Systems for the Provision of Oral Health Care in the Black Sea Countries Part 13: Cyprus

Chrystala Charalambous[1], Mamas Theodorou[2]

[1]MSc, DDS, Dental Officer, Dental Services, Ministry of Health, Nicosia, Cyprus. [2]Associate Professor in Health Policy, Open University of Cyprus.

Abstract

This paper describes the health care system in Cyprus and the funding arrangements for oral health care. Some epidemiological data and costs are also presented. Although almost 83% of the population is entitled to free of charge oral health care within the public sector, only 10% make use of it. Most patients prefer to use the private sector, where they pay out of pocket on a fee-for-service basis. Additionally, issues regarding the dental workforce in Cyprus are discussed, including the fact that there is no dental school in Cyprus.

Key Words: Oral Health, Cyprus, Dental Workforce, Epidemiology

Introduction

This paper is the thirteenth in a series that describes the provision systems of oral health care in the countries surrounding the Black and the Eastern Mediterranean Seas. The information contained herein and most of the data quoted in this paper were provided by the Dental Services of the Cyprus Ministry of Health, the Cyprus Statistical Authority, the Cyprus Dental Association and the *Cyprus Health Care System Review,* published in October 2012 by the European Observatory on Health Systems and Policies.

The Country and its Health Care System

Cyprus is the third largest Mediterranean island after Sicily and Sardinia with an area covering 9,250 sq km and is located in the south-east part of the Mediterranean Sea, about 60 km south of Turkey and 300 km north of Egypt. Its population in the government-controlled area in 2011 [1] was 838,897, an increase of 21.7% from the previous census in 2001. Of the total population, 78.6% are Cypriot citizens, while the rest are Europeans (13.4%) and third-country nationals (8%) [1].

Cyprus has been an independent sovereign republic since 1960, with a presidential system of government. Administratively, it is divided into six districts: Nicosia, Limassol, Larnaca, Paphos, Ammochostos and Kyreneia. Approximately 70.2% of the population resides in urban areas.

On the 1st May 2004 the Republic of Cyprus became a full member of the European Union (EU) and on 1st January 2008 it became a member of the Eurozone. As a result of Turkey's military invasion in 1974, 36.2% of the territory of the Republic of Cyprus is under occupation by Turkish troops and thus EU legislation is suspended in that part of Cyprus.

Life expectancy at birth is 77.9 years for males and 82.4 years for females [2]. Leading causes of death are diseases of the circulatory system and malignant neoplasms. Although in comparison with other EU countries the population is relatively young, its ageing population poses significant challenges to the already strained health system [3].

The health system consists of two parallel delivery systems: the public system and a completely separate private one. The public system is highly centralised, with all planning, organisation, administration and regulation under the control of the Ministry of Health (MoH). It is exclusively financed from the state budget, with services provided through a network of hospitals and health centres directly controlled by the MoH. Public providers have the status of civil servants and are salaried employees [3].

Corresponding author: Dr Chrystala Charalambous, Dental Services, Ministry of Health, Nicosia, Cyprus; e-mail: chrysa @logosnet.cy.net

The private system is financed mostly by out-of-pocket payments and to a lesser degree by voluntary health insurance. Other minor health care delivery subsystems include: the Workers' Union schemes, which mostly provide primary care services, and the schemes offered by semi-state organisations, some of which have their own network of providers although some others use the private providers. The private sector includes for-profit hospitals, diagnostic centres, and independent practices [3].

According to the National Health Accounts data, total health expenditure in Cyprus in 2010 accounted for 6% of the gross domestic product (GDP), with the government funding 41.5% of health care expenditure and 58.5% being privately funded. Out-of-pocket payments are the dominant private source of health care expenditure and Cyprus has one of Europe's highest proportions of health care spending by household. The public system does not provide universal coverage to all citizens. It is estimated that only 83% of the population is entitled to free-of-charge health care within the public system, whereas the remainder of the population must pay according to predetermined fee schedules set by the MoH [3].

The current health care system has many deficiencies. Apart from the very high out-of-pocket payments, other major issues include the fragmentation of services, inadequate coordination between the public and the private sector, and a lack of equity in financing. Other problems that have been identified include the uncontrolled development and use of high-cost medical technology in the private sector, the difficulty of attracting and retaining nursing staff in the private sector, the absence of regulation and comprehensive quality control/clinical governance systems within the health care system, long waiting times in the public sector, uninsured illegal immigrants, and other shortages or inefficiencies in the fields of care including rehabilitation, long-term care and palliative care.

Accession to the EU has led to many reforms and changes in the system, although many challenges remain to be addressed, such as rising costs, universal coverage, inequalities in access, and improving the quality and financing of the system. That is why in 2001 the House of Representatives voted for the law for a National Health Service ([N]. 89 (I)/2001), which is based on the principles of social solidarity, equality, justice and universality. The main provisions of the law are:

1. Financing of the system through contributions by employers, employees, self-employed, income earners in general, and by the state.
2. Provision of universal coverage.
3. The purchasing of health care services from both the public and the private sector in a competitive internal market.
4. The introduction of family physicians and encouragement of a primary care-driven referral system by paying general medical practitioners based on capitation and performance indicators; specialists are to be paid on a fee-for-service basis under a global budget by specialty.
5. The remuneration of inpatient care using diagnostic related groups.
6. Comprehensive budget and price-adjustment mechanisms for reimbursement of health care providers.

Regarding oral health care, the National Health Care system will remunerate only preventive measures such as examination, topical application of fluoride, fissure sealants, and radiographs up to the age of 16 years.

However, the start date of the General Health Insurance System has been repeatedly postponed for three main reasons: (a) government concerns over costs, (b) the negative impact of the financial crisis on fiscal revenues, and (c) the time-consuming tendering procedures associated with the introduction of the new system.

The Provision of Oral Health Care

Oral health care coverage for the population in Cyprus is provided through:

1. The Public Dental Services (PDS), which run clinics at public hospitals as well as at urban and rural health centres.
2. The private sector, whereby providers are remunerated mainly by direct out-of-pocket payments from patients and which provides dental services for the majority of the population in Cyprus.

The Dental Workforce in Cyprus

The total number of registered dentists in 2012 was 807, of whom only 40 (4.9%) were employed in the public sector. The remaining 95% worked in the private sector, mainly in solo practices. The ratio of dentists to patients in Cyprus is 1:1005 [4] and is among one of the highest in the EU, while the ratio of male to female dentists is 1: 0.9 *(Table 1).*

The high percentage of dentists working in the private sector reflects the high percentage (90%) of patients who use the services of private dentists. In contrast, only 10% of the population uses the PDS [6]. These findings are confirmed by the results of the Eurobarometer survey of oral health (2010) [7], according to which 91% of the Cypriot population stated that they favour private rather than public dentists. However, over the last three years there has been a 14% increase in the number of visits to the PDS, perhaps as a result of the financial crisis [8].

The geographical distribution of dental surgeries (both public and private) is such that it ensures access to dental care for all citizens. According to the special Eurobarometer survey of oral health carried out in 2010 [7], 96% of Cypriots stated that they could reach a dentist within 30 minutes. This percentage was the highest among EU countries.

Currently, there is no dental school in Cyprus and the majority of dentists have obtained their qualifications in other EU countries, mainly in Greece, the United Kingdom (UK), and Hungary [4].

Registration with the Cyprus Dental Association (CDA), as well as with the local association of the district where dentists operate, is compulsory. The CDA represents both the private and the public dentists and was founded in 1964. The board of the CDA has 23 members who repre-

Table 1. *Total number of active dentists, percentage (%) of female dentists, and population per dentist in European Area Member States (2010)*

Country	No of active dentists	Female (%)	Population/dentist
Austria	4,505	36	1,838
Belgium	7,775	44	1,361
Bulgaria	7641	66	1,197
Czech Republic	6,580	66	1,556
Cyprus*	807	45	1,005
Denmark	4,884	50	1,115
Estonia	1,220	87	1,099
Finland	4,500	68	1,178
France	40,847	37	1,515
Germany	65,929	39	1,248
Greece	14,126	46	794
Hungary	5,350	56	1,866
Iceland	284	35	1,125
Ireland	2,100	37	2,000
Italy	48,000	32	1,242
Latvia	1,302	85	1,752
Lithuania	3,010	84	1,118
Luxembourg	360	30	1,344
Malta	131	28	3,068
Netherlands	7,994	25	2,064
Norway	4,300	45	1,093
Poland	21,800	75	1,774
Portugal	5,663	52	1,503
Romania	14,161	64	1,137
Slovakia	3,185	61	1,693
Slovenia	1,296	63	1,571
Spain	23,200	41	1,948
Sweden	7,541	50	1,217
Switzerland	4,500	22	1,687
UK	31,000	36	1,974

*2012. Source: Council of European Chief Dental Officers [5]

sent all the local associations. Also, in order for a dentist to be able to practise dentistry in Cyprus, he or she must obtain a licence from the Cyprus Dental Council. The Dental Council consists of four dentists from the private and three from the public sector and is appointed by the Council of Ministers. It is the competent authority for the registration of dentists in Cyprus as well as for the recognition of dental specialties [9].

All dentists working in the public sector have a dental nurse (chairside assistant). Dental nurses in Cyprus do not have any special training, although some hold a diploma as a dental technician. Since 2012, a private university in Cyprus has offered a two-year course that leads to a diploma for dental nurses. The number of private dentists who have dental nurses is also increasing, although the exact number is unknown.

Regarding dental technicians, they are trained in Greece, the UK and other EU countries, or even the USA. The minimum requirement for registration as a dental technician in Cyprus is a three-year course after the completion of secondary school education. Dental technicians normally work in separate dental laboratories and they have to be registered with the Dental Technicians' Council [9]. In 2011, there were 237 dental technicians registered in Cyprus, of whom only 12 worked at the public sector.

Although there are some dental hygienists, they work as dental nurses, as their profession is not recognised in Cyprus

Dental Specialities

The recognised dental specialities and specialists in Cyprus are [4]:

- Orthodontics (41).
- Maxillofacial surgery (10).
- Oral and maxillofacial surgery (10). This speciality is also recognised by the Cyprus Medical Council.
- Oral surgery (1).

Over the past few years, there has been an increasing trend for a number of Cypriot dentists to attend various dental postgraduate studies such as periodontology, paediatric dentistry, endodontics, prosthodontics and dental public health.

Continuing Professional Education (CPE)

It was only in 2012 that the Cyprus Dental Association proposed compulsory CPE for dentists in Cyprus. This has now been implemented on a pilot basis. It is expected that it will soon be required by law. According to this proposal, each dentist must accrue 45 points in a three-year period, with a minimum of 10 points every year.

The points are correlated with the type of course (theoretical or practical) as well as its duration. One-hour attendance of a theoretical course equates with one point whereas one hour of a hands-on course equates with 1.5 points (maximum 6 points per day). Because of the lack of a dental school in Cyprus, the PDS, in collaboration with the Cyprus Dental Association and the local associations, organises seminars, workshops, and conferences on dental topics of interest with local as well as foreign speakers.

Public Dental Clinics

Public Dental Services are based in six hospitals, nine urban centres, two institutions and 23 rural centres and run a total of 57 dental clinics and four mobile dental units.

The activities of the PDS are divided into three main areas: (a) dental public health, (b) treatment sector, and (c) department of planning, human resource development, coordination and EU issues.

All centres offer primary and secondary dental care, while various hospitals operate specialised clinics to deal with special and complicated cases in the fields of prosthetics, periodontology, minor oral surgery, paedodontics and endodontics. However, orthodontics and fixed prosthetics are not provided by the PDS. Patients unable to receive treatment in a dental chair undergo general anaesthesia, under the responsibility of a maxillofacacial surgeon (around 30 patients per year).

The oral health promotion and prevention services of the PDS offer the following programmes:

* Oral health education to all the children aged 6 to 12 years, as well as to parents, school teachers, and expectant mothers.
* Preventive care and dental treatment to students in elementary schools and other institutions, with the use of four mobile dental units.
* Examination of all children at the age of 6 years.
* In conjunction with the Cyprus Dental Association, treatment of all the elementary students aged 10 to 11 years.

In addition, dental emergency care is provided for the entire population, free of charge, on a 24-hour basis, 365 days a year, at the public hospitals' emergency departments.

Eighty-three per cent of the population is entitled to almost free-of-charge dental public care (they pay €2 per visit, regardless of services offered). Recipients of public assistance benefit, war pensioners, persons over 65 years, military personnel, medical, nursing and paramedical personnel do not have to pay even this small fee. Regarding dentures, patients have to pay only part of the cost (€76 per denture).

Even for patients who are not eligible for free care in the public sector, the fees in the public sector for dental treatment are considerably cheaper than those in the private sector. For example, the cost for one surface filling with resin is only €29 compared with €50 in the private sector.

Dental Services' Funding

Only 0.05% of GDP goes towards oral health care and 97% of this concerns outsourcing. The overall dental services budget in 2012 was €5.5 million per year.

Epidemiology

Epidemiological studies over the last three decades (1980-2010) in Cyprus have revealed a reduction in caries prevalence, and the mean DMFT index for 6-, 12-, and 15-year-old children has declined *(Table 2)* [10].

The most recent study, which was conducted in 2010, showed that the DMFT for all the three age groups was at relatively low levels (2.15 for 6-year-old, 1.25 for 12-year-old, and 1.98 for 15-year-old children) [10]. These results are comparable with the published figures for other developed European countries *(Figure 1)*.

Regarding caries, no statistical significant difference was observed between boys/girls and urban/rural areas, unlike in the study conducted in 1992 where rural areas had a higher prevalence of dental caries. However, a statistically significant difference ($P<0.05$) was found between Cypriots and migrants (most are from Eastern European countries) and also between different districts (Paphos/Famagusta: $P<0.05$). Fifty per cent of 6-year-old, 28% of 12-year-old, and 35% of 15-year-old children had unmet needs, most of which were simple fillings. Regarding the Community Periodontal Index of Treatment Need (CPITN), only 25% of 15-year-old children had healthy gums (CPITN=0) compared with 33% in 1992.

In conclusion, although the level of oral health of children living in Cyprus is satisfactory, there is a great variability in caries prevalence across the different districts, with the worst decayed-missing-filled teeth (DMFT) figures and higher percentage of untreated caries needs found among migrants. Therefore, a more targeted public health approach towards children presenting a high caries risk is needed.

The level of adults' oral health is satisfactory, as—according to the Eurobarometer (2010) [7]—

Table 2. *Mean national dmft/DMFT scores for children age 6, 12 and 16 years old*

Age group	Year of study				
	1981	**1990**	**1992**	**2005**	**2010**
6 (dmft)				2.23	2.14
12 (DMFT)	2.7	2.49	2.16	1.12	1.25
15 (DMFT)	4.1	4.72	3.87		1.98

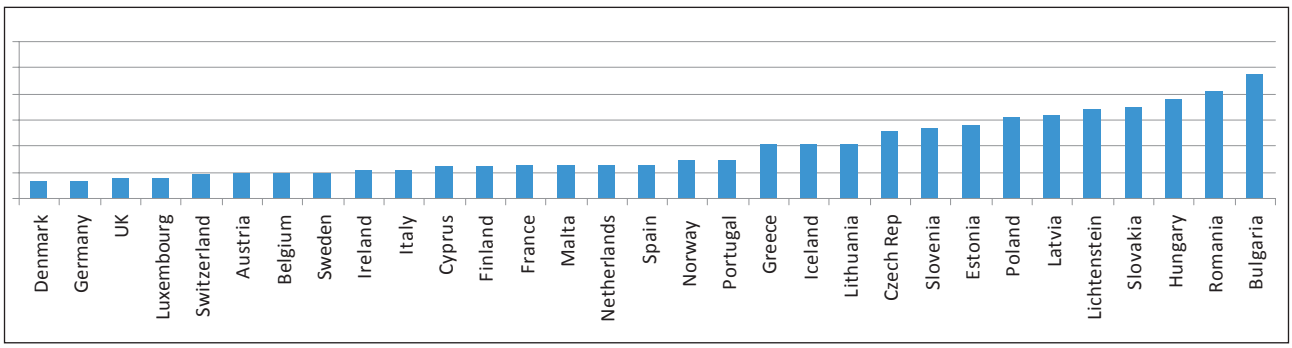

Figure 1. *Mean National DMFT scores for 12-year-old children in the EU.*
Source: Council of European Chief Dental Officers [5]

57% reported that they had all their teeth, which was the highest percentage among EU countries. However, in terms of visits to a dentist, data suggest that Cypriots do not attend for regular dental appointments and the most frequently reported reason for visiting the dentist was for emergency treatment (45% compared with a mean of 17% for the EU 27) [7].

Further Considerations

The increasing number of dentists, as well as the high dentist-to-population ratio (which is among the highest in the EU), creates concerns about the sustainability of the dental profession. Therefore, the number of dentists should be commensurate with the country's needs.

Emphasis should also be placed on the consequences of the economic crisis and the increasing number of patients that are visiting PDS. The existing personnel in the public sector cannot respond to the increasing demand for oral care and there is a great risk of the appearance of long waiting lists and a low quality of care.

Additionally, although there are many prevention programmes, especially for the children, emphasis should also be given to other vulnerable groups such as the elderly, who represent an increasing section of the society. Because social inequality is harmful for general and oral health, policy makers should devise strategies to eliminate disparities and the effects of social determinants on oral health [11].

Statement of conflict of interest

As far as the authors are aware, there is no conflict of interests.

References

1. Statistical Service of the Republic of Cyprus. Results of the Census of Population, 2011. Accessed (2012 Nov 17) at: http://www.mof.gov.cy/mof/cystat/statistics.nsf/All/5255A073C1648AEDC2257AAA0036287E?OpenDocument&sub=2&sel=1&e=&print

2. Statistical Service of the Republic of Cyprus. Health and Hospital Statistics 2009. Accessed (2012 Nov 17) at: http://www.mof.gov.cy/mof/cystat/statistics.nsf/All/39FF8C6C587B26A6C22579EC002D5471/$file/HEALTH_HOSPITAL_STATS_2009-260412.pdf?OpenElement

3. Theodorou M, Charalambous C, Petrou C, Cylus J. Cyprus health system review. *Health Systems in Transition*. 2012; **14**(6): 1-128.

4. Dental Services, Ministry of Health. *Dental Care in Cyprus*. Nicosia, Cyprus: Public Information Office; 2012.

5. Council of European Chief Dental Officers. Accessed (2012 Nov 17) at: http://www.cecdo.org/

6. Statistical Service of the Republic of Cyprus. *Health Survey, 2003*. Health Statistics Series 2: Report No 6. Nicosia, Cyprus: Cyprus Statistical Service; 2005.

7. Special Eurobarometer No 330. *Oral Health Report*. Brussels: European Commission; 2010.

8. Ministry of Health. *Annual Report of the Ministry of Health 2010*. Accessed (2012 Nov 17) at: http://www.moh.gov.cy

9. Kravitz AS, Treasure ET. *EU Manual of Dental Practice*. Brussels: Council of European Dentists; 2009. p. 95-102 Accessed (2012 Nov 17) at: http://www.eudental.eu/

10. Charalambous C, Theodorou M. [Oral health status of the children living in Cyprus]. *Hellenic Stomatological Review*. 2011; **55**: 29-36. [Article in Greek]

11. Watt RG. Strategies and approaches in oral disease prevention and health promotion. *Bulletin of the World Health Organization*. 2005; **83**: 711-718.