced total, number of transactions, and ratio of cost per transaction-total invoice cost with respect to years

		Total Invoice Cost (TL)	Total Number Of Transactions	Distribution of Cost per Transaction in Total Invoiced Cost (%)
	Mean	644.8984	117.9444	8.8189
2000-2003	Median	395.0000	70.0000	5.1154
	S.D.	1025.47302	184.55175	15.85563
	Mean	1042.0785	116.7543	43.9158
2004-2007	Median	693.0000	75.0000	8.1595
	S.D.	1484.35569	163.10916	161.37820
	U	4656438.000	6399200.500	4226187.000
Significancy	Z	-21.478	-1.900	-26.128
	P*	**0.000**	0.057	**0.000**

* The Mann-Whitney U test was used.

When expenditures, other than those related to laboratory tests, were taken separately, the cost of each item was noticed to have increased. As can be seen from the below table, the change in charges observed in the whole sum of the invoice is balanced with and parallel to that in charges observed in the total cost of the items making up the invoice. Yet, when cost per procedure was considered, it was noticed that there exists in the sum of the invoice a much greater increase than the expected percentage of 133. This could be related to the practise of issuing invoices in a more detailed style, as a direct result of automation and increased supervision; two practises which were started with the introduction of neoliberal applications.

Table 19: Differences between the health care expenditures effected before* and after** the transition to neoliberal health care policies (in percentages).

	Difference in charges per each item of cost	Number of procedures	Difference in cost per each procedure	Percentage of item in the invoice %
Laboratory	-0.52%	-19.10%	42.58%	-34.31%
Medicine	6.12%	8.65%	7.59%	-18.43%
Medical supplies	126.05%	10.47%	57.27%	47.10%
Radiological examinations	40.83%	-19.72%	53.10%	-16.37%
General service	79.99%	-29.39%	295.38%	13.99%
Total sum of the invoice	61.59%	-1.01%	398.01%	-

*Between the years 2000 and 2003. ** Between the years 2004 and 2007.

CONCLUSION AND RECOMMENDATIONS

The year 2003 witnessed the introduction of *Health Care Transformation Programme*, which involved Family Medicine and General Health Insurance, as well as privatizing and giving autonomy to public institutions. This study, therefore, considers 2003 as a turning point that signifies a transition to neoliberal health care policies in Turkey. Following this transition, the expenditure on total patient treatment and average cost per each procedure were observed to increase more significantly between 2004 and 2007 than between 2000-2003 (Table 20). When this study was initiated, it was argued that neoliberal policies could have increased the total expenditure on health. As part of this total expenditure, the percentage of the sum of below-mentioned items and services was thought to have risen year by year: drugs, medical supplies, various diagnostic tests performed in the laboratory and by radiological means. On the other hand, the percentage of the overall cost of health care services was estimated to have decreased year by year. However, when the actual average cost of each service in various training hospitals was obtained and evaluated, it was realized that the expenditure on overall health care services enormously increased by 295%. This was followed by an increase over 43% in all the items of expenditure except medicine. It is a fact that an EU regulation caused the cost of medicine to decrease by 20% during the period of 2004-2007. This may be the reason why the cost of medicine did not rise significantly.

As regards the differences in the costs of health care services, data obtained from the training hospitals revealed that, apart from those rendered by laboratories, the cost of other services increased steadily until 2003 and 2004, but stabilized afterwards. For each in-patient, average sum of invoice and number of procedures undertaken increased until 2004, but levelled off from then on. Between 2000 and 2007, cost per each item of invoice steadily increased. So did the general cost of patient treatment. Looking back at table 20, it can be stated that this increase is a result of the rise in the cost of medicine, medical supplies, and examinations and tests. At first glance it may seem that the stability of the cost of the charges and number of procedures was an expected result of the application of neoliberal policies. However, the increase in the total expenditure on patient care was contrary to expectations.

As the result of the research indicates the mean value for the total number of transactions and total invoice cost for each inpatient increased until 2004, but remained steady after decreasing slightly after 2004. The following factors may have had an impact on the elevated number of mean transactions and total invoice cost until 2004:

1. The hospitals began employing medical secretaries through subcontractors by means of tenders to carry out invoicing procedures, and automated systems started to be used. Consequently, the records of all the services, drugs, and medical supplies were kept more meticulously;
2. Both of the hospitals included in the study were training and research hospitals. Therefore, they had access to and utilized newly developed drugs and medical supplies before other hospitals did;
3. Lack of experience of hospital purchasing departments in implementing the newly prepared Public Procurement Regulations and underdeveloped competitive market conditions;
4. As a performance-based revolving fund system began to be used, superfluous laboratory examinations and tests may have been requested, or automation errors may have led to repeated data entry.

The following factors may have led to a decreased number of transactions and invoiced sums after 2004:

1. The Social Security Institution published the Social Security Institution Healthcare Directive (SSHD) in 2007 and the Finance Ministry published the Budgetary Implementations Directive (BID), which had a positive impact on lowering the prices (SSHD and BID regulate drug prices, drug restrictions, restrictions on the prices and quantities of medical supplies and services, and restrictions on examinations);
2. The decrease in the rate of inflation was reflected on prices in the healthcare industry;
3. Restrictions on drugs, medical supplies and services through Medula[6], and maintaining the prices for drugs and medical supplies and services under check through inspections at state hospitals conducted by the Public Procurement Authority and the Ministry of Health;
4. By using internal auditing systems and inventory monitoring software, hospitals avoided the waste of medical supplies and kept under control the examinations and services given to patients. Moreover,

[6] Medula is the system that enables to connecting all social security organizations in Turkey like social security organization, retirement fund, "Bagkur", and Green Card in one body as public health insurance.

standards were defined for surgical operations or medical services, and for cases in which there was no standard defined; upper limits were established by utilizing automation systems.

As this research was carried out in two training hospitals, Şişli Etfal and Dr. Lütfi Kırdar, the result of the research could not be generalized into the broad phenomenon of the effect of neoliberal policies in health sector. Such variables as the competitiveness of companies, governmental intervention, individuals' level of knowledge and demands pertaining to health care have a potential to affect the expenditure on items of health care following the transition to neoliberal policies. In fact, it might be these variables that make it difficult to interrelate pre- and post-neoliberal periods.

As literature study indicates that there is no such a research in economics, management, medicine and international business fields etc., researchers would produce many studies within the scope of this study. Further studies in other cities of Turkey and in other countries are needed if the effects of neoliberal health care policies on cost in order to generalize the results in to the health sector. This might be a starting point for further studies. Another further study may be conducted on the variables that might have affected health care costs before and after the implementation of neoliberal policies in health care.

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