

The Effects of Economic Crisis on the Demand and Supply of the Dental Services in Greece

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ABSTRACT

Objectives: This paper attempts to explore the impact of the economic crisis on the supply and demand of dental care services by listing the changes in costs for dental care as well as by the use of a questionnaire administered to dentists.

Materials and Methods: The Health Accounts System, the Household Budget Surveys of the Greek Statistical Authority, and a questionnaire distributed to dentists working as self-employed were used as analysis tools. The survey involved a total of 361 dentists from all the regions of the country.

Results: During the period of the economic crisis, the household expenses for dental care decreased by 57% according to the Health Accounts System and by 59.38% according to the Household Budget Surveys. Regarding public expenditures, the direct government expenses decreased (excluding social insurance) by 57.55% and social insurance by 91.04%. On the demand side, the majority of respondents indicate a reduction in quantity and prices of dental procedures. An increase is noted in the number of extractions and changes are not reflected in the number of fillings and surgical extractions. For root canal treatments, the percentage of dentists stating decrease in the number is almost equal to the percentage indicating increase. On the supply side, respondents notice an increase in professional costs due to an increase taxes and materials.

Conclusions: Dental expenditures and private income for dentists collapsed during the Greek economic crisis, and demand for dental services remained stable only for emergency cases and pain management.

KEYWORDS: *Dental care, Greece, health expenditure*

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INTRODUCTION

The “recipe” followed in Greece to deal with the economic crisis proved to be “toxic” for the economy and society. The “price” for reducing the government deficit (15.70% as a percentage of GDP in 2009 and 3.5% in 2014), achieving a primary surplus in 2014 (0.4% as a percentage of GDP) and the “restoration” of the deficit on the current account balance (-10.9% as a percentage of GDP in 2009, +0.9% in 2014) was heavy. Unemployment escalated from 9.6% in 2009 to 26.49% in 2014, the government debt increased from 129.7%, as a percentage of GDP, to 177.1% in 2014, and GDP fell from 231,081 million euros in 2009 to 179,081 million in 2014.^[1]

The impact of the economic crisis on the health system is concentrated on reducing public spending, shifting the financial burden to individuals and the difficulties of access for the uninsured. Although the impact on the population health status is long lasting, changes concerning the self-estimated level of health, mental health, children’s health, infectious diseases, and the increase in suicides are already listed.^[2]

In the field of oral health, an increased rate of unmet needs, especially at the ages of 12 and 15^[3] and a

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reduced number of visits are noted.^[4] The impact of the economic crisis on the supply and demand of dental care services in the private and public sector is the subject of the present survey.

MATERIALS AND METHODS

The data used, concerning the public and private spending on dental care, came from the Health Accounts System and the Household Budget Surveys of the Greek Statistical Authority. For the comparison of the respective amounts with the countries of the Economic Cooperation and Development Organization, the database of the Organization was used. The Health Accounts System defines the financial burden of each financial institution and the direction of health expenditure per health care provider according to health activity. The implementation of the system followed the “bottom-up” approach drawing health expenditure information from Ministries, Social Security Funds, the Association of Insurance Companies, Local Authorities, Non -Government Organizations, the Church of Greece, and the Household Budget Surveys of the Greek Statistical Authority. The Household Budget Survey is carried out annually. Data refer to the average monthly expenses on the basis of which the annual household spending on health services and products was estimated.^[5] At the same time, the Household Budget Surveys explore the consumption behavior of the households, which are classified by demographic, social, and economic criteria (urban–rural areas, value of purchases, income).^[6]

The impact of the economic crisis on the dental profession was investigated by the use of a questionnaire, to which 361 dentists of the private sector responded. The questionnaire was distributed mainly by e-mail and includes two sections. The first section explores the demographic and professional data of the participants. In the second section, an attempt is made to record the views of dentists on the change in the number of procedures,

variability of prices, amount of work completed the previous month, and evolution of the professional cost. The answers were anonymous and confidential. The results were used exclusively for research and academic purposes. Although our sample of dentists is large enough, it is not representative of the Greek dental practitioners. The total number of privately practiced dentists is estimated at 11100 according to authors’ research in the period from September 2014 to February 2015. At the same time, a precise response rate cannot be determined given that the questionnaire circulated electronically both the authors and by the Secretaries of Dental Associations. For the investigation of the relationship between two categorical variables, the chi-square test was used. The level of statistical significance was set at 0.05. For data analysis, we used the Statistical Package for Social Sciences, version 22.0 (IBM Corp.)

RESULTS

Between 2009 and 2013, the costs for dental care decreased by 57%, from 1.97 billion in 2009 to 847 million euros in 2013 (current prices). The government expenditure (excluding social insurance) fell to 1.61 million in 2013 from 3.77 million in 2009 (–57.29%). A collapse was observed in the costs of social insurance from 19.51 million in 2009 to 1.21 million euros in 2013 (–93.79%). Private expenditure on dental care concerns only private payments and fell from 1953.56 million euros in 2009 to 843 million euros in 2013 (–56.8%). The percentage of private payments for dental services compared to the total of out-of-pocket payments for services and health products reduced (28% in 2009, 16.5% in 2013).^[7]

The rapid reduction of the spending for dental services is reflected in the evolution of the per capita expenditure at current prices (PPP) [Table 1].^[8]

Between 2009 and 2014, the average monthly expenditure for health services and products decreased

Table 1: Per capita expenditure on dental care (in USD, PPP)

Year	Total expenditure		Household expenditure		Social insurance funds expenditure		Government expenditure (excluding social insurance)		Private insurance expenditure	
	Greece	OECD average	Greece	OECD average	Greece	OECD average	Greece	OECD average	Greece	OECD Average
2009	253.43	177	250.37	101.40	2.57	46.06	0.48	13.74		38.89
2010	213.81	179.68	211.35	102.00	2.19	46.65	0.25	14.10		40.63
2011	192.43	188.62	190.11	106.95	2.02	48.07	0.29	20.06		42.34
2012	125.03	183.84	124.29	105.20	0.55	49.27	0.19	20.67		45.17
2013	120.06	186.25	119.58	100.94	0.25	46.00	0.22	17.54		50.03
Variation 2009-13(%)	-52.62	+5.22	-52.23	-0.45	-90.27	-	-54.16	+27.65		+28.64

Source = OECD

by 21.23% from 134.27 euros in 2009 to 105.76 euros in 2014 (current prices). In the individual units of expenses, a decrease in expenses for outpatient medical and dental services was observed, -51% and -59.74%, respectively, and an increase in expenditure on medicines, pharmaceuticals, therapeutic appliances, and equipment (+25.47%) as well as hospital care (+31.76%).^[9]

Differentiation in the composition of the mixture of the household expenditure on health services and products is reflected in the evolution of the percentage of the individual costs in the total expenditure. In 2009, the cost of drugs, pharmaceuticals, therapeutic appliances, and equipment accounted for 23.27% of the total expenditure. In 2014, this rate was 37.07%. In 2009, 17.54% was channelled to hospital care. In 2014, hospital care absorbed 29.34% of the total expenditure. During the same period, the proportion of expenditure on outpatient medical services (excluding dentists) decreased from 29.81% in 2009 to 18.56% in 2014. The proportion of expenditure on dental services decreased from 29.38% in 2009 to 15.01% in 2014.^[9]

The Household Budget Surveys contribute to the assessment of the total private consumption of services and health products [Table 2].

In urban areas, the declines in the average monthly expenditure for dental care in the period 2009–2014 reached 61.37% and in rural areas it was 43.77%.^[9] The highest rates of reduction in the average monthly

expenditure on individual categories of households, according to the amount of monthly purchases, are recorded in households with total monthly purchases of up to 1800 euros. According to the monthly income, the highest reduction rates are observed in households with income up to 1451 euros [Table 3].

The average monthly expenditure for health services and products of the richest 20% of the population is 6.14 times more than the corresponding expenditure of the poorest 20% in 2014. For drugs, pharmaceuticals, therapeutic appliances, and equipment, the average monthly expenditure of the richest 20% of the population is 2.27 times more than the corresponding expenditure of the poorest 20%. For outpatient medical (and dental) services, the average monthly expenditure of the richest 20% of the population is 8.77 times more than the corresponding expenditure of the poorest 20%. Especially for dental care, the average monthly expenditure of the richest 20% of the population is 18.23 times more than the corresponding expenditure of the poorest 20%. For hospital care, the average monthly expenditure of the richest 20% of the population is 18.64 times more than the corresponding expenditure of the poorest 20%.^[10]

The demographic and professional characteristics of dentists who participated in the survey are listed in Table 4.

The majority of dentists indicate a decrease in the number of dental transactions except for fillings, extractions, and

Table 2: Spending for health services and products (drugs, etc., medical services, dental services, hospital care) in billion euros

Years	2014	2013	2012	2011	2010	2009	Variation 2009-14 (%)
Number of households	4,136,073	4,178,116	4,163,236	4,148,860	4,131,264	4,114,150	
Health services and products	5.24	5.23	5.22	5.69	6.15	6.62	-20.84
Drugs, etc	1.94	1.86	1.62	1.53	1.59	1.54	+25.97
Medical services	0.98	1.07	1.19	1.52	1.69	1.98	-50.50
Dental services	0.78	0.84	0.98	1.32	1.64	1.94	-59.38
Hospital care	1.54	1.46	1.43	1.32	1.23	1.16	+32.75

Source = Hellenic Statistical Authority (Household Budget Survey 2009-2014)

Table 3: Percentage change in the average monthly cost for dental care of households

	Households with monthly total purchases							
	Up to 750 €	751-1100 €	1101-1450 €	1451-1800 €	1801-2200 €	2201-2800 €	2801-3500 €	3501 και άνω €
2009	3,13	13,80	18,36	23,55	28,04	34,99	51,07	85,85
2014	1,8	5,11	8,69	12,65	20,15	23,63	35,52	47,64
Change in 2009-2014 (%)	-73,88	-62,97%	-52,66%	-46,28%	-28,13%	-32,46%	-30,44%	-44,50%
	Households with a monthly total income							
	Up to 750 €	751-1100 €	1101-1450 €	1451-1800 €	1801-2200 €	2201-2800 €	2801-3500 €	3501 και άνω €
2009	12,73	22,12	26,75	29,53	34,63	45,60	44,33	84,68
2014	5,22	8,47	10,32	18,76	16,91	22,97	32,5	38,41
Change in 2009-2014 (%)	-58,99%	-61,70%	-61,42%	-36,47%	-51,16%	-49,62%	-26,68%	-54,64%

Source = Hellenic Statistical Authority (Household Budget Survey 2009–2014)

surgical extractions. The highest rates of dentists who report a reduction in the amount of their respective tasks are reflected in prosthetics (74.8% in bridges –58.2% crowns and dentures) and prevention (56%) [Table 5]. The change in the quantity of dentures is affected by the level of the degree (undergraduate or postgraduate studies) ($P = 0,000$) and the place of professional activity ($P = 0.034$). The undergraduates and professional practitioners in Attica, the most populated region of Greece, indicate a higher percentage over others that the amount of dentures has dropped. The change in quantity of crowns is affected by the level of the degree ($P = 0.000$) and the place of practice ($P = 0.016$). The undergraduates and profession practitioners in Attica report at higher rates compared

to the others that the quantity of crowns has declined. Regarding price evolution, the majority of dentists indicate a decrease for all procedures.

Last month, 25% of dentists completed 11–20 fillings, 45.2% 0–10 extractions, 55.4% 0–5 quarters (a radical paring), and 52.9% 0–10 root canal treatments. 37.1% of the dentists completed 0–5 “crowns” (the number of “crowns” included, besides the individual crowns, retainers, and pontics of bridges) and 66.8% 0–2 dentures. In the field of prevention, 67.9% of dentists completed 0–5 fluoride treatments and 67.6% 0–5 preventive fillings.

A reduced demand in private dental offices was not accompanied by a shift in a demand in the public sector. During the period 2012–2013, the total number of visits to the health centres of the National Health System decreased by 33.04% from 172.411 in 2012 to 156.206 in 2013. During the same period, the number of dentists in 6 out of 7 health districts decreased by 11.11% from 117 in 2012 to 104 in 2013. In 2013, the total number of dentists working at health centres in the seven health districts was 153. The number of visits per dentist in these regions has increased by 77.95% from 676 in 2012 to 1203 in 2013.^[11]

DISCUSSION

The Health Accounts System (2009–2013) and the Household Budget Surveys (2009–2014) converge on the estimate of the household expenditure reduction for dental care services in the period of economic crisis. During the same period, household expenses on “drugs, pharmaceuticals, therapeutic appliances, equipment” and hospital care increased. Exploring the inequality in the distribution of health expenditure, it was found that household expenditures for dental care are among the most “unequal” with the richest 20% of the population spending 18.23 times more than the poorest 20%. This result along with the percentage reduction of expenditure

Table 4: Demographic and professional characteristics

	Number	Percentage
Gender		
Men	199	55,1%
Women	162	44,9%
Upper education		
Undergraduate	202	56,0%
Postgraduate	120	33,2%
PhD	39	10,8%
Specialization		
General dentists	319	88,4%
Orthodontists	27	7,5%
Oral and Maxillofacial Surgeons	15	4,2%
Place of Professional Activity		
Attica	82	22,7%
Prefecture of Thessaloniki	92	25,5%
Prefecture of Thessaloniki/Abroad	1	0,3%
Rest of Greece	183	50,7%
Rest of Greece / Attica	3	0,8%
Duration of professional activity (years)		
1-10	146	40,4%
11-20	136	37,7%
21-30	57	15,8%
31-40	21	5,8%
>40	1	0,3%

Table 5: The views of dentists on the evolution in the amount of dental operations during the crisis period

Transactions	Increase (%)	Decrease (%)	At the same level (%)	They do not provide (%)
Fillings	64 (17.7)	103 (28.5)	133 (36.8)	61 (16.9)
Dentures	30 (8.3)	210 (58.2)	50 (13.9)	71 (19.7)
Extractions	177 (49)	50 (13.9)	79 (21.9)	55 (15.2)
Scalers/Radical abrasion	44 (12.2)	146 (40.4)	116 (32.1)	55 (15.2)
Root canal treatments	109 (30.2)	111 (30.7)	89 (24.7)	52 (14.4)
Crowns/Bridges	4 (1.1)	270 (74.8)	17 (4.7)	70 (19.4)
Prevention (fluoridation, sealants)	17 (4.7)	202 (56)	79 (21.9)	63 (17.5)
Surgical extractions	3 (0.8)	72 (19.9)	46 (12.7)	240 (66.5)
Apicoectomy	1 (0.3)	56 (15.5)	37 (10.2)	267 (74)
Bladders removal	1 (0.3)	51 (14.1)	38 (10.5)	271 (75.1)
Implants	4 (1.1)	94 (26)	17 (4.7)	246 (68.1)
Orthodontic incidents	5 (1,4)	23 (6,4)	16 (4,4)	317 (87,8)

by household type shows that the monthly income and the monthly value of total purchases determine the “depth” of the impact of the economic crisis on the demand of services. The contribution of the income to dental care services demand, especially in economic crisis conditions, is confirmed by Manski *et al.* (2014)^[12] in the United States of America and Fernandez *et al.* (2015)^[13] in Spain. In the United States of America, Manski *et al.* (2014) recorded reduced demand for dental services at ages over 51 years when the reduction in family income exceeds 50%. In Spain, there was an increase of untreatable needs particularly in sections of the population with reduced purchasing power and the unemployed.^[13]

On the demand side, the increase in the quantity of extractions, the stability in the number of fillings, and the relatively high percentage of those who report an increase in root canal treatments are attributed to the relatively low cost of these tasks and their connection with the relief of the patient from pain. On the other hand, concerning prosthetic procedures, which have a high cost to the patient, most dentists reported reduction. In Cyprus, during the period of the economic crisis, there was a reduction in the frequency of visits to the dentist, especially emergency incidents management and selection of low-cost therapeutic interventions.^[14] The reduction in the number of preventive operations agrees with the survey in Iceland in which a lower demand on the part of parents for the prevention and treatment of dental caries in children and adolescents up to 18 years was observed.^[15] McClure and Saemundsson (2014)^[16] found no major changes in the frequency of visits (dental check-up) in Iceland.

The limited contribution of prices to the shrinking of private spending is reflected in the views of dentists and the Household Budget Surveys of Hellenic Statistical Authority, where a decrease in the price level by 2.81% over the period 2009–2014 is indicated.^[17]

On the supply side, the income of self-employed is compressed not only by the reduction of incidents but also by the increase in taxation, insurance charges, and the cost of materials. The reduction of the income of dentists in economic crisis conditions is observed in Cyprus^[14] and North Carolina.^[18] Dentists in North Carolina reported a reduced number of patients and 57% reduction of their income.^[18] The recovery of the US economy is not accompanied by a corresponding increase in the income of dentists.^[19,20]

During the economic crisis period, there was no demand shift in the public sector. This ascertainment is attributed to the reduction of disposable dental personnel, bureaucracy, the limited range of services, and low quality.

LIMITATIONS

The electronic handling of the questionnaire facilitates the participation in research of those familiar with the internet. Its completion on the part of dentists may involve the risk of a systematic mistake as a result of the subjective assessment of parameters such as changes in the number of work during the crisis period.

CONCLUSION

The private “nature” of dental care in terms of both supply and financing even in the period of economic crisis remained stable in Greece. Moreover during this period, public intervention weakened, and the demand which “disappeared” from the private sector does not seem to be absorbed by the public structures. In the private dental offices, patients were more oriented to low cost work mainly related to pain management (fillings, extractions, root canal treatments) and less to expensive work involved in restoring partial or total edentulism (bridges–crowns, partial or complete dentures, implants). Dental expenditures and income of dentists collapsed due to austerity and economic crisis.

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CONFLICTS OF INTEREST

There are no conflicts of interest.

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