Systems for the Provision of Oral Health Care in the Black Sea Countries Part 11: Serbia

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Abstract

This paper gives an overview of the provision of health care in the Republic of Serbia. It then gives details of the system for the provision of oral health care, the education of dentists and dental staff, epidemiological data, and costs. It includes details of the state (public) and private sectors of health and dental care in Serbia. Private health and oral health care is based mainly on a number of practices that provide medical and dental care to the population. The state sector has a wider range of types of provision, including complex health care institutions. The number of employees in the private health and dental sector is much smaller than the number of employees in the public sector. Far fewer patients seek private medical and dental care than visit a doctor and dentist in the state sector, which still provides the bedrock for the health system in Serbia.

Key Words: Oral Health Care, Provision, Serbia

Introduction

Health care is seen as an important activity in Serbia and is aimed at population health, which includes oral health. Dental health care has a long tradition in Serbia [1]. Modern dental health care in Serbia developed after the Second World War. The first dental college was opened in Belgrade in 1948. The first dental health facility was opened in Pancevo in 1944 as a dental clinic, in which there were three dental chairs. Its patients were members of the military and its staff consisted of one doctor, three dentists, four dental technicians, and four dental assistants. In 1945, there were 108 dentists working in Belgrade.

The concept of dental health in the post-war period was based on the principle of increasing the number of professional staff, developing and expanding network of dental facilities, and improving the system of treatment. The development of dental services was intense and extensive. However, despite the investment of funds, the expected results were not achieved. Prevention of dental caries and periodontal diseases for the population of Serbia, the most common problems of dental-oral health, was not achieved.

After an analysis of problems of the existing system, the current Serbian system was developed. However, there have always been limited funds for the system.

The Provision of Health Care and Oral Health Care

In Serbia, after the Second World War, the population grew fairly rapidly from 5,794,837 in 1948, to 7,729246 in 1981. In the last 20 years as a result of war and political upheaval, it has reduced slightly from 7,822,715 in 1991 to 7,565,761 in 2011 [2] (*Table 1*). The territory of Serbia is divided into 25 district administrative units, not including the territory of Kosovo and Metohija. There are 157 municipalities.

Health care in Serbia covers all its inhabitants. Within the health care system, the right to dental care has not always been given to all citizens of Serbia. For example, because they had no health insurance, farmers did not have this right until 1960 and until 1979, they did not have the same full rights as other employees (workers) in Serbia. In 1992, changes to the Health Care Law established specific individual health care programmes for the

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population, targeted at significant health problems or certain categories of population. An example is the programme of preventive dental care, which started in 1994. In terms of personnel it required one dentist and 1.5 dental nurses per 1,500 preschool and school children and youths (aged 0-18 years) and a dentist and 1.2 dental nurses per 2,000 adult population (19 years and over). This programme envisages the introduction of screening for malocclusion, health education, and the local application of fluoride and fissure sealants.

Table 1. *The population of Serbia in the period 1948-2011*

Year	Population in Serbia
1948	5,794,837
1953	6,162,321
1961	6,678,247
1971	7,202,914
1981	7,729,246
1991	7,822,715
2002	7,893,125
2011	7,565,761

At the end of 2010, there were 344 state-owned health institutions in Serbia. They were classified as follows: 157 health centres, 38 institutes, 40 general hospitals, 37 specialised hospitals, 6 clinics, 4 clinical centres, 4 clinical-hospital centres, 35 pharmacies, and 23 institutes of public health [3]. At the same time (the end of 2010), there were 113,866 employees in these health institutions.

The status of dental clinics changed several times during the period 1950-2000. They were first independent dental clinics and then they became units within health centres and other health institutions and less independent institutes for dentistry. The number of dental health care institutions has increased over the period (*Table 2*). The average number of inhabitants per dental clinic has decreased from 29,592 inhabitants in 1950 to 4,773 inhabitants in 2000.

Article 45 of the Health Care Law [4] stipulates that health services include health care facilities and private practice, as well as the health workers and associates who perform health care activities in health institutions and private practice [5]. Health facilities may be established in both public and private buildings.

Table 2*. Number of dental clinics in Serbia in the period 1950-2000*

Year	Number of dental clinics
1950	194
1961	589
1971	874
1981	1,109
1991	1,410
2000	1,571

It also states that medical facilities in state ownership shall be established in accordance with the plan for a network of health institutions, and, depending on the type of facility, the owners may be the Republic, an autonomous province, a city or a municipality. Given that these are established as institutions operating in the public interest, their establishment and management bodies are defined by the Civil Service Law [6].

Private practice may be established by unemployed health workers who have passed the examination or a health care provider who has passed retirement age, if this is agreed with the Chamber of Health Workers. For the establishment and operation of health institutions, different rules apply in the private and public (state) sectors. Private health care providers in most cases operate as a private practice and are established and operated in accordance with the Law on Private Entrepreneurs [7].

There are a number of companies, mainly in the form of limited liability companies, which operate in accordance with the provisions of the Companies Law [8]. A precise overview of the number of entrepreneurs and companies that provide medical services is not available. Private health care providers are limited in terms of aspects of and activities within the health care that they can undertake. In fact, there are several activities listed in articles 48 and 56 of the Health Care Law that can be performed only in public (state-owned) medical institutions [4].

In 2009, in Serbia private health facilities totalled 5,519, of which 1,989 were dental [3]. In March 2009, an assessment of the private sector health care, performed by the Institute of Economic and Social Research, confirmed that the private sector provided only a very small proportion of health services to the population [5]. Services in outpatient clinics and ambulances were used by only 1.2% of the population of Serbia and private

treatment in hospitals was accessed only 0.1% of the population. However, as regards dental care and treatment, a higher percentage of Serbs are seen in the private sector. The data show that dental services are used both in public and in private practice as a result of legislative changes on the use of services, and ways that dental services are run in government health centres.

As far as oral health care is concerned, the Republic Health Insurance Fund provides registered members with examinations and the treatment of oral and dental health in-patient ambulatory and stationary conditions [9], including:

1. The examination and treatment of oral and dental diseases and conditions
   - For children under the age of 18 years (including removable orthodontic appliances) and for students under the age of 26 years.
   - For persons older than 18 years with severe physical or mental disabilities, and persons with severe congenital or acquired deformities of the face and jaws.
2. The examination and treatment of diseases of the mouth and teeth, except for prosthetic care, for women who are pregnant and for 12 months after delivery.
3. Emergency dental care for adults.
4. The examination and treatment of oral and dental prosthetic care, prior to transplantation of organs and tissue, and heart surgery.
5. The examination and treatment of diseases of the mouth and teeth in the pre-operative and post-operative treatment of malignant disease in maxillofacial regions.
6. The emergency surgical and dental examinations and treatment of injuries of teeth and facial bones, including the primary reconstruction.
7. The provision of acrylic complete (full) and partial dentures for patients older than 65 years of age.
8. Necessary dental treatment, including fixed orthodontic appliances in the pre-operative and post-operative treatment of patients with severe congenital and acquired deformities of the face and jaw.
9. The provision of prosthetic restorations of the face and jaw (intra-oral post-resection prostheses and facial prostheses) after post-cancer rehabilitation and reconstruction, including implants.
10. The examination and treatment of diseases of the mouth and teeth of persons who in their lifetime because of illness or injury, who due to loss of some bodily or mental functions are unable to perform activities of daily living independently.

In 2010, the following care and treatment was provided in public (state) dental facilities as part of 5,070,413 total visits to a dentist (of which 1,449,270 were first visits) [3]:

- 968,763 visits for fillings.
- 252,347 visits for pit and fissure sealing.
- 712,260 visits for tooth extraction.
- 791,479 visits for other surgical procedures.
- 81,515 visits for complete or partial dentures (removable prostheses).
- 44,219 visits for fixed prostheses.
- 467,011 visits for orthodontic treatment.
- 336,013 visits for soft-tissue care.

Hospital dental health care in Serbia (secondary care) is almost always for maxillofacial surgery. In 2010, 45 hospital beds were allocated for maxillofacial surgery patients, 1,541 patients were treated, and they spent a total of 7,113 days in hospital [5].

Private dental clinics usually have only one dentist who, it is reported, had an average of 379 visits in 2010. In the private dental sector, there were 163,605 visits, of which 80,929 were first visits The most common diagnosis was caries (72,362). A private dentist completed an average annual of 230 fillings, 39 extractions, 47 prostheses, and seven orthodontic appliances [5].

In 2006, a survey found that 27% of patients who visited a dentist made one visit and 44% made two or three (*Table 3*) [10].

Table 3. *Frequency of dental visits during the year as a percentage, Serbia, 2006*

Number of visits	1	2-3	4-6	7-12	12+
Percentage of visits	27%	44%	18%	8%	3%

In 2000, 36% of the adult population visited a dentist. By 2006, this percentage had risen to 44.8% of the adult population and 53.5% of schoolchildren [10]. Also in 2006, 16.2% of the population visited a private dentist [10]. The reasons for visits to a dentist in 2006 are shown in *Table 4*.

Table 4. *Reasons for visits to the dentist during the year as a percentage, Serbia, 2006*

Reason for visit to dentist	%
A periodic review or recall	6.2
Repair of teeth	39.3
Extraction of teeth	34.1
Making dentures	17.3
Gum disease	1.3
Scaling, polishing	1.1
Other reasons	0.7

In Serbia, any patient who chooses private dental treatment pays twice: first through contributions earmarked for state insurance, and then from their own pocket for private treatment [5].

Ideally, individual patients should be able to choose their doctors and be treated in a public or private health institution for the same price. The patient could choose, and would have the feeling that he was placing himself in the hands of knowledgeable, skilled and friendly professionals. Unfortunately, this has not happened in Serbia because the private sector in the past has carried a negative connotation. Until 15-20 years ago, Serbians were the healthiest in the former Yugoslavia. Reform of the current system is needed so that the system focuses on patients who, as beneficiaries of health care, have every right to choose the best for themselves.

The Dental Workforce

During the period 1950-2005 years, the number of dentists in Serbia rose from 363 in 1950 to 3,087 in 2005 and the dentists-per-population ratio improved from 1:15,930 to 1:2,234 (*Table 5*) [10].

Table 5. *Number of dentists and the number of inhabitants per dentist in Serbia in the period 1950-2005*

Year	Number dentists	Number of inhabitants per dentist
1950	363	15,930
1961	1,150	5,605
1971	1,838	3,840
1981	3,050	2,603
1991	3,920	2,096
2000	3,471	2,160
2005	3,087	2,424

At the end of 2010, there were 113,866 employees in the state health institutions in Serbia [3]. Of this total, 2,242 were dentists. Dentists were 8.3% of employed workers in public health institutions with university education. Dentals specialists made up 55% of the total number of dentists.

Dentists worked in the following type of practice: 1,437 in state dental clinics; 540 in primary care health centres; 125 in clinics for specific groups such as police, railway workers; 95 in dental and other clinics; 45 in other institutes and organisations.

Distribution of dentists by type of specialisation was:

- Paediatric and preventive dentistry: 416
- Orthodontics: 183
- Prosthodontics: 174
- General dentistry: 146
- Endodontics: 121
- Oral surgery: 104
- Periodontics and oral medicine: 40
- Maxillofacial surgery: 31
- Social medicine: 18

There were 1,009 dentists without specialisation.

Other dental workers in the public (state) sector were: dental technicians with secondary education (1,044), dental technicians with college degree (23), dentists without a university degree (116), and dental assistants 2,362.

Dental Education

In Serbia, there is only one government dental school (college). It is located in Belgrade and was founded in 1948 [11]. Each year, 150 students enrol and are paid for from public (state) funds, together with a further 50 students who finance their own studies. The first private dental school (college) in Serbia was established in 2002 and is located in Pancevo. It enrols 50 students annually [12]. Dentistry can also be studied at four medical schools. They are at the Universities of Nis [13], Kragujevac [14], Pristina [15] and Novi Sad [16]. Dental technicians are educated in several middle and high schools for healthcare subjects. Dental assistants are trained in schools for health care workers. There are no dental hygienists in Serbia.

Epidemiology

In Serbia, all health institutions are obliged by law to submit annual reports on the diseases that they have treated. These include oral diseases. However, as the data only relate to patients who have been examined and not to random samples of the population, these data cannot be seen as representative

of the population because less than 40% of adults visited a dentist in 2006 and 60% of adults visited a dentist in previous years [10]. However, there are data from a study in 2006. These are presented in *Tables 6, 7,* and *8*.

Table 6. *Self-assessment of oral health in the responding population as a percentage in 2006*

Self-assessment of oral health	School children	Adult population
Very good	27.2%	6.4%
Good	52.0%	21.4%
Average	17.0%	28.2%
Bad	3.5%	30.6%
Very poor	0.3%	12.8%
No answer	-	0.6%

The same survey research identified the lack of teeth in the population in Serbia (*Table 7*). Only 8.3% of the adults who responded reported that they had all their teeth and 12.3% reported that they had no natural teeth (*Table 7*) [10].

Table 7. *Self-assessed lack of teeth in the responding population as a percentage in 2006*

Absence of teeth	%
None	8.3
1-5 teeth	39.8
6-10 teeth	15.7
Over 10 teeth	13.0
Removable denture	10.9
Complete denture	10.5
No teeth or dentures	1.8

The same self-assessment survey also found that in those who responded, 33.8% of pre-school children, 2.5% of school children, and 6.9% of the adult population reported that they did not brush their teeth at all (*Table 8*). Also in this self-assessment survey, 56.7% of the adults who responded reported that they brushed their teeth two or more times per day.

Costs

In the period 2004-2009, total costs of health care in Serbia, which include costs for dental care, have grown steadily (*Table 9*) [17].

Table 8. *Self-assessed toothbrushing in the responding population groups as percentages in 2006*

Frequency of toothbrushing	Pre-school children	School children	Adult population
Do not brush at all	33.8%	2.5%	6.9%
Brush periodically	24.2%	15.8%	16.6%
Brush only in the morning	5.7%	9.7%	10.8%
Brush only in the evening	11.0%	9.1%	9.0%
Brush in the morning and evening	20.6%	45.8%	40.9%
Brush several times a day	4.7%	17.1%	15.8%

Table 9. *Total cost of health care in Serbia in the period 2004-2009*

Year	Total cost		
	Serbian Dinar (CSD)	Euro (€)	U.S Dollar ($)
2004	49,546,621,147	628,086,723	855,203,134
2005	81,222,190,366	949,967,138	1,124,666,678
2006	96,162,554,246	1,217,247,522	1,603,358,597
2008	120,987,502,236	1,526,922,066	2,251,868,727
2008	142,398,620,728	1,607,189,769	2,263,889,041
2009	144,150,456,906	1,503,321,134	2,160,253,219

Table 10. *Percentage share of the cost of health care in GDP in the period 2004-2009*

Year	GDP at current prices (in millions of CSD)	Share of assets to GDP
2004	1,380,711.60	3.58%
2005	1,683,483.30	4.81%
2006	1,962,072.90	4.86%
2008	2,302,214.40	5.12%
2008	2,722,461.30	5.04%
2009	2,815,000.00	5.10%

In the same years, both the Serbian gross domestic product (GDP), and share of GDP earmarked funds for health care costs rose substantially (*Table 10*). The percentage of GDP spent on health care grew from 3.58% in 2004 to 5.20% in 2009 (*Table 10*).

Health care expenditure per capita, as expressed in Serbian Dinars (CSD), Euros or U.S. dollars, also rose between 2004 to 2009 (*Table 11*).

Table 11. *Health care expenditure per capita in the period 2004-2009*

Year	Expenditure per capita		
	CSD	€	U.S. $
2004	6,608	83.76	114
2005	10,833	126.70	150
2006	12,825	176.00	213
2008	16,136	201.00	300
2008	18,992	232.00	302
2009	19,225	200.00	288

In 2009, expenditure on dental services in Serbia from the Republic Health Insurance Fund was CSD 68 million, which accounted for 2.56% of total expenditure for health care [18]. The total cost of dental services in Serbia provided in private dental practice is unknown [17].

Contributions of each author

- HA wrote the paper.
- BT advised and supervised the writing of the paper and checked each draft and the final manuscript.

Statement of conflict of interest

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

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