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Is liberal independent dental practice in danger? Assessing forms of dental practice in the European Regional Organization (ERO) zone of the FDI World Dental Federation

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Objective: A trend towards increasingly new forms of dental practice has been observed in the FDI World Dental Federation. Elementary foundations such as the free dentist and therapy choice, and independent, free, self-responsible professional practice may be undermined. The current study is aimed at analyzing the general training framework, organization, and professional types of dental practice in the European Regional Organization (ERO) zone and at critically discussing selected aspects of changes in the dental profession. **Method and Materials:** A questionnaire was developed by the ERO Working-Group "Liberal Dental Practice." Information about dental schools, professional organizations, dental practice regulations, and ambulatory healthcare centers was analyzed. **Results:** Self-employed dental practice is the most common type of practice (51.7%). Dentists are allowed to work independently immediately after graduation (72.7%). Approximately one-third are organized as compulsory members in chambers/corporations. The density of dentists has a mean of 1,570 inhabitants per dentist. In most countries, there are no special rules for founding dental ambulatory healthcare centers. In a total of 353 universities of the ERO countries surveyed, 16,619 dentists per year were trained, with a trend toward a higher percentage of female students (63%). **Conclusions:** Despite modern forms of dental practice, the charter of the individual liberal dental profession (CED et al, 2013) should be respected and taken into account on the basis of ethical principles. The commercialization of the dental profession can be neutralized only by establishing and following well-defined ethical principles; oral healthcare quality can thus be ensured without the influence of third parties.
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The classic one-professional independent dental office model has experienced change in recent years. A trend towards professional/financial cooperation in dental practice has been observed in many European countries. Currently, dentists can choose to work in different modern dental practice modalities, eg practice-sharing comprising two or more partners with equal rights; practice clinics consisting of an office in which a smaller percentage of the professionals are partners and the rest are employees; dental public limited companies in which the proprietor(s) is/are professionals but do not practice dentistry themselves; practices based on franchise models and practices in cooperation with external companies in which in both practice modalities the investor is not a dental professional; practice networks consisting of two or more dental offices in which the proprietor(s) is/are the same professional(s) or investor; as well as ambulatory healthcare centers usually run by the respective government.

This change started around 15 years ago in some European countries. Liberal professions have been affected by business interests, mainly driven by third parties, since Decree # 248/2006 went into force in Italy. Similar laws went into force in other EU countries more or less at the same time. The law deals with the liberalization of the market; it regulates urgent provisions for economic and social relaunch, containment and rationalization of public expenditure and interventions regarding tax payment, and measures against fiscal fraud.[1] The German legislature introduced ambulatory healthcare centers as part of the health reform in 2003 with the SHI Modernization Act. Since 2004, in addition to licensed panel doctors in individual or community practices, ambulatory healthcare centers can also participate in the provision of care in Germany, and municipalities have also been able to found ambulatory healthcare centers since 2015.[2] The development of the number of panel dentists in Germany shows an annual average decrease of 0.6% (3,310 dentists) for the 10-year period from 2005 to 2015. Including the number of dentists employed, the average annual increase is around 1.0%.

A trend towards practice cooperation can be observed.[3] Reasons for this change may include the shift in internal markets within the European Union due to legal changes,[4-6] policy frameworks in the national member states,[7] increased financial and economic challenges in establishing a practice,[8] and the aspirations of the new generation of dentists with different perceptions of professional practice[9-10] and social life as well as the compatibility of family and career.[11-13] Nevertheless, these innovative forms of dental practice may involve compromising independent liberal dental practice, which should not be ignored.

Similar observations can also be observed in Canada and the United States of America and even in Australia. Private equity firms or dental corporations owned by non-dentists in the whole zone of the FDI World Dental Federation exist. The political discourse about this circumstance is often associated with over-treatment and financial enrichment of shareholders. Fundamental aspects, such as the free choice of dentist and therapy, could be undermined. The overriding and fundamental principle that treatment decisions are a matter between dentist and patient must be maintained.[14] Furthermore, the FDI Statement says, "Dentists should advise treatments which are in the best interest of the patients' long-term oral health and not be influenced by the eligibility of patients under third-party reimbursement schemes." While the freedom to choose the form of dental occupation should be maintained within the different forms of cooperation, it is important and strongly recommended not to leave behind the negotiation of independent, liberal, self-reliant dental service provisions for each individual.

Based on ethical guidelines[15] and the principles of the Charter for Liberal Professions of the Council of European Dentists (CED) et al,[16] the following must be guaranteed and is so-called "liberal dental practice": free dental practice choice, freedom of therapy, and an independent and uninfluenced dentist-patient relationship without the interference of third parties. "The Charter for Liberal Professions,[16] elaborated and supported by European organizations representing professionals across Europe, aims therefore to set recommen-

dations for the European Institutions to consider possible implications for liberal professions of any new or amended legislation and policies, and to enable the provision of high-quality services for every citizen in Europe. The Charter also proposes a definition of the term 'liberal professions' based on the existing case law of the Court of Justice of the EU and outlines the distinguishing characteristics of liberal professions."[16] "ERO is a Federation of Dental Organizations representing all geographic European countries" (ERO vision statement). The ERO was founded "to promote the concept of dentistry as an independent profession based on freedom in choice between patients and dentists, to support the member organizations in providing the best possible oral and general health to the patients, to promote and support European/national health policies on an ethical and professional basis, to work under the visions and missions of FDI trying to influence the work of FDI" (ERO mission statement). The possibility that financial interests are not overruled by ethical principles is existent; thus it should be taken care, one way or another, to ensure that ethical principles always prevail.

Thus, a sensible healthcare market must be regarded separately and may not form the basis for general market policy-related principles such as economic and profit-oriented trade. Therefore, the oral healthcare market constitutes a unique situation and it would be beneficial to subject it to a specific regulation. Structures such as honorary reduction and bonus-malus regulations entail the risk of accepting a loss of treatment quality at the expense of the patient's health. However, many young professionals choose to work in major practice partnerships as an interim solution after graduation from dental school to gain theoretical, practical, and organizational experience for future professional practice.

Nowadays, dentists often choose to be salaried for the future for financial reasons[8,13] and to minimize economic risk, and to ensure the compatibility of family and career.[9,10,17] As a result of legal regulations, employed dentists are prone to be subjected to a type of dependency, mostly financial, from the directives of the practice owner, leader, investor, or stakeholder. Because of this discrepancy for the salaried dentist between the obligation to adhere to these directives and the essential responsibility for its specific dental practice, the principles of liberal dental practice must be considered a prerequisite for an optimal and trusting treatment of the individual.

The Council of European Dentists (CED) states that "general assumptions about the advantages of free competition do not apply to the provision of health services," that "health services rightly occupy a special position among services"; yet, it also points out that the European Court of Justice recently made reference to the special relationship of trust that must exist between dentists and their patients.[18] Furthermore, the possibility that an individual during his or her dental training could adopt a certain professional practice modality was also investigated.

Against this background, the current study aims to analyze the general conditions of a dentist's education, organization, and form of occupation within the ERO zone and to critically discuss the current status and changes in dental profession.

METHOD AND MATERIALS

The present study was conducted by members of the ERO Working Group entitled "Liberal Dental Practice" at the end of 2015, discussed at several meetings, and presented to the Working Group at the ERO Meeting in April 2016 in Baku.

The questionnaire was intended to allow an analysis of the various circumstances in the ERO member states regarding liberal independent dental practice nowadays, as multi-dentist dental offices, office networks, and ambulatory healthcare centers are becoming more popular in the ERO member associations. The questions were focused on how the independent dentistry profession concept, based on national health policies, is affecting ethical principles and professional standards. The rules of procedure of the ERO Working Groups can be seen at www.erodental.org.

In the survey, questions were also asked regarding how European dentists are organized in general; based on the results, an analysis of the number of educational

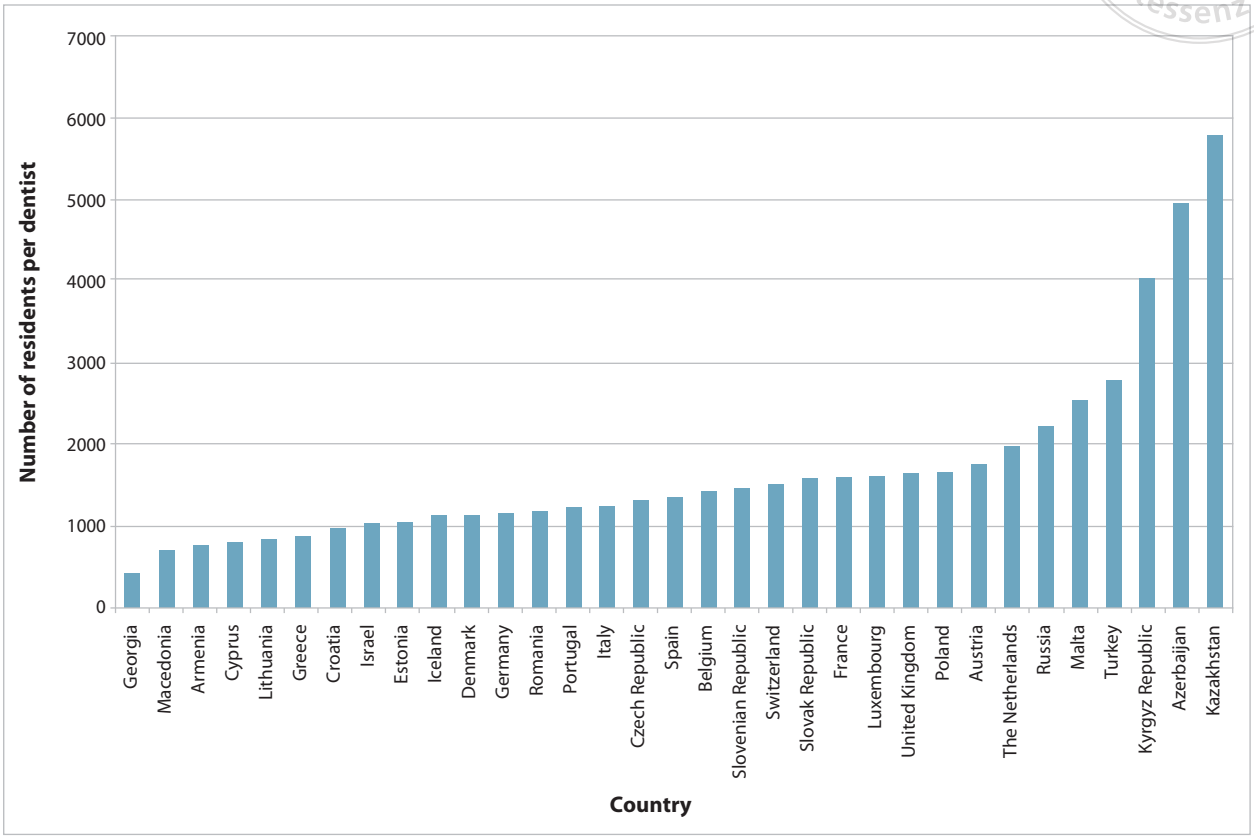

Fig 1 Dental care rate of the ERO countries.

centers as well as educational conditions in the ERO member associations was performed. The following questions were included: How long does the training last? How many dental schools exist? What is the gender distribution among the student population?

With respect to ambulatory healthcare centers, the number of colleagues allowed to work in accordance with the law was surveyed and whether a so-called training period is mandatory in the respective country/state before a dentist can become independent, as well as, in the affirmative case, the regulated length of this training period. An assessment of dental offices in under- or over-supplied population areas was performed and whether such a situation had changed over the last 10 years. Finally, who is allowed to establish ambulatory healthcare centers in the ERO countries was determined and whether there are legal regulations governing this issue. To ascertain the point of view of the ERO member countries regarding their conditions, the questionnaire was sent to the organizations' corresponding contact individual of a total of 37 ERO member associations.

RESULTS

A total of 33 ERO countries and national member dental associations responded: Austria, Armenia, Azerbaijan, Belgium, Croatia, Czech Republic, Cyprus, Denmark, Estonia, France, Georgia, Germany, Greece, Iceland, Israel, Italy, Kazakhstan, Kyrgyz Republic, Lithuania, Luxembourg, Macedonia, Malta, The Netherlands, Poland, Portugal, Romania, Russia, Slovak Republic, Slovenian Republic, Spain, Switzerland, Turkey, and the United Kingdom. The response rate was 33 out of 37

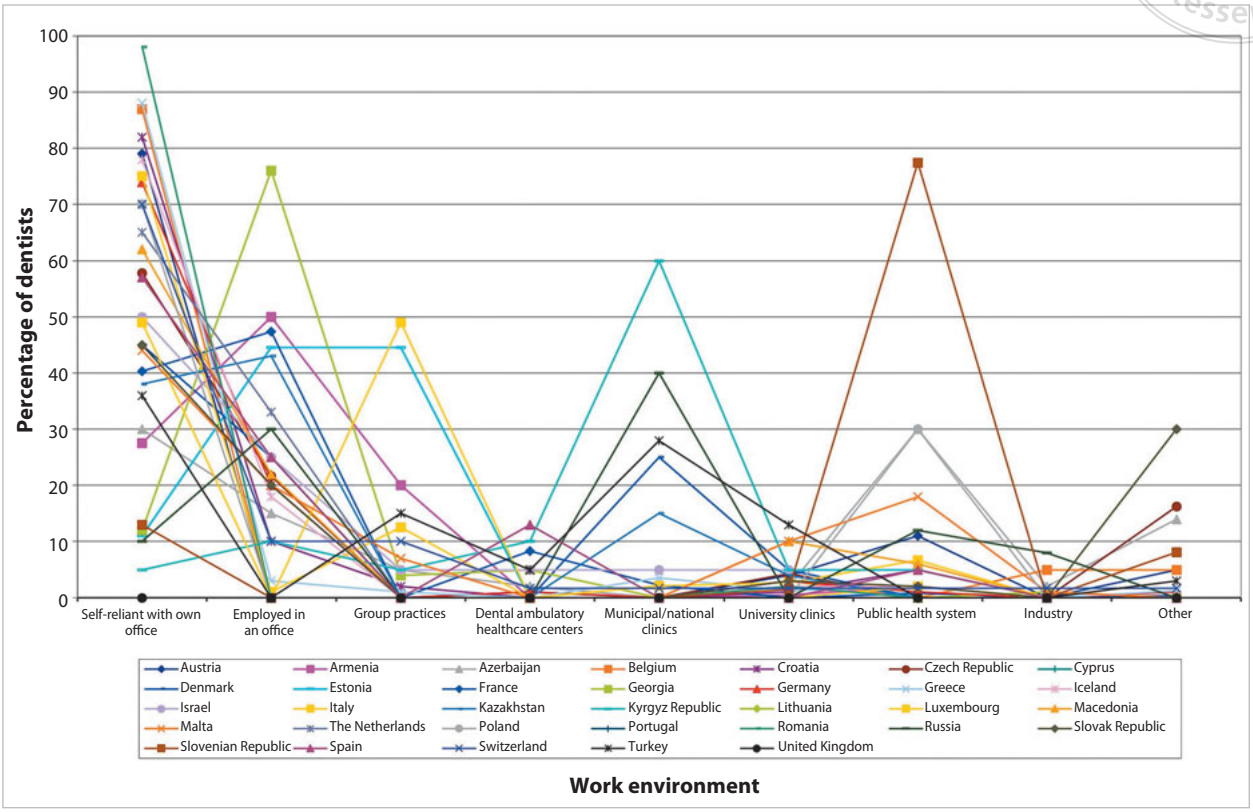

Fig 2 Work environment of dentists distributed in their own office (self-reliant), employed in an office, or working in group practice, dental ambulatory healthcare center, municipal/national clinic, university clinic, public health system, industry, or other places.

(89.19%), with 22 (59%) of the countries as members of the European Union.

Figure 1 shows the dental care rate of the ERO countries, which represents the number of people taken care of by each dentist, based on the total number of residents. For this purpose, the population data of Armenia, Azerbaijan, Georgia, Israel, Kazakhstan, Kyrgyz Republic, and Russia given by the United Nations in 2016[19] was taken into consideration. The populations of the other countries investigated in this study were obtained from the European Commission data, "Eurostat," from 2015.[20]

Figure 2 shows the distribution of the working environments in which dentists are employed in their country: self-reliant own office, employed in an office, working in group offices, dental ambulatory healthcare center, municipal/national clinic, university clinic, public health system, industry, or other places. The most common work environment for dentists is their own professional office in the ERO countries (51.7%). In Georgia, Armenia, France, Kazakhstan, the Netherlands, and Russia a relative large number of dentists (more than 30%) are employed. Group offices are mainly represented in Italy (49%), Germany (25%), Armenia (20%), and Turkey (15%); the rate in all other countries is below 15%. The highest numbers of dental ambulatory healthcare centers are in Spain (13%) and the Kyrgyz Republic (10%); the rate in all other countries is lower than 10%. Municipal/national clinics are mainly established in the Kyrgyz Republic (60%), Russia (40%), Turkey (28%), Denmark (25%), Kazakhstan (15%), and Israel (5%). University medical centers account for less than 13% in all of the surveyed countries. Within the public healthcare system, dentists in the Slovenian Republic (77%) have the highest employment rate, fol-

Table 1 Number of dental schools, number of graduates, course duration, and gender ratio among dental students

Country	Number of graduates	Course duration		Number of dental schools		Gender ratio among dental students	
		(y)	(h)	State	Private	Female (%)	Male (%)
Austria	150	6	5,500	3	2	70.0	30.0
Armenia	450	5	5,000	1	7	50.0	50.0
Azerbaijan	150	5	5,000	1	0	45.0	55.0
Belgium	160	5	5,000	2	3	63.1	36.9
Croatia	170	6	5,500	3	1	65.0	35.0
Czech Republic	240	5	5,000	5	0	65.9	34.1
Cyprus	0	NA	NA	0	0	NA	NA
Denmark	120	5	5,000	2	0	80.0	20.0
Estonia	28	5	7,800	1	0	88.0	12.0
France	1,200	6	5,000	16	0	55.0	45.0
Georgia	500	5	4,583	4	7	65.0	35.0
Germany	1,800	5	5,000	30	1	65.0	35.0
Greece	200	5	5,000	2	0	57.6	42.2
Iceland	7	6	5,500	1	0	61.0	39.0
Israel	80	6	5,500	2	0	60.0	40.0
Italy	833	6	5,000	32	2	47.0	53.0
Kazakhstan	310	5	5,000	5	0	60.0	40.0
Kyrgyz Republic	500	5	5,000	3	1	50.0	50.0
Lithuania	150	5	5,000	2	0	80.0	20.0
Luxembourg	0	NA	NA	0	0	NA	NA
Macedonia	175	6	5,500	4	1	62.0	38.0
Malta	12	5	5,000	1	0	80.0	20.0
The Netherlands	240	6	5,500	3	0	65.0	35.0
Poland	850	5	5,000	10	0	80.0	20.0
Portugal	570	5	5,000	3	4	75.0	25.0
Romania	1,000	6	5,500	11	2	70.0	30.0
Russia	1,800	5	5,000	57	0	60.0	40.0
Slovak Republic	94	6	5,000	4	0	60.0	40.0
Slovenian Republic	NA	6	5,500	1	1	70.0	30.0
Spain	1,650	5	5,000	12	9	60.0	40.0
Switzerland	130	5	5,500	4	0	60.0	40.0
Turkey	2,000	5	5,000	53	18	45.0	55.0
United Kingdom	1,050	5	5,000	16	0	NA	NA

NA, not applicable.

lowed by those in Poland and Azerbaijan (30%), Malta (18%), Russia (12%), and Austria (11%); the rate in other countries of this type of employment is under 7%. The industrial setting (eg, employment in the pharmaceutical industry or dental materials trade) is the lowest ranked working environment for a dentist in all countries, with the highest figures in Russia (8%) and Belgium (5%) and a rate of less than 2% in the rest of the countries. Categories not included in the above-mentioned employment types were collected in the "others" category (eg, working in an insurance company as referee, locum doctor) and exhibited rates of 30%, 16%, and 14% (Slovak Republic, Czech Republic, and Azerbaijan, respectively), while the rate in the other countries was below 9%.

Table 1 shows the number of dental schools and graduates, the course duration, and the dental students' gender ratio. The research did not reveal that gender was a factor for preference of a professional practice type. Most dental schools of the ERO member states are public (83.3%). In most countries, state universities predominated over private dental schools. This ratio was balanced in the Slovenian Republic; predominantly private compared to state dental schools were reported by Armenia, Belgium, Georgia, and Portugal. The gender distribution of the dental students revealed predominantly female students (63.8%) in most countries, with the exceptions of Armenia and the Kyrgyz Republic, which showed a balanced male-female ratio. Only Azerbaijan, Italy, and Turkey reported more male than female students (slightly over 50%) who are currently studying dentistry.

Table 2 shows the organization of dentists, the regulations for dental practice and ambulatory healthcare centers, and oral healthcare in cities and rural areas. A dental chamber with mandatory professional membership exists in 13 of the 33 ERO states. With the exception of the Slovak Republic, all countries have national dental associations. The number of dentists and the percentage of dentists who are members of a professional organization are listed. Notably, the level of organization of the European dentists in national dental associations varies strongly. This is relevant because dental organizations have a responsibility for the dental care of the people in their country, whether or not statutory or non-governmental (NGO) exist; this reflects negative trends that jeopardize liberal dental practice.

In most countries, the number of dentists allowed to work in a dental ambulatory healthcare center is not limited. Dentists are allowed to work independently immediately after graduation in the majority of countries analyzed (72.7% overall); it is not allowed in Armenia, Denmark, Kazakhstan, the Kyrgyz Republic, Poland, the Slovenian Republic, or Turkey. Immediate self-employment in Germany depends on whether the individual's aim is to work exclusively in a private practice or as independent practice owner within the mandatory state insurance system. The first option allows an individual to open a dental practice immediately after graduation from dental school. Employment in a dental training practice first is mandatory in Armenia, Denmark, Germany, Kazakhstan, the Kyrgyz Republic, Poland, the Slovenian Republic, Switzerland, and the United Kingdom. The required time of employment before being allowed to found one's own practice ranges from 12 to 60 months.

Data for over- or under-supplied cities or rural areas in ERO member countries vary; the change of the ratio of offices in towns vs offices in the countryside during the past 10 years varies, as well. The broad information gained from the questionnaire showed that it is difficult to define over- or under-supplied areas. However, these data are important to visualize the need for adequate dental care coverage with classic or alternative dental environments.

Table 3 shows who is allowed to found an ambulatory healthcare center. In most countries, except in Croatia, the Czech Republic, Cyprus, Iceland, Luxembourg, and Malta, there are special rules for founding such dental ambulatory healthcare centers. In the investigated ERO-zone countries, the foundation of ambulatory healthcare centers is possible for the vast majority of respective citizens or legal residents. Few differences exist among the different ERO countries in the following categories: investors without dental or medical education, dentists, medical doctors, municipalities, health insurances, companies, or others. The results show that in the majority of ERO countries it is possible, without any legal regulation, to establish a dental healthcare center.

DISCUSSION

The increasing number of different possibilities of dental practice makes an investigation of this development necessary. It is important to ensure free, independent professionalism with the aim of optimal oral health for the patient based on the ethical principles of the charter for liberal professions.[16] This type of research is relevant in order to confirm if free, independent dental practices, based on the ethical principles of the liberal

Table 2 Organization of dentists, regulations for dental practice and ambulatory healthcare centers, and oral healthcare in cities and rural areas

Country	Chamber	National Dental Association (NDA)	Number of dentists in the country	Percentage of dentists who are members of an organization (%)	Mandatory regulations	Number of employed dentists allowed to work in a dental ambulatory healthcare center	Immediately allowed to work self-reliantly	Employment in a dental practice first		Over- or under-supply of dentists		Change in ratio of offices in towns vs. offices in the countryside during the past 10 years
								Mandatory time	Duration (months)	In cities	In rural areas	
Austria	Yes; mandatory	Yes	4,913	100.00	No	NA	Yes	No	0	No	Yes	Yes
Armenia	No	Yes	4,000	21.25	NA	Unlimited	No	Yes	12	No	Yes	Yes
Azerbaijan	No	Yes	2,000	25.00	NA	3-8	Yes	NA	NA	Yes	Yes	Yes
Belgium	No	Yes	8,000	69.85	No	NA	NA	NA	NA	Yes	Yes	Yes
Croatia	Yes; mandatory	Yes	4,400	50.00	No	NA	Yes	No	0	Yes	No	Yes
Czech Republic	Yes	Yes	8,117	100.00	No	NA	Yes	No	0	Unknown	Yes	Yes
Cyprus	No	Yes; mandatory	1,073	100.00	No	NA	Yes	No	0	NA	NA	NA
Denmark	No	Yes; mandatory	5,000	84.00	No	NA	No	Yes	12	No	No	Unknown
Estonia	No	Yes	1,271	69.08	No	NA	Yes	No	0	No	Yes	Yes
France	Yes; mandatory	Yes	41,763	100.00	No	NA	Yes	No	0	Yes	Yes	Unknown
Georgia	No	Yes	9,559	37.66	No	0	Yes	No	0	No	Yes	Unknown
Germany	Yes; mandatory	Yes	70,740	100.00	No	NA	Yes	Yes	24	Unknown	Unknown	Yes
Greece	No	Yes; mandatory	12,500	100.00	No	NA	Yes	No	0	Yes	Yes	Yes
Iceland	No	Yes	291	100.00	No	NA	Yes	No	0	No	No	No
Israel	No	Yes; mandatory	8,000	50.38	No	NA	Yes	No	0	Yes	Yes	Unknown
Italy	Yes; mandatory	Yes	49,413	100.00	No	NA	Yes	No	0	Yes	NA	No
Kazakhstan	No	Yes	3,094	32.32	No	Unlimited	No	Yes	12	Yes	NA	Yes
Kyrgyz Republic	No	Yes	1,500	13.11	No	Unlimited	No	Yes	60	No	Yes	Yes
Lithuania	Yes; mandatory	Yes	3,550	100.00	No	NA	Yes	No	0	Yes	Yes	No
Luxembourg	Yes	Yes	353	100.00	No	Unlimited	Yes	No	0	NA	NA	NA
Macedonia	Yes; mandatory	Yes	3,000	34.17	No	NA	Yes	No	0	Unknown	Unknown	No
Malta	No	Yes	170	52.94	No	NA	Yes	No	0	No	No	No
The Netherlands	No	Yes	8,600	72.09	No	Unlimited	Yes	No	0	No	Yes	Unknown
Poland	Yes; mandatory	Yes	23,100	100.00	No	NA	No	Yes	12	Unknown	Unknown	Unknown
Portugal	No	Yes; mandatory	8,543	100.00	No	NA	Yes	No	0	No	No	No
Romania	Yes; mandatory	Yes	17,000	29.41	No	NA	Yes	No	0	Yes	Yes	No
Russia	No	Yes	65,000	8.80	No	NA	Yes	No	0	Yes	Yes	Yes
Slovak Republic	Yes	No	3,444	82.35	No	NA	Yes	No	0	Yes	Unknown	Yes
Slovenian Republic	Yes; mandatory	Yes	1,427	100.00	NA	NA	No	Yes	12	Yes	Yes	Yes
Spain	Yes; mandatory	Yes; mandatory	34,641	100.00	No	NA	Yes	No	0	Yes	Yes	Yes
Switzerland	No	Yes	5,500	78.18	No	NA	No	Yes	24	No	Yes	Yes
Turkey	Yes; mandatory	Yes; mandatory	28,000	100.00	Yes	5	Yes	No	0	Yes	Yes	Yes
United Kingdom	Yes; mandatory	Yes	39,500	46.84	No	NA	No	Yes	12	Unknown	Unknown	Unknown

NA, not applicable.

professions, are performing adequately, ensuring patients' oral health (as per the actual FDI World Dental Federation oral health definition), when compared to commercially supported dental service suppliers.[21] An investigation reporting the results of similar parameters to those evaluated in this investigation has, to the present authors' knowledge, not yet been published. To this end, the present study was aimed at analyzing the general conditions of professional dental education, organization, and occupational forms within the ERO-zone.

The high questionnaire response rate (89.19%) allows a comprehensive overview of the situation of dental care in the member countries of the ERO. The countries of Armenia, Croatia, Cyprus, Georgia, Greece, Lithuania, and Macedonia, with a density of fewer than 1,000 inhabitants per dentist, are noteworthy. The quantitatively lowest density of dentists, with over 4,000 inhabitants per dentist, was found in Azerbaijan, Kazakhstan and the Kyrgyz Republic. The mean density of dentists of the EU member countries in the ERO was 1,570 inhabitants per dentist. Compared with the data of the CED of 2008, with 345,000 dentists and a ratio of inhabitant per dentist of 1:1,501, and of 2015 with 361,000 dentists and a ratio of 1:1,433,[22] it can be confirmed that the oral healthcare of the population is increasing. The ERO member countries indicated that there are areas that are under- or over-provided. This finding should be further examined to avoid the over- or under-supply of professional dental care and preventively counteract it. Although the European Union, Macedonia, and Turkey stated in 2010 that, as required, 88% of the population has access to a dentist within 30 minutes, the trend towards under-supply in thinly populated regions can be perceived, as the ratio between offices in cities versus offices in the rural areas has changed in favor of city practices in recent years. This situation could be mitigated through the high student training capacity identified in the present study.[23] Unfortunately, no valid data on start-ups or office closures could be obtained in this study from the ERO member states. However, the number of self-reliant dentists with their own offices constitutes the most common form of dental occupation in most ERO countries. Although no further specification was made whether patients are able to distinguish between different dental professional practices, the Eurobarometer stated that 79% of patients preferred visiting a dental practice or a private clinic.[23] Nevertheless, the number of dentists employed is not negligible (eg, Georgia 76%, Armenia 50%, France 47.4%, Estonia 44.5%, Kazakhstan 43%, the Netherlands 33%, Russia 30%, Denmark/Israel/Spain 25%, Azerbaijan/Germany/Iceland/Malta/Macedonia/Slovak Republic from 15% to 22%, Kyrgyz Republic/Switzerland 10%), although no gender-specific data collection could be obtained in this study. The increase in the percentage of female students from 2003 (53%) to 2008 (61%) to 2013 (63%)[22] is consistent with the 63% within the ERO-zone in CED member countries, confirming the upward trend. A tendency that females are engaged differently in dental practices, especially in terms of daily/weekly working hours in a dental practice, was not observed. Thus, unfortunately, the perception that they consider themselves an employee rather than an entrepreneur or clinic director could not be elucidated due to the study design.

An increase in salaried dentists in the coming years can be expected as the dental profession continues to work to achieve a satisfactory reconciliation between family and work.[17] The distribution over all professional occupations noted in the questionnaire (Fig 2) confirms the high degree of freedom across all countries to freely choose the type of professional practice. A large number of governmental support structures were identified only in Denmark, the Kyrgyz Republic, Malta, Poland, Russia, the Slovenian Republic, Spain, and Turkey. This finding is partially justified historically or is socially/politically pursued by the public healthcare systems. Within the EU, Macedonia, and Turkey, the percentage of patients who used a dental or communal care facility for dental treatment was 14%.[22] Except for Spain (13%) and the Kyrgyz Republic (10%), dental care centers represent a small proportion of the workforce. However, when taking into consideration the results of the question "who is allowed to found an ambulatory healthcare

Table 3 Rules for founding an ambulatory healthcare center

Country	Who can found an ambulatory healthcare center?							Rules for founding ambulatory healthcare centers
	Investors without dental or medical education	Dentists	Medical doctors	Municipalities	Health insurances	Companies	Others	
Austria	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes
Armenia	Yes	Yes	Yes	Yes	No	No	Yes	Yes
Azerbaijan	Yes	Yes	Yes	NA	NA	NA	NA	Yes
Belgium	Yes	Yes	Yes	Yes	Yes	Yes	NA	Unknown
Croatia	Yes	Yes	Yes	Yes	Yes	Yes	NA	No
Czech Republic	Yes	Yes	Yes	No	No	Yes	Yes	No
Cyprus	No	Yes	Yes	No	No	No	No	No
Denmark	NA	NA	NA	NA	NA	NA	NA	NA
Estonia	Yes	Yes	Yes	Yes	Yes	Yes	NA	Yes
France	Yes	Yes	Yes	Yes	Yes	Yes	NA	Yes
Georgia	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Germany	Yes	Yes	Yes	Yes	Yes	No	NA	Yes
Greece	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Iceland	No	No	No	Yes	Yes	No	No	No
Israel	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes
Italy	Yes	Yes	Yes	Yes	Yes	Yes	NA	Yes
Kazakhstan	Yes	Yes	Yes	Yes	Yes	Yes	NA	Yes
Kyrgyz Republic	Yes	Yes	Yes	Yes	No	Yes	NA	Yes
Lithuania	Yes	Yes	Yes	Yes	No	Yes	NA	Yes
Luxembourg	NA	NA	NA	NA	NA	NA	NA	No
Macedonia	Yes	Yes	Yes	NA	NA	NA	Yes	Yes
Malta	NA	NA	NA	NA	NA	NA	NA	No
The Netherlands	Yes	Yes	Yes	Yes	Yes	Yes	Yes	NA
Poland	Yes	Yes	Yes	Yes	Yes	Yes	NA	Yes
Portugal	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Romania	Yes	Yes	Yes	Yes	Yes	Yes	NA	Yes
Russia	Yes	Yes	Yes	Yes	Yes	Yes	NA	Yes
Slovak Republic	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Slovenian Republic	NA	NA	NA	NA	NA	NA	NA	NA
Spain	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Switzerland	Yes	Yes	Yes	Yes	Yes	Yes	NA	Yes
Turkey	Yes	Yes	NA	NA	NA	NA	NA	Yes
United Kingdom	NA	NA	NA	NA	NA	NA	NA	Unknown

NA, not applicable.

center?" (Table 3), it can be expected that the number of these occupational forms could change according to different locally influenced financial scenarios in the future. Although in a number of countries there are regulations for the establishment of ambulatory healthcare centers, their corporate transparency involves certain risks such as foreign investors and solely mercantile investors or stakeholders that are allowed to operate health centers in almost all countries within the ERO zone. The dental practice profession, in any form, requires a legal framework assuring patient protection from financial abuse or defective treatment. Under actual circumstances the main attributes of an individual operator-responsible, free, liberal, and independent

practice and the freedom of therapy choice are therefore endangered and possibly undermine the contents of the charter for liberal professions.[12,16,18]

In a total of 353 universities of the ERO countries surveyed, 16,619 dentists per year were trained. The dental study length showed that in around two-thirds of the countries it is 5 years and 5,000 hours. In approximately one-third of the countries, the study period is 6 years and 5,500 hours. Both dental study lengths are in accordance with the requirements described in Directive 2005/36/EC on the recognition of professional qualifications and Regulation (EU) No 1024/2012 on administrative cooperation through the Internal Market Information System.[24] Fortunately in most ERO countries adequate dental training education, which is an expensive matter, is being implemented. A supply-oriented density based on life expectancy is currently not available due to missing data in the ERO member countries. Collecting data in the member countries of the ERO is therefore encouraged to facilitate the analysis of how dental/oral healthcare is based on work lifetime. Such an analysis is the only way to consider measures at an early stage and to prevent over- or under-supply of dental care in the future.

The number of trained dentists was previously shown to increase in 2003, 2008, and 2013.[22] In Azerbaijan, Kazakhstan, the Kyrgyz Republic, Russia, and Turkey, countries with lower supply density, a future higher treatment access may result. In the remaining countries, however, an increase in the number of employed dentists is to be expected, which is a promising prerequisite for the establishment of a higher number of dental care supply facilities. These conditions, however, entail the danger that due to a growing competitive environment, a commercialization of the dental profession could take place.

The fact that a training period before self-reliant work is mandatory in only 10 countries is based on national guidelines. In the countries in which this training period is required, the dental education time is 5 years. The extent to which a significant quality criterion is associated with a mandatory training period could not be established in the present study. Differences within the EU, however, lead to inequalities with respect to the establishment of a self-responsible professional practice. Nevertheless, based on the directives recognizing professional qualifications and regulations,[24] professionals with no vocational training period have the legal opportunity to establish their own practice in different EU countries.

The majority of dentists in all investigated ERO countries are voluntary members of dental organizations or professional organizations. However, only approximately one-third of the dentists are organized as compulsory members in chambers or corporations, indicating a reduced scope for professionals to interact socially and professionally. In turn, in the majority of countries, external influences, such as the state, health insurance, or investors, affect professional practice and public perception. This influence is especially true in times when profitable practice structures with a high number of dentists who work in the workplace erode independent, liberal, free, self-responsible professional practice.[16] This situation is inevitably linked to the weakening of the social position of the dental profession.

CONCLUSIONS

In most ERO countries the dental profession is ethically organized in dental associations and boards and is able to pursue adequate further education and training. Despite actual modern forms of dental practice, the authors are of the opinion that the integrity of the liberal individual dental profession, regardless of the professional practice modality, should continue to be respected and taken into account on the basis of ethical principles; thus, encouraging the achievement of appropriate oral health without the influence of third parties.

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