

Systems for the Provision of Oral Health Care in the Black Sea Countries

Part 12: Ukraine

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Abstract

This paper is part of a series describing systems for the provision of oral health care in countries that surround or are near to the Black Sea. It starts by outlining the country and its population structure. It then provides a description of the general and oral public and private health care systems in Ukraine. It describes the dental workforce (dentists, oral hygienists, dental specialists and dental technicians) and its education, setting out the numbers of dentists and other dental workers. A section on dental education at undergraduate, specialist, and continuing levels follows. Finally, the paper gives some information on the oral epidemiology and costs of oral care in Ukraine.

Key Words: Ukraine, Oral Health Care System, Dental Workforce, Dental Education

Introduction

Unless stated to the contrary, all data quoted in this paper relate to 2011. The data have come from official sources (World Health Organization, European Observatory on Health Systems and Policies, European Commission TEMPUS, United States Agency for International Development, Italian Embassy in Kiev, the Ukrainian Ministry of Health, and the Ukrainian Ministry of Education), reported research and professional media. Some data are only estimates.

Ukraine lies at the north-west end of the Black Sea and is bordered by Belarus to the north-west, Slovakia and Poland to the west, the Russian Federation to the north-east/east, and the Republic of Moldova, Romania, and Hungary to the south-west (*Figure 1*).

The geographical area of Ukraine is the second largest in Europe. It had a population of 45,167 million in 2011, 68% of whom were urban and 32% rural dwellers [1,2]. Ukraine is a presidential parliamentary republic in which authority is divided between the President (head of the executive power), *Verkhovna-Rada* (legislative power, parliament), and the court system [3]. The main law is the

Constitution, adopted in 1997. Ukraine is divided administratively into 27 regions: the Crimean Autonomous Republic, 24 *oblasts* (regions) and two municipalities with oblast status (Kiev and Sevastopol). Oblasts are further subdivided into 490 *rayons* (districts) [3-6].

Although sharp regional contrasts are absent, there are economic, ethnic and language differences between the eastern and western parts of the country. Salaries in the more industrialised eastern regions are generally higher than in the western ones. Contrasting political preferences can also be identified [5].

Ukraine Health System Review

The structure of the public basic health system has essentially remained unaltered since the Soviet period (Semashko model) [7]. However, since the country gained independence from the Soviet Union, the government has sought to make the following reforms [3,4,6-13]:

1. Decentralising management through delegation of administrative functions to regional and local levels.
2. Developing a formal private sector.

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Figure 1. Map of the Republic of Ukraine.

Source: Figure 1 in: Lekhan V, Rudy V, Nolte E. *Health Care Systems in Transition: Ukraine*. Copenhagen: World Health Organization Regional Office for Europe; 2004. p. 2.

3. Retaining the health system and containing costs through mobilisation of additional, mainly private, resources of health care financing, limiting the scope of health care provided free-of-charge, and reducing overcapacity in the hospital sector.
4. Improving structural efficiency and quality of care through the development of primary health care, establishing a primary care system based on family medicine (2000), reorienting the system towards primary care, restructuring in-patient care, implementing the plans to shift the focus to out-patient service delivery, introducing specific quality guarantees for health services (such as licensing of medical practice, accreditation of health facilities, standardisation of clinical practice, introduction of evidence-based medicine, systematic monitoring for health care quality).
5. Reforming higher medical education.

The system is financed by general taxation and it is coordinated and managed at central level by the Ministry of Health (government) and at local level by 27 regional administrations and numerous administrative bodies at municipal, district, township and village levels, as well by other ministries [3,4]. In fact, many ministries and other government bodies have separate “parallel” health systems funded by the national budget [3-5,7,12]. The different levels of public medical facilities are funded directly by the respective budgets, but all levels of local budgets (regional, municipal, district and village budgets) are financed through the allocation of funds from the national budget in the form of transfers to regional authorities according to a special formula approved by the Cabinet of Ministers of Ukraine (the Budget Code) [3,4,7,14] (Figure 2).

The budgets are strictly itemised, including payroll and additional payments to staff, goods (pharmaceuticals, medical equipment and supplies,

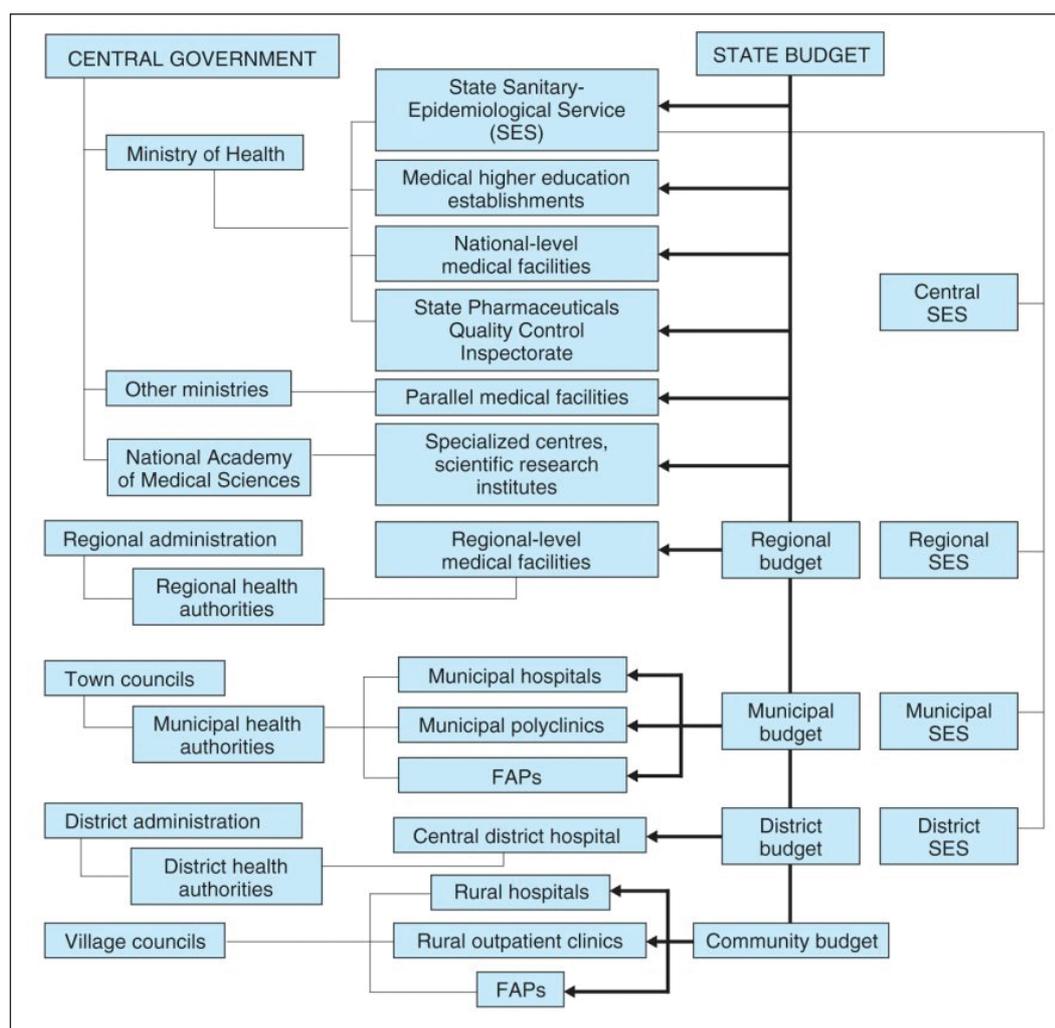


Figure 2. State budget and the health system.

Source: Figure 2.1 in: Lekhan V, Rudyi V, Richardson E. Ukraine: Health system review. *Health Systems in Transition*. 2010; 12(8): 16.

food) and maintenance costs [3,6,7,9]. The volume of resources set aside for each budgetary item is strictly regulated. Estimate indicators for the volumes of health care expenditure in regional, *rayon* (district), and village and township budgets are defined using the specified formulae, approved by the Cabinet of Ministers in 2001 and 2004, on the basis of a single, per capita national budgetary provision for health care, weighted for different levels and regions and for gender and age demographics within administrative units [9]. The per-capita sum and adjusting weights are approved by the Cabinet of Ministers with some evaluation about numbers of consultations and admissions.

In the absence of a system of public contracting of medical services to private providers, the private sector is rather small and consists mostly of pharmacies, medico-prophylactic facilities (in-patient and out-patient), privately practising physicians and dental clinics [3,4,9]. Voluntary health insurance (VHI; legalised in 1996) [4] still plays a very minor role in health care financing [7]. In fact,

despite the relative growth in the number of insured people and insurance premiums, only 2.5% of the population use VHI, which remains a minor form of health care funding comprising 0.8% of total health care expenditure [7,9]. It is important to underline that the availability of a wide range of dental services (with dental prevention, too) is considered the minimal service offered by a good VHI. There are also credit unions and sickness funds (non-governmental not-for-profit organisations) [3,4,9]. However, as their members comprise only 1.6% of the population, these funds do not significantly affect the financial situation of the health care sector [7].

The number of private medical facilities is growing steadily [10]. The first survey of all health facilities irrespective of their form of ownership was undertaken in 2008. It was found that in the Ukrainian private health sector there were 82 in-patient facilities, 577 medical centres, 1938 individual practices, and 6917 individual doctors active in private provision [7]. The majority of all private

facilities and individual practices (about 75%) were engaged in dental care, while about 15% were diagnostic centres and laboratories (Figures 3 and 4).

that free-of-charge medical treatment will be available in state-owned health facilities for all Ukrainian citizens and registered residents (Article 49 of the Constitution of Ukraine adopted in 1996) [3,4,6, 12,14]. However, the post-independence economic crisis led to a mismatch between available resources and the constitutionally imposed commit-

Population Coverage and Basis for Entitlement

The Ukrainian constitution guarantees, in theory,

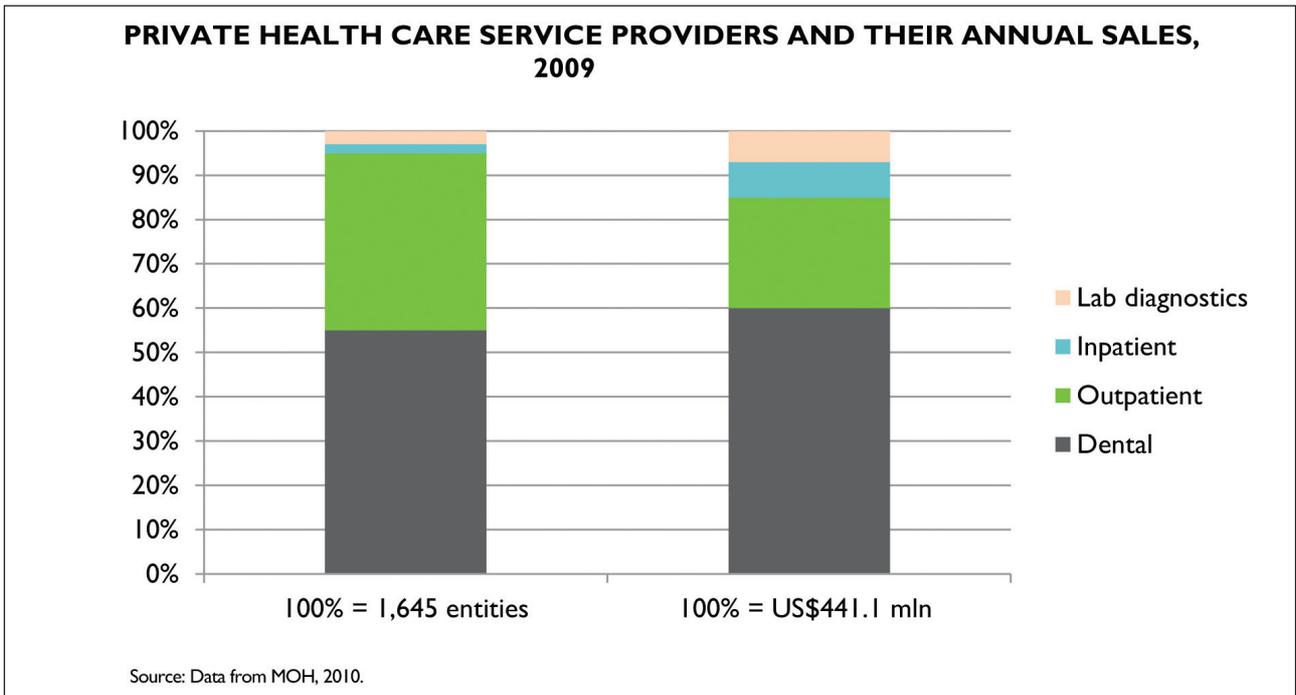


Figure 3. Private health care service providers and their annual sales, 2009.

Source: Figure 3.3.2 in: Tarantino L, Chankova S, Rosenfeld J, Routh S, Preble E. *Ukraine Health System Assessment 2011*. Health Systems 20/20 Project. Bethesda, MD: Abt Associates; 2011. p 45.

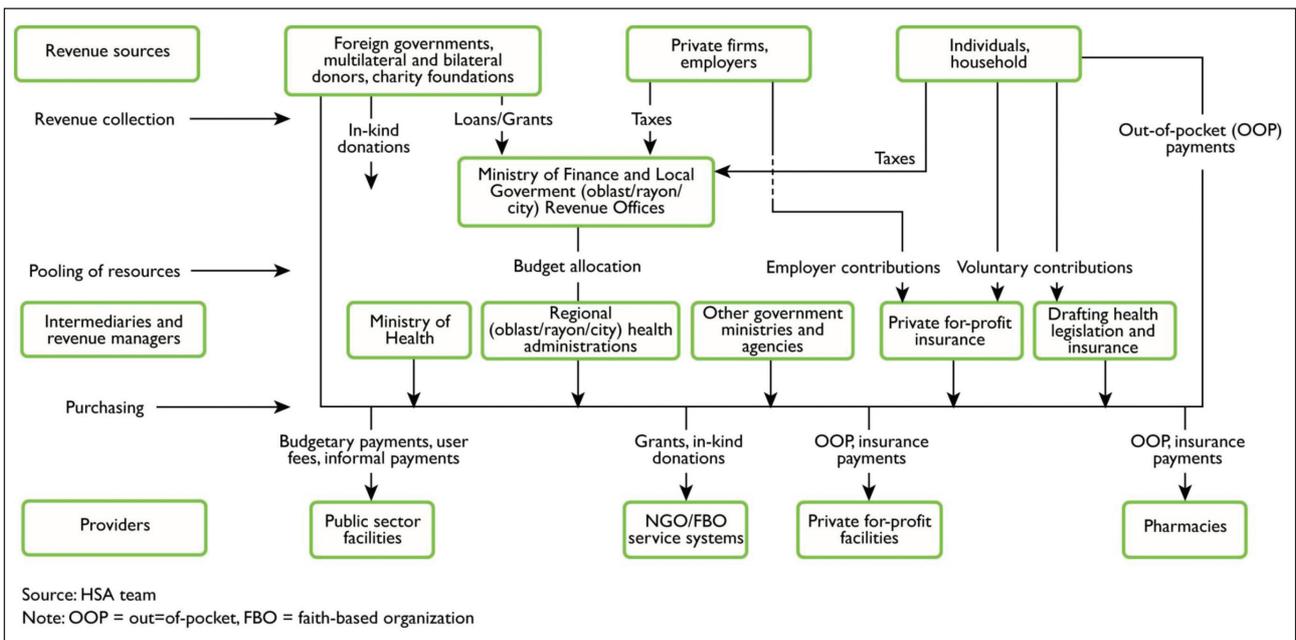


Figure 4. Health care funding flow in Ukraine.

Source: Figure 3.2.1 in: Tarantino L, Chankova S, Rosenfeld J, Routh S, Preble E. *Ukraine Health System Assessment 2011*. Health Systems 20/20 Project. Bethesda, MD: Abt Associates; 2011. p 27.

ments for free care [14]. This forced the government to find ways to reduce the benefits package [3,14]. In an attempt to realign entitlement commitments contained in the benefits package with budget and constitutional constraints, the government separated all health care services into two lists and in 2002 created a dichotomous benefits package that detailed the free health care guaranteed by the state. One is a defined list of health care services to be provided by the state and community health care facilities for free [4,14], as well standards for the extent of services provided [6]. The second list specifies all services that may be not financed from the budget and that should be available in state and community health facilities (Cabinet of Ministers Resolution No. 989, issued 11th July 2002) if the patient or a third party pays for them in full [4,14].

In addition, the government defined certain vulnerable groups of population that are exempt from user charges [4]. In this way, the government reduced the level of commitment of free services to the population, but the boundaries between paid services and free medical care remain blurred and not well understood by consumers [12]. This contributed to an increase in informal payments [7].

Training of Health Care Personnel

Higher medical education

Higher medical education is provided by 18 state medical universities and faculties, which are evenly distributed around the country in 16 regional centres and the capital of the Crimean Autonomous Republic [3,7]. In addition, there are four private institutions providing higher medical education, all licensed and accredited [3]. Reform of higher medical education was initiated soon after independence and work is now under way to bring it in line with European standards as set out in the Bologna Declaration which Ukraine signed in May 2005 [3,4,8,15,16].

The number of students admitted to medical education is established by a government order and supervised by the Ministry of Health, based on the estimated needs of the population for different medical specialists and the state's economic potential [7].

According to data from the Ministry of Health, admittance to medical training institutions increased in 2005-2010, particularly for physicians (32%), pharmacists (24%), public health specialists (20%) and dentists (14%) [3]. In this period, about 40% of students in medical programmes were fee

paying (self-funded or sponsored by a legal entity), while the rest were funded by the state [3,7]. The proportion of fee-paying students was considerably higher for students of dentistry (76%) [3].

The system of higher medical education consists of two stages: undergraduate and postgraduate training. Undergraduate medical education provides training in two main disciplines: medicine (general medicine, paediatrics, disease prevention, and dentistry) and pharmacy [7].

The number of new graduates remained largely unchanged in 2005-2010 for physicians; at the same time, the number of new graduates in dentistry increased by 20% [3] (*Figure 5*).

Medical students must complete two state licensing examinations during their undergraduate training, after studying basic disciplines ("Step 1") and after completing the full training course ("Step 2"). In 2004 the state licensing examinations for internship training were introduced, which is equivalent to "Step 3" in the current system of higher medical education.

Medicine, paediatrics and public health graduates have an examination in general medicine, whereas dental graduates must pass an examination in dentistry.

Internships for students funded by the state are based on requests from regional health authorities, taking into account the real and estimated staffing levels in health facilities, in compliance with staffing standards; in contrast, paying students are allowed to choose their specialty [3,7].

Dental education

Dentists are trained through a basic full-time/intramural five-year undergraduate programme in dentistry. Classes are held every day except for weekends and the degree awarded is BDS. The curriculum foresees the need for further postgraduate education.

Students are accepted according to the results of entrance examination, which they pass in July/August [8]. Entrance examinations are slightly different at different universities, but basically they comprise: Ukrainian language, chemistry, physics, and biology. During the enrolment process quotas for relief categories are taken into account. The number of students admitted is regulated by the number of licenses for educational programmes [3,8].

The academic year beginning on 1st September lasts until the end of July and consists of two semesters: the first from September to January and the second from February to June [8]. At the

end of each semester, students take between three and five examinations. The most widespread forms of assessment are written tests and discussion of theoretical and practical material. The training is provided in compliance with the general state syllabuses and curricula approved by the Ministry of Education and Science and the Ministry of Health of Ukraine [7].

During the first years of undergraduate level education, students study theoretical disciplines

and great attention is paid to basic medical and biological sciences and socio-economic subjects [17].

Education in dental subjects and clinical disciplines starts in the third year and includes: paediatric, therapeutic and orthopaedic dentistry, oral medicine, orthodontics, facial surgery of children and adults (*Table 1*).

During their lessons, students are allowed to work with patients [17]. The majority of students' clinical experience is gained either on mannequin

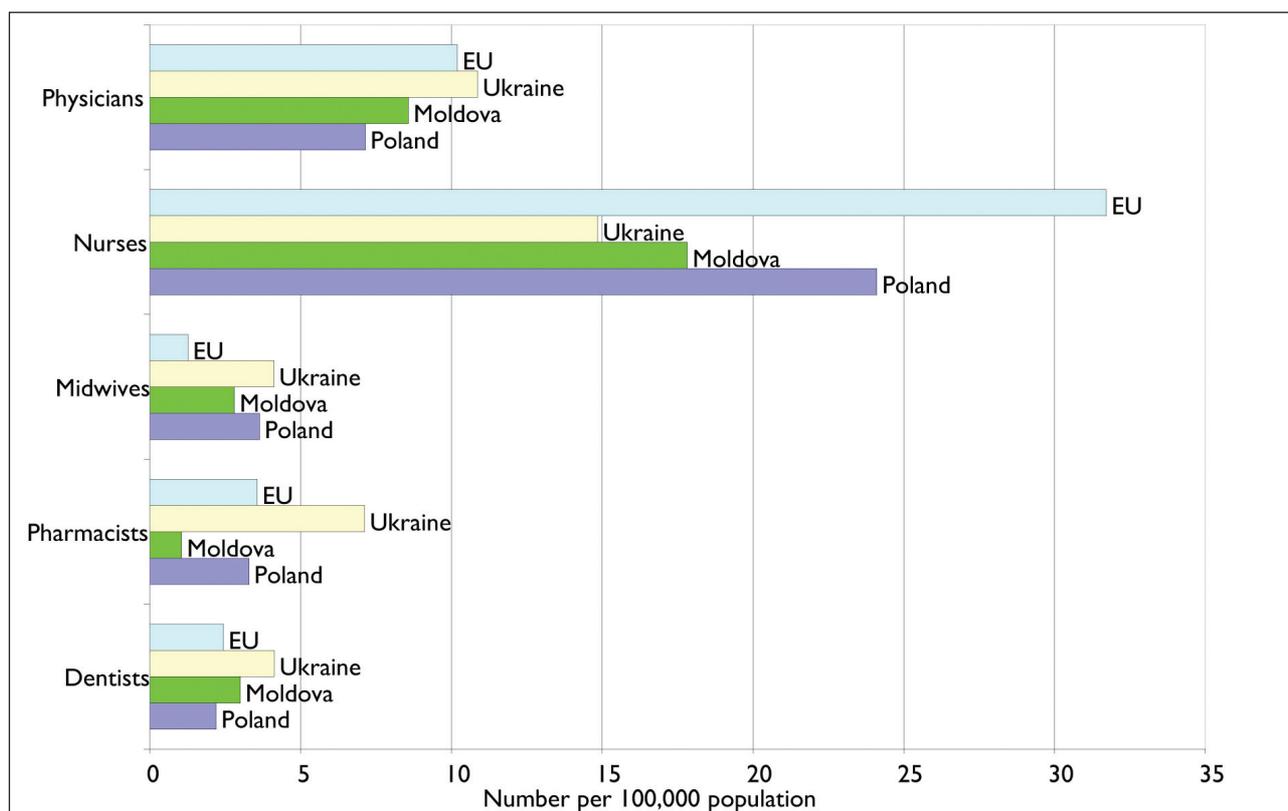


Figure 5. Number of students graduated per 100,000 population in Ukraine and selected other countries, 2008-2009.

Source: Figure 3.4.2 in: Tarantino L, Chankova S, Rosenfeld J, Routh S, Preble E. *Ukraine Health System Assessment 2011*. Health Systems 20/20 Project. Bethesda, MD: Abt Associates; 2011. p 60.

Table 1. Dental training hours

For 5 years of training (total 11,147 hours), of which:	
Humanitarian subjects	1,026 hours
Social-economic subjects	486 hours
Fundamental/general scientific subjects	1,854 hours
And 6,701 hours are on professionally oriented subjects, of which:	
Stomatological type	3,734 hours
Clinical type	2,453 hours
Hygienic type	298 hours
Elective course	216 hours
Practical training	1,080 hours

heads or in treating patients with the patients' consent and under supervision and guidance of their teachers.

To complete undergraduate studies, students should defend a thesis and pass the Final State Examination. Postgraduate studies include two levels of primary (general) and secondary (professional) specialisation [17].

After graduating dentists, have an 11-month period of probation during which time they work as a general practitioner (dentist) and perform a full range of clinical dentistry under the supervision of an approved dentist, supervised by the university. After this probationary period, every dentist takes a further examination and is then licensed to work independently. Dentists who want to open their own facilities are required to undertake a two-month training in health care organisation and management [3].

Those who wish to specialise in a particular field must complete postgraduate courses. Courses are offered in therapeutic dentistry (conservative and endodontic), paediatric dentistry, orthopaedic dentistry, prosthodontics, orthodontics, and surgical dentistry.

This postgraduate courses include pre-certification courses (one month), advanced courses on specific topics (two months), internships (probation) (1 to 2 years), Master's degrees (1 to 2 years), clinical specialist training (clinical residency) (2 to 3 years), PhD (3 to 4 years), and research programmes implemented in a "non-Bologna" format as a postgraduate doctorate programme (*Aspirantura*) and a postdoctorate programme (*Doctorantura*) [8].

Dental nurses and orthodontic dental nurses are considered as mid-level health staff [7] and they attend specific courses. Training of mid-level health staff is conducted by 244 vocational schools, evenly distributed among all regions; ten are private [3].

Training is offered in full-time/intra-mural, part-time/evening and distance/extra-mural formats. The duration of courses is up to three years for students who have a general secondary education and up to four years for students who have just a basic secondary education. According to the State Statistics Committee of Ukraine data on dental personnel, the number of these nurses has decreased drastically since independence due to the growing delimitation between the functions of dentists and mid-level staff in dentistry [3].

The profession of dental hygienist is new in Ukraine. Currently in Ukraine there are ten dental hygiene programmes, all of which are three years in length. There are about 780 dental hygienists in the

Ukraine [18]. At present, no schools offer postgraduate study for dental hygienists. The greatest need for dental hygienists appears to be in school dental offices and in general practices [19].

The duration of training for dental technicians is two years. In 2005 there was one dental technician per 10,000 people. This equates to an estimated total of 4516 dental technicians [7].

Licensing and re-accreditation

In addition to the Soviet Semashko system of accreditation for health personnel, the mid-1990s saw the licensing of clinical practices as well as the introduction of accreditation of all health facilities [3,7,12].

An independent unit under the Ministry of Health, the Centre for Testing Professional Skills of Health Workers, conducts standard integrated licensing examinations, using a written (computer-based) test on theory and practical examination [3].

Currently, the Ministry of Health is developing the theoretical and organisational basis for a system of continuous professional medical education (Order of the Ministry of Health No. 484 of 7th June 2009, *On the Ratification of Changes to the Conduct of Pre-Certification Cycle Examinations*) [7].

Continuing dental education is required for all dentists and there is a minimum level of 160 hours every five years. Along with traditional postgraduate faculty programmes, the system encourages correspondence courses and a credit system for all professional activity in order to be admitted for certification [3]. Dentists can gain credit hours by attending courses at the frequent dental meetings of the Ukrainian Dental Association (UDA) or by correspondence courses [20].

Dental Care

Until the early 1990s, Ukraine was part of the Soviet Union. It is therefore unsurprising that the dental workforce and education of dentists, dental technicians and dental nurses had and still has many similarities to the pattern followed in the Russian Federation and Belarus [3,21-24].

In 2011, the number of dentists in Ukraine was 21,313. The dentist:population ratio of 1:2,200 was lower than the European Union average but similar to that in Poland, Moldova, and between that of Belarus and the Russian Federation [3,5]. In 2005-2010, there was a 3.5% increase in the number of dentists and now there are about 41 dentists per 100,000 population [3] (*Figures 6, 7, and 8*).

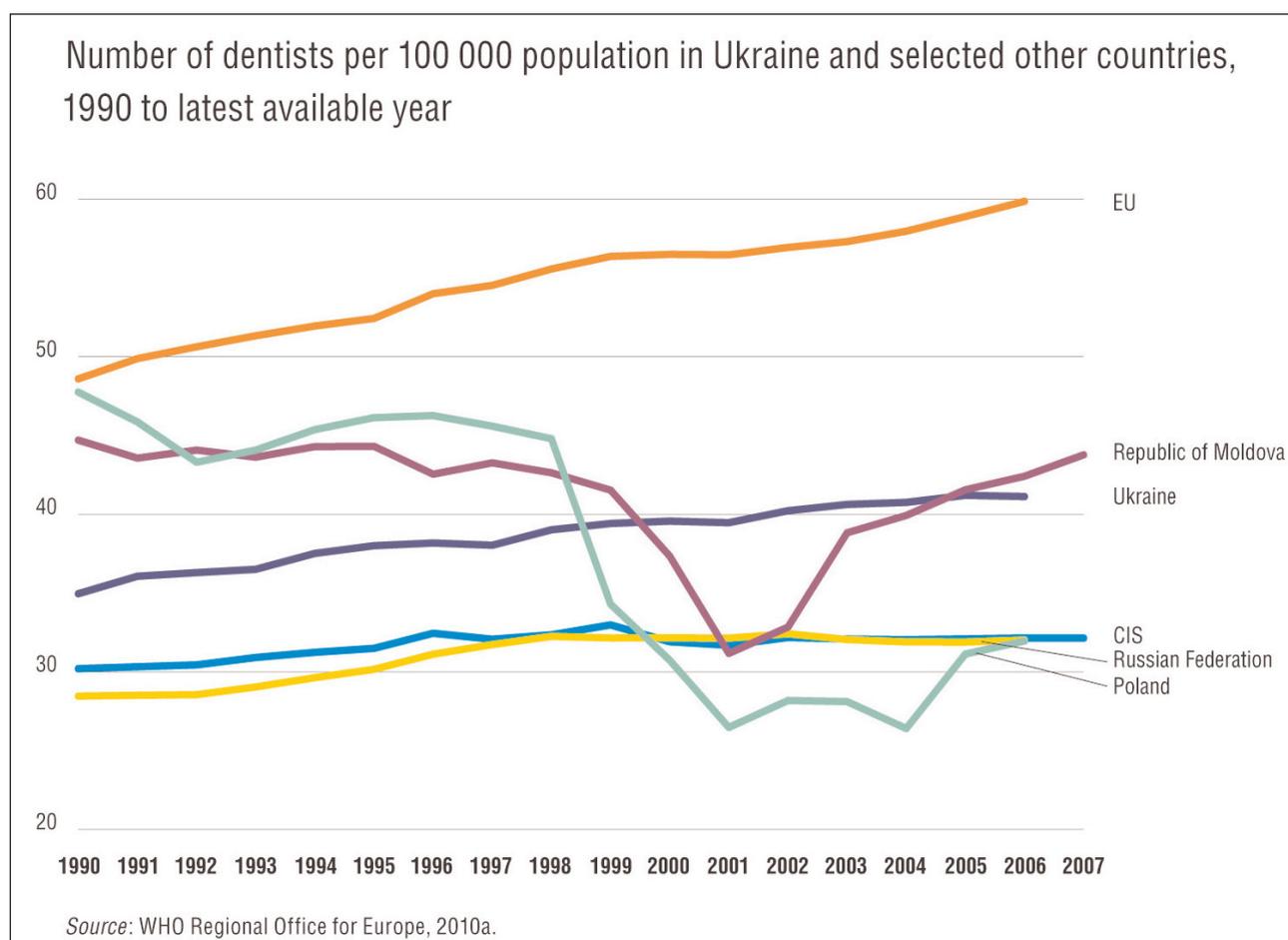


Figure 6. Number of dentists per 100,000 population in Ukraine and selected other countries.

Source: Figure 5.6 in: Lekhan V, Rudiy V, Richardson E. Ukraine: Health system review. *Health Systems in Transition*. 2010; 12(8):100.

NUMBER OF HEALTH WORKERS IN UKRAINE (SELECT CADRES), 2005–2010							
	2005	2006	2007	2008	2009	2010	% change 2005–2010
Doctors (all types, excl. dentists)	174,143	175,417	175,046	175,616	176,754	175,752	0.9%
% change from previous year		0.7%	-0.2%	0.3%	0.6%	-0.6%	
Practicing physicians, clinical medicine	150,185	149,990	149,053	149,020	149,392	149,618	-0.4%
% change from previous year		-0.1%	-0.6%	0.0%	0.2%	0.2%	
Family doctors	4975	5825	6815	7772	8112	8140	63.6%
% change from previous year		17.1%	17.0%	14.0%	4.4%	0.3%	
Nurses, midwives, and feldshers	367,163	365,138	362,389	360,119	360,414	358,492	-2.4%
% change from previous year		-0.6%	-0.8%	-0.6%	0.1%	-0.5%	
Dentists	20,588	20,539	20,509	20,582	20,894	21,313	3.5%
% change from previous year		-0.2%	-0.1%	0.4%	1.5%	2.0%	
Laboratory specialists	35,091	35,258	35,417	35,238	35,672	35,389	0.8%
% change from previous year		0.5%	0.5%	-0.5%	1.2%	-0.8%	
Management staff	12,357	12,511	12,612	12,297	12,412	12,532	1.4%
% change from previous year		1.2%	0.8%	-2.5%	0.9%	1.0%	

Source: MOH.

Figure 7. Number of health workers in Ukraine, 2005-2010.

Source: Table 3.4.1 in: Tarantino L, Chankova S, Rosenfeld J, Routh S, Preble E. *Ukraine Health System Assessment 2011*. Health Systems 20/20 Project. Bethesda, MD: Abt Associates; 2011. p 56

Trends in health care human resources per 1 000 population, 1990–2008 (selected years)

	1990	1995	2000	2005	2006	2007	2008
Doctors, total	4.3	4.4	4.5	4.7	4.7	4.8	4.8
Doctors working in Ministry of Health structures	3.8	4.0	4.0	4.2	4.2	4.2	4.3
Public health specialists (in sanitary-epidemiological services)	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Practising doctors, clinical medicine, total of which: ^a	–	3.0	3.0	3.0	3.0	3.0	3.0
– doctors working in outpatient care ^a	–	1.6	1.7	1.7	1.7	–	–
– doctors working in inpatient care ^a	–	1.4	1.3	1.3	1.3	–	–
– primary care physicians ^a	–	–	0.5	0.5	0.6	–	–
– medical scientists ^a	–	–	–	–	3.0	3.1	–
Mid-level health personnel	117.5	116.5	110.3	106.2	106.1	105.5	101.0
Mid-level health personnel working in Ministry of Health structures ^a	102.1	105.7	99.1	98.7	93.8	92.9	93.6
Nurses (including midwives and <i>feldshers</i>) ^a	8.4	8.4	7.9	7.9	7.9	7.9	7.8
Dentists	0.4	0.5	0.5	0.5	0.5	0.5	0.5
Dental technicians	0.1	0.1	0.1	0.1	0.1	–	–
Pharmaceutical chemists ^b	0.4	0.4	0.3	0.4	0.4	–	–
Pharmacists	0.5	0.4	0.4	0.5	0.5	–	–
Management staff	0.2	0.2	0.3	0.3	0.3	–	–

Sources: State Statistics Committee of Ukraine, 2001–2007; Medical Statistics Centre, 2001–2008, 2007; Gruzeva & Galienko, 2009.

Notes: ^a Specialists working in facilities under the Ministry of Health; ^b Pharmacists with a higher education degree.

Figure 8. Trends in dentists and dental technicians per 1,000 population, 1990/2008.

Source: Table 5.4 in: Lekhan V, Rudiy V, Richardson E. Ukraine: Health system review. *Health Systems in Transition*. 2010; 12(8):94.

Dentists are employed in state and community medical facilities (dental polyclinics, stomatological polyclinics, children's stomatological polyclinics, municipal children's centres), in dental units in the other state institutions (polyclinics, dispensaries, hospitals, out-patient, maternity clinics), in dental–medical organisations (kindergartens, schools, universities, etc.), in dental units in medical facilities of parallel systems, and in private clinics [3,10,25].

The Budget Code stipulates that public dental care can receive financing from different budgets. In fact, it is purchased via the state/national budget (specialised dental polyclinics), Crimea Autonomous Republic and *oblast* budgets (polyclinics including dental facilities) and districts' and cities' budgets (general dental polyclinics, etc.) [6]. However, the largest percentage of funds comes from the cities' and local government budgets [9] (Figures 9 and 10).

The public free services cover basic provision, in the form of emergency dental care and dental care and dental prosthetics for children, the disabled, students, pregnant women with children under three years of age, and for other certain population groups (socially vulnerable people) [6,7]. Since 2002, the government has decided to charge user fees for dental care provided in state practices, for dental appliances, and for diagnostic tests and examinations.

When they are declared to the authorities, formal private payments for dental services in public facilities go to a special account. This fund can be used at the discretion of the facilities' management [7].

Reforms to the dental care system are currently under public discussion. It has been suggested to transform state-owned dental facilities into leaseholding, local or national companies, reorganising the service model by providing equal conditions for

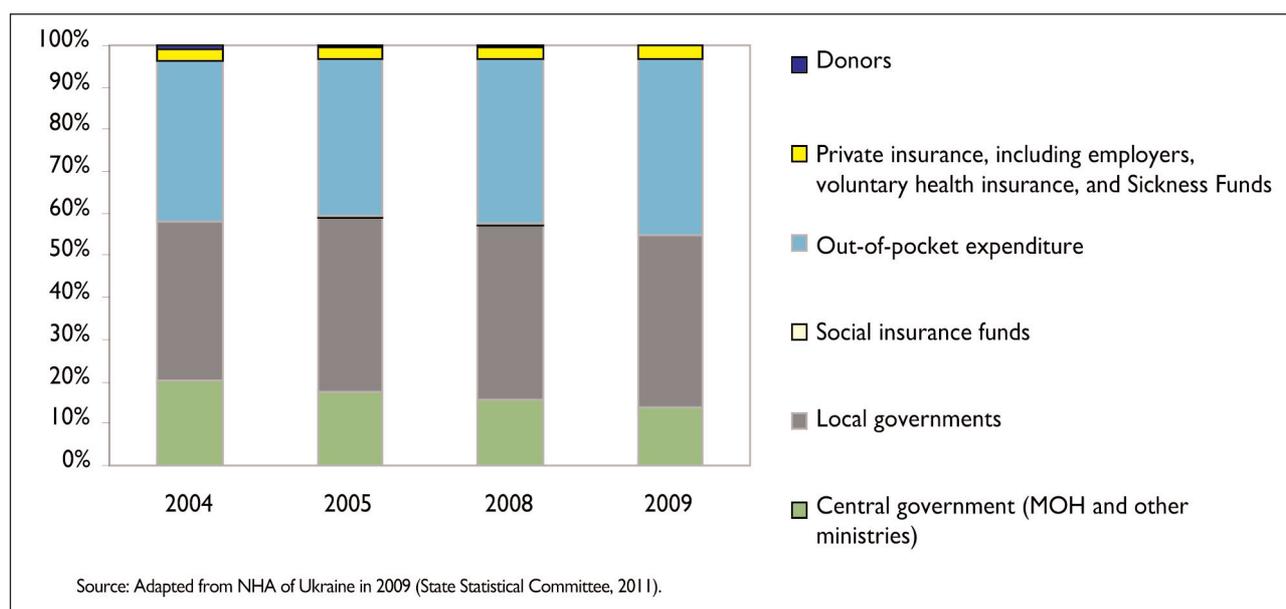


Figure 9. Trends in the sources of health financing, 2004-2009.

Source: Figure 3.2.3 in: Tarantino L, Chankova S, Rosenfeld J, Routh S, Preble E. *Ukraine Health System Assessment 2011*. Health Systems 20/20 Project. Bethesda, MD: Abt Associates; 2011. p 30.

Sources of revenue as a percentage of total expenditure on health in Ukraine, 2003–2008

	2003	2004	2005	2006	2007	2008
State sources, including:	58.0	58.1	59.3	60.6	61.7	57.2
– Central budget	18.2	20.2	17.5	16.3	18.6	15.6
– Local budgets	39.5	37.7	41.6	44.1	42.8	41.4
– Social insurance funds	0.3	0.2	0.2	0.2	0.3	0.3
Private sources, including:	41.5	41.2	40.4	39.4	38.3	42.5
– Direct payments from households	38.5	38.2	37.4	36.2	34.6	39.3
– Expenditures from private enterprises	2.2	2.2	2.2	2.3	2.8	2.3
– VHI	0.8	0.7	0.7	0.8	0.8	0.8
– Sickness funds	0.1	0.1	0.1	0.1	0.1	0.1
External sources	0.5	0.7	0.3	0.3	0.3	0.3
Total^a	100.0	100.0	100.0	100.0	100.0	100.0

Sources: Gotsadze et al., 2006; State Statistics Committee of Ukraine, 2010a.

Note: ^a Totals subject to rounding errors.

Figure 10. Analysis of health resources.

Source: Table 3.3 in: Lekhan V, Rudy V, Richardson E. Ukraine: Health system review. *Health Systems in Transition*. 2010; 12(8):41.

facilities within different forms of ownership. Moreover, the government must present the public with a standard package of guaranteed dental services, primarily for children and population groups who are subject to mandatory medical check-ups. In addition, the reforms would include the introduc-

tion of an inter-sectoral system of health education, with further development of effective methods of primary and secondary prophylactic care, primarily for children and pregnant women [7].

According to data collected by the Medical Statistics Centre of the Ministry of Health, in 2007,

in state-owned facilities, the only aspects of care that were regulated were those related to routine screening, the population examined during screening, the percentage of those examined who needed check-ups, and the percentage of those who need check-ups and who actually receive them. There is no systematic quality control in the majority of public and private facilities [7]. There are no available data on the number of dental graduates working in the private sector, but it was stated that in fiscal year 2008/2009 about 30% of dentists were employed full-time in private practice [3,10]. Officially, this level is similar to those in central Europe, and higher relative to other countries of the former Soviet Union [13].

In private facilities, resources come either in the form of fees-for-service from the patients or as contracts from private firms and corporations that cover a package of services (VHI, sickness funds). In 2004, National Health Accounts surveys found that, as well as pharmaceutical expenditure, the share of direct private expenditure on dental care is quite large (32.9%) [7].

State regulation of dental care prices is insignificant; the market plays the primary role in setting prices. The average state wage for dentists is equal to 3000 to 4000 Ukrainian *hryvnia* (300 to 400 euro) per month and it does not differ from other medical specialists [3,7]. In private clinics, dentists sometimes earn 25,000 Ukrainian *hryvnia* (2500 euro) and above per month, depending on the institution in which they work.

As in the Russian Federation [23] and Belarus [24], there are also some “tooth doctors” (*zubnoy vrach*) who have undertaken short three-year courses in medical colleges and provide some dentistry (primary restorative dentistry and prophylaxis) in some regions.

Epidemiology

In the 1990s, the drop in the accessibility and quality of dental services led to an increase in dental health problems, particularly among children. The disintegration of the national system of primary and secondary prevention and the downsizing of the network of dental practices in pre-schools and schools was to a great extent responsible for this problem [3].

However, according to the Ukrainian Dental Association, there are numerous factors responsible for these negative tendencies in dental health. They are said to include: dental equipment in a fairly

poor condition in state-owned facilities (especially in children’s dental polyclinics, departments) and practices and techniques in use that are incompatible with modern dental prevention and treatment standards. These factors prompted the approval of the State Programme for the Prevention and Treatment of Dental Diseases, 2002–2007 (Presidential Decree No. 475/2002, issued on 21st May 2002) [7,10].

According to epidemiological surveys conducted by the Ukraine Dental Association, there is a high prevalence of dental caries in the country (Ministry of Health, 2008) [25]: 87.9% of 6-year-old children had caries in their deciduous teeth with a mean of 4.6 decayed, missing and filled teeth (dmft), 72.3% of 12-year-old children had caries in their permanent teeth with a mean DMFT of 2.75, 70-80% of 15-year-olds surveyed had periodontal problems [7].

Caries prevalence is higher in areas with a low fluoride content in the drinking water (78.6% of the 12-year-old population with a mean DMFT of 3.62), whereas, in areas with drinking water containing 1 part per million of fluoride, 61.7% of 12-year-olds had dental caries and the mean DMFT was 2.05. A study has shown that there was significantly higher caries prevalence in a radiation-contaminated town (near Chernobyl) compared to a non-contaminated town in Ukraine [26]. The difference was not explained by differences in oral health knowledge, attitudes or behaviours [26].

Equal Access to Care

The disparity of the access to and the quality of healthcare between rural and urban areas is substantial in Ukraine. Private clinics are available in major cities and offer higher quality services but remain unaffordable for the majority of the population. Another problem is the shortage of dental specialists, which is especially important for rural areas [5,25]. Travel times of more than 40 minutes to visit a dentist have been frequently reported [5].

Distribution of Dentists

Dentists are extremely unevenly distributed [3,7]. In Odessa, Lviv, Kiev, Kharkov, Donetsk, and a few other cities, there are between 80 to 100 dentists for every 100,000 people, whereas the number of dentists per capita in Hersonsk, Mykolaevsk, and Zaporizk is less than a third of the number in Kiev city and Lviv region [3,5,10]. It is also interesting to note that special dental tourism trips are organ-

ised to some Ukrainian cities (Lviv, Odessa, Lutsk, and Kharkov) because rates are considerably lower than in many other European countries [10]. As mentioned previously, there are very few dentists in many rural areas [3].

Costs

Health care expenditure in Ukraine is low by European standards and has not increased significantly as a proportion of gross domestic product (GDP) since the mid-1990s. The exact level of total health expenditure is difficult to determine, mainly because of inconsistencies between statistical data from different sources and a scarcity of data on health care spending in the private sector [4]. In 2010, the Ukrainian annual total health expenditure was about USD 234 per capita; this figure represents about 7.7 % of GDP [27].

According to the 2011 WHO *Global Health Expenditure Atlas*, the general government expenditure on health was 8.9% of total government expenditure; that is, 55% of total expenditure on health (45% was private expenditure on health as a percentage of total expenditure on health, but taking account of informal [undeclared cash] payments, the overall share of direct health expenditure by the population is currently estimated at 50%) [3,27].

Out-of-pocket expenditure was 93.3% of private expenditure on health (2009); private prepaid plans only accounted for 2.0% of private expenditure on health (2009) while external resources for

health as a percentage of total expenditure on health (2009) were 0.5% [27,28]. It is quite difficult to assess the real volume of out-of-pocket payments for health care by the population due to the insufficiency of data about the scale of “under-the-table” payments (it is stated that from 2003 to 2005 informal payments accounted for 8-10% of total health expenditure [7]) [27] (*Figures 9 and 10*).

There are no clear data on total oral health care expenditure. However, in 2008 the government health expenditure for out-patient dental care was 0.8% of the total public health expenditure (THE), while the total expenditure in dental care was 1.4% (%THE) [7]. There are no clear data on how much is spent on private oral health care.

Contributions of each author

- MB: Data collection, interpretation, writing and study design.
- CP: Guarantor of integrity of entire study and study concept.
- DD: Data collection.
- IC: Manuscript preparation as hygienist expert.
- AD: Data collection as national expert.
- SD: Literature research and comparison to similar systems.

Statement of conflict of interest

In the opinion of the authors, there was no conflict of interest.

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