

The Health Professions: developments in legislation and training, from student application to employment

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Abstract. *Background and aim:* The legislation and training of health workers have undergone various changes during the course of the last 90 years. In addition to the Degrees in Medicine and Surgery, and in Dentistry, with a duration of six years, the Faculty of Medicine and Surgery also offers three-year degree courses in the 22 health professions, including Nursing, Obstetrics, Physiotherapy, Speech Therapy, Laboratory work, Radiology, Neurophysiopathology and Dietetics. *Method:* A data research study was carried out over the last 18 years, on the legislation and training requirements for health workers, including the availability of University places and the applications presented, as well as the number of university lecturers and the employment opportunities. *Results:* Data reveal a steady increase from 1997 to 2011 in the number of student admission applications for Medicine and Surgery as well as for the other Health Professions, reaching a peak in 2012 and currently continuing to fall. The trend is different for lecturers, who, apart from a slight increase up to 2008, have remained at around 9400 in number since 1997. *Conclusions:* The drop in applications for places would appear to be linked to the fall in employment in the last six years, from 86% in 2007 to 62% in 2012. Although the health sector is still in first place among all the other sectors, careful reflection would seem to be warranted on the part of the Regions and the Ministries of Health and University Education when defining the annual training requirements for each of the 22 Health Professions

Key words: health professions, programming of student numbers, students, lecturers, employment

Introduction

The general reform of university studies starting from 1990 saw the completion of the juridical legislation covering numerous health professions for which degree courses have been added to the Faculty of Medicine and Surgery (1). In addition to the Degrees in Medicine and Surgery, and in Dentistry, with a duration of six years, the Faculty of Medicine and Surgery also now offers three-year degree courses in the 22 health professions, including Nursing, Midwifery, Physiotherapy, Speech Therapy, Technician of Laboratory, of Radiology and of Neurophysiopathology. Although there is a definite distinction regarding the duration of the different degree courses, the same cannot be said

for the codification of the various professionals, previously distinguished as graduates and non-graduates.

At present, the distinction, not yet completed or codified, regards on the one hand the medical profession (Physicians) and on the other the above mentioned health professions commonly and erroneously defined as “non-physicians or else paramedics” (2-5). In the health sector other professions are accepted as being analogous to that of the Physician, such as the Pharmacist or the Veterinary surgeon, as well as the Biologist, the Chemist and the Psychologist, the training of whom has always been of four years’ duration or more. The latter were codified as “graduate personnel”, to distinguish them from both Physicians and Health Professionals. The continuous evolution of the training

system over the course of the years (6-8), leading to the current awarding of a degree certificate to all students, has apparently given rise to confusion concerning the definition of degree certificates but not concerning the distinction between the four training routes:

- a first degree (Bachelor's), of three years' duration, for the 22 health professions;
- a post-graduate degree, for the 22 health professions, of two years' duration subsequent to the 3-year bachelor's degree - the so-called "3 + 2";
- a single-cycle degree specialising in Dentistry, Veterinary Medicine or Pharmacy, of five years' duration;
- a single-cycle degree specialising in Medicine and Surgery, of six years' duration.

This structure was changed once more with Ministerial Law 270/2004, which, among other things, replaced the "Specialist Degree" with the "Laurea Magistrale", the Italian equivalent of the Master's Degree, and changed the duration of the Degree course in Dentistry from five to six years.

The subject of this analysis is the training of personnel in the 22 Health Professions requiring a three-year Bachelor's degree and a subsequent two year Master's Degree, as stipulated in art. 6 of Law no. 43 of 1st February 2000 (9-12). The same law also "recognised" one year Master's Degrees (13). Hence the term "Health Profession" covers the 22 existing professional profiles, excluding those of Physician, Dentist and Veterinary. However, the set of all the above mentioned professions refers to the definition of "health workers", both Physicians and non-physicians.

The number of health workers with limited-number university training

According to the data gathered from the various professional orders, boards and associations for the year 2012 and reported in Table 1, health workers who for several years have been subject to limited-number or programmed university training (14-16) are now number over 1 million.

The percentage of university places on offer compared to the number of operators can also be considered as an indicator of the turnover, which in general is estimated at around 2.7%.

The "profiles" of the 22 Health Professions were definitively and completely regulated with specific Ministry of Health laws between 1994 and 1998; they were subsequently grouped into four areas and classes in accordance with the Ministry of Health law of 29th March 2001 and the Ministry of University Education law of 2nd April 2001, as seen in Table 2.

Historical and legislative evolution prior to 1970

The present-day 22 professions derive from laws enacted 90 years ago, subsequently evolving into two branches: the "auxiliary branches of the health professions" and the "auxiliary health professions", which in 1999 were denominated as "Health Professions" (2-4). The current legislative system and the relative national training schemes began with Nurses, for whom Royal Decree no. 1832 of 15th August 1925 envisaged the

Table 1. The number of health workers with limited-number university training

	Those enrolled in a professional register and registered operators		University Places		% ratio of places to no. of operators
Physicians	354.143	33,0%	10.023	26,1%	2,8%
Dentistry	59.437	5,5%	949	2,5%	1,6%
Veterinary	30.375	2,8%	774	2,0%	2,5%
Nurses	401.694	37,4%	15.999	41,7%	4,0%
The other 20 professional roles	227.796	21,2%	10.619	27,7%	4,7%
TOTAL	1.073.445		38.364		3,6%

Table 2. Professional profiles and classes of degree of three-year degree courses in the 22 health professions Grouped into four areas in accordance with the Ministry of Health law of 29th March 2001 and the Ministry of University Education law of 2nd April 2001.

Health workers according to profiles, places in Degree Courses and sites of Courses A.A 2014-15

	Workers		Places	Courses	Sites
NURSE AND MIDWAFERY	419.805	67%	16.915	92	281
Nurse	391.219	62,1%	15.701	43	216
Pediatric nurse	10.475	1,7%	298	11	13
Midwife	18.111	2,9%	916	38	52
REHABILITATION	109.000	17%	4.874	144	207
Educator	31.150	4,9%	667	13	16
Physiotherapist	55.000	8,7%	2.213	39	87
Speech therapist	8.700	1,4%	687	26	31
Orthoptist	4.500	0,7%	257	20	21
Podiatrist	1.200	0,2%	130	6	7
Technician of psychiatric rehabilitation	3.450	0,5%	333	19	20
Neuro-therapist for developmental age	4.000	0,6%	333	12	14
Occupational therapist	1.000	0,2%	254	9	11
TECHNICAL DIAGNOSTIC	56.846	9,0%	2.146	92	125
Audiometrician	2.000	0,3%	60	5	5
Laboratory technician	28.000	4,4%	959	36	48
Neurophysiopathology technician	1.500	0,2%	120	12	12
Radiology Technician	25.346	4,0%	1.007	39	60
HEALTH CARE TECHNICIANS	18.670	3,0%	1.666	87	95
Dietician	3.870	0,6%	402	24	25
Dental Hygienist	6.400	1,0%	677	26	32
Audio prosthesis technician	3.400	0,5%	258	12	13
Cardiocirculatory physiop. technician	3.000	0,5%	188	15	15
Orthopaedic technician	2.000	0,3%	141	10	10
PREVENTION	25.169	4,0%	1.007	37	42
Sanitary Assistent	6.169	1,0%	276	10	11
Technician for prevention...	19.000	3,0%	731	27	31
	629.490		26.608	452	750
TOTAL					
Registered workers	451.320	72%			
Not registered workers	178.170	28%			
Nurses	401.174	64%			
Others	227.796	36%			

possibility to set up boarding schools with two-year courses for Nurses at “*the University Faculties of Medicine and Surgery, the local councils and the public institutions, ... as well as committees formed for the purpose*”. Article 7 also stipulated the provision of “*theoretical and practical instruction imparted by Physicians of recognised merit, by the school Director and by Head Nurses*”.

In particular, the qualifications required for the school were a two-year nursing diploma, a qualification as Director obtained after a third year of specific training, in accordance with art. 9, and at least two years' experience in charge of a hospital ward. The above mentioned institutions could, in accordance with art. 12, set up schools specialising in Nursing with a one-year course for visiting health assistants.

The professions were disciplined according to Law no. 1264 of 23rd June 1927, and by the subsequent executive Royal Decree no. 1334 of 31st May 1928, with the identification of the “auxiliary branches of the health professions” of Dental technician, Optician, Orthopaedic technician as well as the already legislated role of nurse, also including the separate specialisations of Masseur and Head lifeguard at hydrotherapy establishments.

The executive regulations regarding training were approved in detail by royal decree no. 2330 of 21st November 1929.

This two-tier teaching arrangement for nurses, with a basic course followed by a second course of specialization, is still in operation; over the years it has been extended to the 20 other subsequently defined health professions, with periodic legislative updating and improvements.

The five years of legislation from 1925 to 1929 were included in royal decree no. 1265 of 27th July 1934, the “Complete set of health laws”, which also regulated the auxiliary profession of midwife, later referred to as obstetrician in accordance with Law no. 2647 of 20th December 1937. Art. 100 of the above mentioned royal decree 1265 introduced the term “professional nurse”; art. 130 authorised the universities and other public institutions to open schools for the auxiliary health professions of nurse and health assistant.

Regarding training, some years previously art. 20 of royal decree no. 1592 of 31st August 1933 (the “Complete Set of Laws on Higher Education”), au-

thorised the setting up of special-purpose schools (SDAF in Italian), with the following subsequent modifications:

- Royal Legislative Decree no. 2128 of 15th October 1936, for the establishment of schools of Midwifery at university clinics for those already qualified as Nurses;
- Royal Decree no. 1631 of 29th September 1938, for the institution of courses at hospital facilities for “laboratory and radiology technicians”;
- Law no. 1098 of 12th July 1940, art. 7, which added to the nursing profession the role of “Children’s Nurse”.

The requisite for admission was the middle school or technical school leaving certificate (obtained in Italy after 3 years' study at middle high school).

This arrangement lasted for around 30 years, until 1968, when a further definition of the professions and their relative training was approved under Law no. 132 of 12th February 1968, the so called “Mariotti Law” (named after the Minister of Health Luigi Mariotti) and the subsequent applicative presidential Decrees nos. 128, 129 and 130 of 27th March 1969 regarding the organisation of hospitals, university clinics and their personnel. Other professions were envisaged, such as the Rehabilitation Therapist and the Dietician.

The relative training courses taking place in hospitals varied in duration from six months to three years and the requisite qualification for admission went from the middle school diploma to the high school leaving diploma.

In addition there existed a considerable degree of autonomy in relation to the programmes, the testing of students and the diplomas issued, regarding both the differing sites of the schools and the various types of profession.

The courses involved hospital schools, university schools and SDAFs (special purpose schools).

Mixed training – at regional and university level

With the aim of legislating the training system then in force, art. 34 of Law no. 118 of 30th March 1971 transferred to the newly instituted regions the task of “vocational training for the practising of auxiliary health professions and of auxiliary skills”, later

regulated under presidential Decree no. 10, art. 1, letter f of 15th January 1972.

Regional training concerned above all and in particular the professions of Nurse, Sanitary Assistant, Radiology technician and Laboratory technician, whereas for other professions such as that of Midwife, Rehabilitation Therapist, Speech therapist, Orthoptist, Neurophysiopathology technician, Dietician and Physiopathology technician, the training was predominantly at University level, at the SDAFs (special purpose schools). The courses varied in duration from two to three years. The admission requirements also varied, from the two-year to the five-year high school leaving certificate.

Recognition of the various professions was defined under presidential Decree no. 761 of 20th December 1979, "The juridical status of personnel of the National Health Service", and Ministry of Health Decree no. 30 of 26th January 1988, which updated the list of professions identified in 1969. Once the various professions were identified, the Ministry of Health Decree of 30th January 1982 established the requisites for qualifying for the professions under art. 81:

«diploma from university special school ...; certificate of qualification course ... of at least two years' duration, taken under the aegis of the National Health Service, to which access is gained with a high school leaving certificate».

In particular, for the university schools and SDAFs (special purpose schools), art. 9 of presidential Decree no. 162 of 10th March 1982 ("Reorganisation of the special purpose schools, specialisation schools and enhancement courses") established the legal recognition of the relative diplomas as qualifications for the exercising of the corresponding profession. However, there remained a discrepancy between one Region and another and between one University and another regarding both programming and the duration of courses (two or three years).

This discrepancy was tackled with Law no. 341 of 19th November 1990 ("Reform of the university teaching system"), which among other things abolished the regional schools and SDAFs (special purpose schools), with a conversion to university diploma courses, thus for the first time defining a uniform and homogeneous system of the various training pathways.

Education with university diplomas

The reform carried out under art. 1 of Law 341/1990 stipulated for the universities four different training levels with the following diplomas:

- University Diploma (UD);
- Degree (D);
- post-diploma certificate (PDC);
- PhD.

The UD for training of the Health Professions was inserted into the Faculty of Medicine and Surgery with the aim of creating national educational uniformity and of aligning with European Union laws and employment prospects. A further development for university education and the regulation of the health profession profiles followed Legislative Decree no. 502 of 30th December 1992 ("Reorganisation of the discipline regarding health, in accordance with art. 1 of Law no. 421 of 23rd October 1992". Art. 6, paragraph 3, established two fundamental principles: the identification of the professions on the part of the Ministry of Health and the relative training on the part of the Ministry of University Education (4). This legislation sanctioned the conclusion of training on the part of regional schools, and the university was recognised as the only training channel, with the stipulation of agreements between Regions and Universities and between Universities and local health authorities.

Regulation of the professions and vocational training

Between 1994 and 1995 the Ministry of Health identified and regulated with specific laws 14 professional profiles, with the integration of eight others in the subsequent period of 1997-98, whereas the Ministry of University Education law of 24th July 1996 defined the respective «university teaching arrangements for the university diploma courses for the health sector» (6) and the subsequent law of 29th September 1997 established the «qualification requisites of the structures».

These laws, issued concomitantly by the Ministries of Health and University Education, establish for each profession the same type of teaching arrangement at national level with a duration of 4600 hours, 1600 for theory and 3000 for practical technical traineeship.

The technical and practical training relating to the Scientific Disciplinary Sectors (SDS) F23/A-F is entrusted according to the category “teachers under contract”, to lecturers belonging to the specific professional profile of the course, thus ensuring that the training consists partly of practical technical traineeship assigned to the specifically nominated “coordinator”, a lecturer on the course belonging to the corresponding professional profile. Particular attention is reserved for practical technical training for “know how” and traineeship, taught and guided by tutors of the specific profession.

A further stage in juridical and educational regulation was Law no. 42 of 26th February 1999, which states: «The appropriate field of activity and responsibility of the health professions in accordance with article 6, paragraph 3, of legislative decree no. 502 of 30th December 1992 and subsequent modifications and integrations, is determined by the specifications of the institutive Health Ministerial Decrees (DM) for the relative specific professional profiles and the teaching arrangements of the respective university diploma courses and post-basic training, as well as the specific ethical codes, save for the competences envisaged for the medical professions and for the other health professions for which a degree certificate is required, with reciprocal respect of the specific professional competences».

The professional profiles, in order of date of law (DM), are as follows:

- 1) Dietician (DM 744, 14-9-1994);
- 2) Physiotherapist (DM 741, 14-9-1994);
- 3) Dental hygienist (DM 669, 14-9-1994);
- 4) Nurse (DM 739, 14-9-1994);
- 5) Speech therapist (DM 742, 14-9-1994);
- 6) Orthoptist/ophthalmology assistant (DM 743, 14-9-1994);
- 7) Midwife (DM 740, 14-9-1994);
- 8) Podiatrist (DM 666, 14-9-1994);
- 9) Orthopaedic technician (DM 665, 14-9-1994);
- 10) Audiometrician (DM 667, 14-9-1994);
- 11) Audio prosthesis technician (DM 668, 14-9-1994);
- 12) Radiology technician (DM 746, 26-9-1994);
- 13) Laboratory technician (DM 745, 26-9-1994);
- 14) Neurophysiopathology technician (DM 183, 14-3-1995);
- 15) Neuro- and psychomotor therapist for developmental age (DM 56, 17-1-1997);
- 16) Technician for prevention in the occupational environment (DM 58, 17-1-1997);
- 17) Occupational therapist (DM 136, 17-1-1997);
- 18) Sanitary assistant (DM 69, 17-1-1997);
- 19) Paediatric nurse (DM 70, 17-1-1997);
- 20) Cardiocirculatory physiopathology and cardiovascular perfusion technician (DM 316, 27-7-1998);
- 21) Educator (DM 520, 8-10-1998);
- 22) Technician for psychiatric and psychosocial rehabilitation (DM 182, 29-3-2001).

The latter two were regulated under a single profile of Psychiatric and psychosocial educator and rehabilitation technician (DM 58, 17-1-1997).

Conversion of university diplomas to degrees

Meanwhile, training was evolving at European Union level, following EU agreements signed by the Ministries of Higher Education and of University Education in Paris in 1998 and in Bologna in 1999 (16), leading to the obsolescence of the UD. With Law no. 509 of 27th November 1999, the Ministry of University Education approved the “Regulation of teaching autonomy in the universities”, instituting the so called “3+2” training system. The aim was to arrive at a wide-sweeping scientific and cultural development guaranteeing the circulation of citizens and occupational opportunity in the various countries. The aim was to create “vocational training in series” through the acquisition of “university training credits” (UTCs) in line with the demands of the labour market. A UTC corresponds to 25 hours of “student work”, with the exception of 30 hours for the courses of the first class for Nurses and midwifery because of EU stipulations (16).

Art. 3 of the law stipulates the issuing of the following first- and second-level certificates:

- Degree (D), equal to 180 UTCs in 3 years;
- first-level Master’s Degree, equal to 60 UTCs, in 3 + 1 years;
- post-graduate Degree (PGD), with 300 UTCs in 3+2 years;
- second-level Master’s Degree, 360 UTCs in 3+2+1 years;

- PhD.

Then came the law of 2 April 2001 issued by the Ministries of University Education and of Health envisaging four “classes of degrees for the health professions”, as shown in Table 2, including study courses with partially the same general basic training objectives, together with qualifying and professionalising aims for each specific profile.

The degree classes are divided as follows:

- the health professions of nurse and midwifery;
- the health professions of rehabilitation;
- the technical health professions, divided into assistential and diagnostic areas;
- health professions of safety and prevention.

The passage of the UD to Degree status slightly changed the teaching arrangements, with a reduction in the hours of traineeship and an increase in “autonomy”. Whereas on the one hand this encouraged the in-depth study of disciplines characterising the scientific identity of the specific areas, on the other hand it led to a reduction in the minimum number of hours of training common to all the areas, which had been guaranteed by the UD.

Two-year post-graduate degrees and Master’s Degrees

The development in the teaching of the health professions was reinforced by Law no. 251 of 10th August 2000, which formally defines the role of directors. This function was already envisaged in the above mentioned Royal Decree 1265 of 1934, art. 20 of which envisaged for nurses «a third year of study for a directing qualification». In 1965 the universities set up SDAFs (special purpose schools) for directors of nursing assistance (DAI, IID, DDSI) which were transformed into post-graduate degrees with the Ministry of University Education law of 2nd April 2001.

There followed the Laws of 9th July and 1st October 2004, which instituted courses for each of the four classes of degree, assigning a total of 1122 places at 17 universities. In total, in the 11 years from 2004 to 2014, 20.215 places were assigned against the demand for 20.385 from the regions, with an average of 1838 places on offer each year.

The proportion of the annual average of 22.045 places for the three-year degrees is equal to 8.3%.

Contemporaneously, various universities enacted one-year Master’s degree courses for the functions of coordination, in substitution of the old analogous training pathways for the functions of Head Nurse and Chief Technician, assigning around 2500 places at national level.

Law no. 43 of 1st February 2006 was issued with the aim of setting up professional registers and orders for the Health Professions; although the part referring to the institution of the orders was not applied, art. 6 of this law definitively and in its entirety sanctions the correspondence between first -level university degrees, the one-year Master’s degree subdivided among coordination and specialist functions and the second-level post-graduate degree for directional and teaching functions.

New university reform from 2004 to 2009

The above mentioned training system underwent further reform by the Ministry of University Education with Law no. 270 of 22nd October 2004. Among the main reasons for the reform was the need to better align professional training protocols with the demands of the labour market. To this end, the Ministry of University Education laws of 11th and 23rd October 2004 entrusted the definition of the proposals for the teaching arrangements of the various classes of degree to seven specific technical working groups, composed of representatives of the university and work environments (12). The Health Professions were entrusted to technical working group 2, “Health sciences”, completing the task in 2005.

Of the common salient points, 60 UTCs were allotted for traineeship, 30 UTCs for professional training differentiated for each of the 22 professional profiles, in relation to the respective Disciplinary Scientific Sectors MED/45-50 ex F23/A-D, transformed by the Ministry of University Education Law of 4th October 2000. In addition, the denomination of post-graduate degree was re-denominated as the *Laurea Magistrale*, thus avoiding any confusion with the schools of medical specialisation and with the post-graduate (specialising) Master’s degrees.

In application of this regulation, the law of 19th February 2009 was issued jointly by the Ministries of University Education and of Health.

Validation and recognition of certificates already obtained

To conclude the legalisation process, in 2011 the Ministries of University Education and of State Education jointly issued the Law of 11th November 2011 for the “Validation of diplomas from special purpose schools, instituted in accordance with presidential Decree no. 162/1982, of three-years’ duration, and of university diplomas, instituted in accordance with Law no. 341/1990 and of the same duration, of degrees prior to ministerial Law 509/1999 and to degrees prior to ministerial Law 270/2004, enabling participation in public calls”.

However, as an exception for the Health Professions only, two-year diplomas can also be recognised that are among those stated as being eligible for validation by the laws issued by the Ministry of Health and the Ministry of University Education of 27th July 2000. This replaced and effectively invalidated the procedures of “Re-conversion of credits” set up by some universities (7 out of 39) in 2001, with many doubts as to the advantages for students, as has already been pointed out. (17).

Programming of student numbers

The study courses of the Faculty of Medicine and Surgery, according to Law no. 264 of 2nd August 1999, “Legislation regarding access to university courses”, must correspond to the indications of prevailing EU laws and to the recommendations of the EU stipulating teaching standards requiring the possession of specific requisites.

The introduction of programmed limited-number access to university courses stems from the necessity to guarantee two aims.

The first of these aims is linked to the quality of technical and practical teaching in specific health structures, which in general can accommodate only a limited number of students if adequate teaching levels are to be guaranteed.

The second is related to the objective of guaranteeing adequate labour opportunities, since the type of teaching protocol, designed for a specific professional goal, does not allow for its multidisciplinary use, as happens for other courses of study such as Literature, Economics or Jurisprudence. For this reason, specific regulations were issued with Legislative Decrees no. 502, of 30th December 1992 and no. 229 of 19th June 1999, the “Reorganisation of health discipline”, which, with art. 6, regulated the collaboration between regions and universities for the definition of special agreement protocols as to the use of structures and personnel, and for the definition of teaching requirements for professionals needed to guarantee cover of health and social assistance activities (18).

The number of places to be assigned for each Region for each Profession is decided on the basis of consultation between the Ministry of Health, the Regions and the Federations and Associations of the Health Professions (Table 3).

This decision, which according to Law 264/1999 should have been made by 30th April, was reached in effect at the end of June. In accordance with the Ministry of University Education, the allocation of places for each course and for each university was based on the respective training potential, with the issuing in the first few days of July of the corresponding Laws based on the opinions of a special technical board set up with a Ministry of University Education law. University admission procedures were started up in mid-July, with admission examinations in the first week of September, thus guaranteeing a smooth start to teaching activities in October. The determination of the number of places to be assigned and their division were at first subject to divergence and discussion among the regions and categories, although for some years they have been working towards relatively workable solutions. In general, reference is made to a turnover of 4%, which is a mean value (see Table 1) taking into account academic mortality and interregional mobility as well as the particular demands of some professions that are undergoing occupational evolution.

Table 3. The number of places to be assigned for each Region and for each Profession is decided on the basis of consultation between the Ministry of Health, the Regions and the Federation and Association of the health profession

DEGREES COURSES OF HEALTH PROFESSION AA 2014-15

Places requested by the Region and by professional Association. Places made available by Universities and student's applications

Developed by A. Mastrillo	Operators		Places by					Made available by University Ministry		Student's Applications		Difference University/Regions		Difference Regions/Association	
			4% turnover	Regions and Health Ministry	Associations and Federations										
Nurse	391.219	62,1%	15.649	17.908	62,3%	20.672	63,5%	15.701	59,0%	28.151	1,8	-2.207	-12%	-2.764	-13%
Physiotherapist	55.000	8,7%	2.200	2.166	7,5%	2.057	6,3%	2.213	8,3%	27.288	12,3	47	2%	109	5%
Educator	31.150	4,9%	1.246	741	2,6%	1.410	4,3%	667	2,5%	1.057	1,6	-74	-10%	-669	-47%
Laboratory technician	28.000	4,4%	1.120	901	3,1%	750	2,3%	959	3,6%	2.166	2,3	58	6%	151	20%
Radiology technician	25.346	4,0%	1.014	930	3,2%	737	2,3%	1.007	3,8%	5.321	5,3	77	8%	193	26%
Prevention technician	19.000	3,0%	760	691	2,4%	625	1,9%	731	2,7%	1.146	1,6	40	6%	66	11%
Midwife	18.111	2,9%	724	922	3,2%	916	2,8%	916	3,4%	6.039	6,6	-6	-1%	6	1%
Paediatric nurse	10.475	1,7%	419	325	1,1%	208	0,6%	298	1,1%	784	2,6	-27	-8%	117	56%
Speech therapist	8.700	1,4%	348	687	2,4%	727	2,2%	687	2,6%	6.205	9,0	0	0%	-40	-6%
Dental hygienist	6.400	1,0%	256	650	2,3%	718	2,2%	677	2,5%	2.084	3,1	27	4%	-68	-9%
Sanitary assistant	6.169	1,0%	247	342	1,2%	513	1,6%	276	1,0%	225	0,8	-66	-19%	-171	-33%
Orthoptist and ophthalmology assistant	4.500	0,7%	180	204	0,7%	270	0,8%	257	1,0%	537	2,1	53	26%	-66	-24%
Neuro therapist for developmental age	4.000	0,6%	160	326	1,1%	425	1,3%	333	1,3%	1.504	4,5	7	2%	-99	-23%
Dietician	3.870	0,6%	155	372	1,3%	413	1,3%	402	1,5%	2.701	6,7	30	8%	-41	-10%
Psychiatric rehabilitation technician	3.450	0,5%	138	309	1,1%	355	1,1%	333	1,3%	955	2,9	24	8%	-46	-13%
Audio prothesis technician	3.400	0,5%	136	379	1,3%	433	1,3%	258	1,0%	438	1,7	-121	-32%	-54	-12%
Cardiocirculatory physiopathol. technician	3.000	0,5%	120	170	0,6%	199	0,6%	188	0,7%	410	2,2	18	11%	-29	-15%
Orthopaedic technician	2.000	0,3%	80	120	0,4%	126	0,4%	141	0,5%	279	2,0	21	18%	-6	-5%
Audiometrician technician	2.000	0,3%	80	123	0,4%	215	0,7%	60	0,2%	79	1,3	-63	-51%	-92	-43%
Neurophysiopathology technician	1.500	0,2%	60	112	0,4%	100	0,3%	120	0,5%	292	2,4	8	7%	12	12%
Podiatrist	1.200	0,2%	48	139	0,5%	218	0,7%	130	0,5%	308	2,4	-9	-6%	-79	-36%
Occupational therapist	1.000	0,2%	40	244	0,8%	465	1,4%	254	1,0%	261	1,0	10	4%	-221	-48%
TOTAL	629.490		25.180	28.761		32.552		26.608		88.230	3,3	-2.153	-7%	-3.791	-12%
AA 2013-14				31.748		33.468		27.338		105.901					
Difference 2014 vs 2013				-2.987	-9%	-917	-3%	-730	-3%	-17.671	-17%				

Statistical data of the last 18 years

The number of places for the Health Professions (Table 4) has progressively increased since 1997, from 8.634 to 26.608 in 2014, equal to +208%, more than tripling; there has been an analogous increase, albeit in a lower proportion, in places for Medicine and Surgery, which is up from 6.016 to 10.023 (+67%) and for Odontology, up from 549 to 949 (+73%).

Despite this exponential growth in the number of students, numbers of lecturers have remained practically constant, ranging from 9.213 in 1997 to 9.400 in 2014, although in the intervening years they reached highs of 11.376, as in 2006. Hence the ratio of students to lecturers increased from 1,7 in 1997 to 4 in 2014.

Of the 9.406 lecturers for the entire medical sector, only 316 (3.4%) belong to the SDSs of the health professions (MED/45-50). Another negative datum is that none of the 101 of MED/46 is a health professional and that out of the 66 of MED/49 only 1 is a Dietician. The same goes for the 88 of MED/50, with only 4 from the Health Professions - 2 Dental Hygienists, one Speech therapist and one Orthoptist. Of the 22 of MED/48, 6 are Physiotherapists and one is a Neurophysiopathology technician. The situation regarding the 33 lecturers of MED/45 is decidedly better, with 27 Nurses, and that of the 6 of MED/47 is reasonably good, with 3 Midwives.

A clear sign of the lack of development of the roles for the health professions is that the teaching activity is done free of charge by personnel of the health service

Table 4. The number of places for the health professions has progressively increased since 1997

UNIVERSITY DIPLOMAS AND DEGREE COURSES OF ITALIAN MEDICAL SCHOOL

Places made available by University and applications in 18 years from 1997-98 to 2014-15

Year	Health Professions			Medicine and Surgery			Dentistry			Total Students			Lectures	Stu- dent/ Lec- tures MED 45-50				
	Places	Applications	A/P	Places	Applications	A/P	Places	Applications	A/P	Places	Applications	A/P						
1997-98	8.634	55%	29.225	3,4	6.016	33%	25.302	3,9	549	3,5%	9.971	18	15.645	64.498	4,1	9.213	1,7	
1998-99	10.345	59%	26.943	2,6	6.462	37%	25.892	4,0	619	3,6%	10.842	18	17.426	63.677	3,7	9.227	1,9	
1990-00	11.674	60%	36.438	3,1	6.932	36%	25.939	3,7	690	3,6%	9.592	14	19.296	71.969	1,7	9.248	2,1	
2000-01	15.737	67%	40.522	2,6	7.106	30%	26.298	3,7	788	3,3%	9.546	12	23.631	76.366	3,2	9.563	2,5	
2001-02	17.428	68%	46.433	2,7	7.294	29%	25.645	3,5	854	3,3%	10.788	13	25.576	82.866	3,2	10.540	2,4	6
2002-03	21.411	72%	58.870	2,7	7.482	25%	32.998	4,4	880	3,0%	11.144	13	29.773	103.012	3,5	11.039	2,7	41
2003-04	22.658	73%	58.501	2,6	7.481	24%	37.267	5,0	913	2,9%	11.890	13	31.052	107.658	3,5	10.789	2,9	59
2004-05	23.205	73%	63.830	2,8	7.466	24%	45.008	6,0	931	2,9%	13.646	15	31.602	122.484	3,9	10.803	2,9	93
2005-06	24.341	75%	75.496	3,1	7.424	23%	47.196	6,4	820	2,5%	13.901	17	32.585	136.593	4,2	11.173	2,9	181
2006-07	25.048	75%	79.521	3,2	7.402	22%	53.414	7,2	820	2,5%	16.405	20	33.270	149.340	4,5	11.376	2,9	228
2007-08	25.417	76%	87.346	3,4	7.366	22%	58.571	8,0	782	2,3%	18.395	24	33.565	164.312	4,9	11.250	3,0	261
2008-09	26.720	76%	89.642	3,4	7.788	22%	60.502	7,8	758	2,1%	18.894	25	35.266	169.038	4,8	11.341	3,1	283
2009-10	26.530	75%	110.230	4,2	8.075	23%	71.000	8,8	690	2,0%	19.958	29	35.295	201.188	5,7	10.912	3,2	288
2010-11	28.142	73%	121.038	4,3	9.527	25%	78.006	8,2	789	2,1%	20.718	26	38.458	219.762	5,7	10.360	3,7	292
2011-12	27.223	71%	123.419	4,5	10.345	27%	98.083	9,5	860	2,2%			38.428	221.502	5,8	10.085	3,8	299
2012-13	27.327	71%	119.654	4,4	10.173	26%	97.157	9,6	931	2,4%			38.431	216.811	5,6	9.886	3,9	319
2013-14	27.738	71%	105.760	3,8	10.157	26%	94.411	9,3	984	2,5%			38.879	200.171	5,1	9.634	4,0	304
2014-15	26.608	71%	88.230	3,3	10.023	27%	86.685	8,6	949	2,5%			37.580	174.915	4,7	9.407	4,0	316
Mean value	22.010	71%	75.617	3,4	8.029	26%	54.965	6,8	812	2,6%	13.978		30.875	141.453	4,6	10.325	3,0	
Total	396.186		1.361.098		144.519		989.374		14.607		195.690		555.758	2.546.162				
Difference	17.974		59.005	-0.1	4.007		61.383	4,7	400		10.747		21.935	110.417	0,5	194	2.3	
2014 vs 1997	208%		202%	-2%	67%		243%	121%	73%		208%		140%	171%	13%	2%	135%	

through the agreements between Regions and Universities and between local health services and Universities.

The division of places among the three courses is characterised by a stability in the last four years among 71% of the health professions, 27% of Medicine and Surgery and about 3% of Dentistry.

The estimate of teaching requirements is also different; looking at the year 2014, it is higher for the Health Professions, with a turnover of 4,0% with respect to the 629.490 operators, 2,8% with respect to the 353.000 Physicians and 1,6% of Dentists and Odontologists.

For the Health Professions the increase derives from the great need for personnel for the various auxiliary activities of rehabilitation and safety, which grew over the years up to 28.142 in 2010, decreasing to 26.608 in the academic year 2014-15. Looking at the annual mean of the Degree courses from 2001 the difference of -3.476 (-11%), between the Universities (25.030) and the Regions (28.965), regards above all the places for nurses, with a difference of -3.593 (-20%), between Regions (17.859) and Universities (14.267). The difference is, however, minimal for the set of the other 20 professions with a mean of -342 (-3%) between the 10.764 of the universities and the 11.106 of the Regions.

Distribution of places and sites by profession.

As emerges from the data of the last 5 years (19), and in particular those of 2014-15 (Tables 2 and 3) there are 5 professions with the greatest number of places and teaching sites: nurses, with 15.701 places over 43 courses and 216 sites, physiotherapists, with 2.213 places over 39 courses and 87 sites, Radiology technicians, with 1007 places over 39 courses and 60 sites, Laboratory technicians, with 959 places over 36 courses and 48 sites, and Midwives, with 916 places over 38 courses and 52 sites. There are 4 professions with the lowest number of places: Orthopaedic technicians, with 141 places over 10 courses, Podiatrists, with 130 places over 6 courses and 7 sites, Neurophysiopathology technicians, with 120 places over 12 courses, and, finally, Audiometrician, with 60 places over 5 courses.

For the five most numerous professions the number of places per course site is 73 for Nurses; 25 for Physiotherapists, 20 for Laboratory technicians, 18 for Midwives and 17 for Radiology technicians.

However, for the others the lowest values are: 12 for Audio prosthesis technician and 10 for Neurophysiopathology technicians. These are figures that are in any case in line with the recent Ministry of University Education Law no. 544 of 31st October 2007, which fixed the minimum number at 10, the medium number at 25 and the maximum number at 75.

Distribution of places and applications per university

The Universities with the highest number of courses and sites are (Table 5) Milano Statale with 22 courses over 51 sites, the only University to have activated all 22 types of course, followed by Roma Sapienza with 20 courses over 71 sites, Roma Tor Vergata with 19 courses over 40 sites and Genova with 19 courses over 20 sites.

Those with fewest courses are Udine, Trieste, Perugia, Foggia and Cagliari, all with 7 courses, Salerno and Sassari with 5 courses, Milano S. Raffaele and Campobasso with 3 courses, Roma Campus Biomedico with 2 and Milano Humanitas with 1.

The highest application/place ratios for the state universities are 9,7 for Cagliari, 8,6 for Catania and 7,4 for Palermo. The lowest, with a ratio of 1,2, are Torino 2 and Roma Sapienza 2.

The professions most in demand among students

In the academic year 2014-15, as in preceding years, the most popular courses among students (Table 3 and Figure 1) are Physiotherapy and Speech Therapy, with application/place ratios of 12,3 and 9, followed by courses for Dieticians and for Midwives with 6,7 and courses for radiology technicians with 5,3.

The mean application/place ratio among the 22 professions is 3,3, going even lower for the more numerous represented professions, such as nursing with 1,8. The only one with a ratio of less than 1 is that of Sanitary Assistant with 0,8.

Table 5. Distribution of places and applications per university on AA 2014-15

Developed by A. Mastrillo	Applications	Places	A/P	Courses	Sites
Torino	3.781	939	4,0	16	22
Torino 2	360	295	1,2	2	3
Vercelli	1.410	608	2,3	7	13
Brescia	1.875	770	2,4	11	22
Milano	4.829	1.462	3,3	22	51
Milano Bicocca	1.932	567	3,4	7	15
Milano Humanitas	225	40	5,6	1	1
Milano S. Raffaele	1.079	135	8,0	3	3
Pavia	1.445	501	2,9	15	19
Varese	906	324	2,8	8	9
Trieste	595	175	3,4	6	6
Udine	865	260	3,3	7	7
Padova	4.376	1.299	3,4	16	36
Verona	2.472	1.009	2,4	10	18
Genova	2.328	724	3,2	19	32
Bologna	2.499	885	2,8	13	26
Ferrara	1.630	451	3,6	11	15
Modena Reggio	1.172	440	2,7	11	12
Parma	1.196	403	3,0	9	12
Ancona	1.720	655	2,6	10	12
Firenze	2.519	880	2,9	12	18
Pisa	2.188	572	3,8	13	18
Siena	1.015	384	2,6	11	16
Perugia	1.018	480	2,1	7	8
Roma Campus	313	88	2,6	2	2
Roma Cattolica	2.517	805	3,1	13	31
Roma Sapienza 1	6.300	3.077	2,0	20	71
Roma Sapienza 2	444	358	1,2	10	15
Roma Tor Vergata	4.390	1.393	3,2	19	40
Chieti	1.999	496	4,0	12	14
L'Aquila	1.857	457	4,1	12	16
Campubasso	274	112	2,4	3	3
Foggia	1.477	313	4,7	7	10
Bari	4.114	816	5,0	17	24
Napoli Fed II	3.160	860	3,7	16	27
Napoli 2	2.867	905	3,2	11	30
Salerno	1.380	300	4,6	5	8
Catanzaro	2.162	685	3,2	13	13
Catania	2.769	322	8,6	11	11
Messina	2.455	492	5,0	12	18
Palermo	2.976	401	7,4	10	10
Cagliari	2.399	248	9,7	7	8
Sassari	1.342	222	6,0	5	5
TOTAL	88.630	26.608	3,3	452	750

Employment figures

Continue according to data of AlmaLaurea employment (20, 21) the decline in a year degree as shown in Figure 1; although in each case the health area still maintains the first place, we must consider the decline of 23 percentage points from 84,4% in 2007 to 61,2% in 2012, with the greatest difference just in the last two years from 69 % to 62% with -7 percentage points. This decline also concerns Nurse, compared to five years ago when he complained deficiency: in this case, employment fell by 94% in 2007 to 63% in 2012, while it was 74% in 2011, then as many as 11 points less in just one year. Still higher the decline for Radiology Technician coming down from 93% in 2007 to 42% in 2012, with a difference of 51 percentage points, including 6 on the year 2011, and that remains the biggest drop in absolute among the 22 profiles. To date there are numerous unemployed 3-4 years of graduation and as a result

there was an immediate drop in the total of 17.671 applications for admission to the 22 courses, compared to 105.901 last year (-16.5%), Table 3.

This leads to reflection as to the opportuneness of reconsidering the teaching demand criteria. Among these criteria is turnover, which for the last 15 years has been an average 5% over all the 22 professions. Consequently, apart from some exceptions such as that of Audioprothesist, Dental hygienist and Podiatrist, for whom a turnover of at least 10% is needed, in all the other professions there is a teaching demand turnover tending towards 4%.

It should also be taken into account that for the other professions of the health sector (Table 1), the turnover figures for teaching demand have for years been lower - below 3% Medicine at 2,7% (a value calculated by ENPAM), Dentistry at 1,6% and Veterinary at 2,5%.

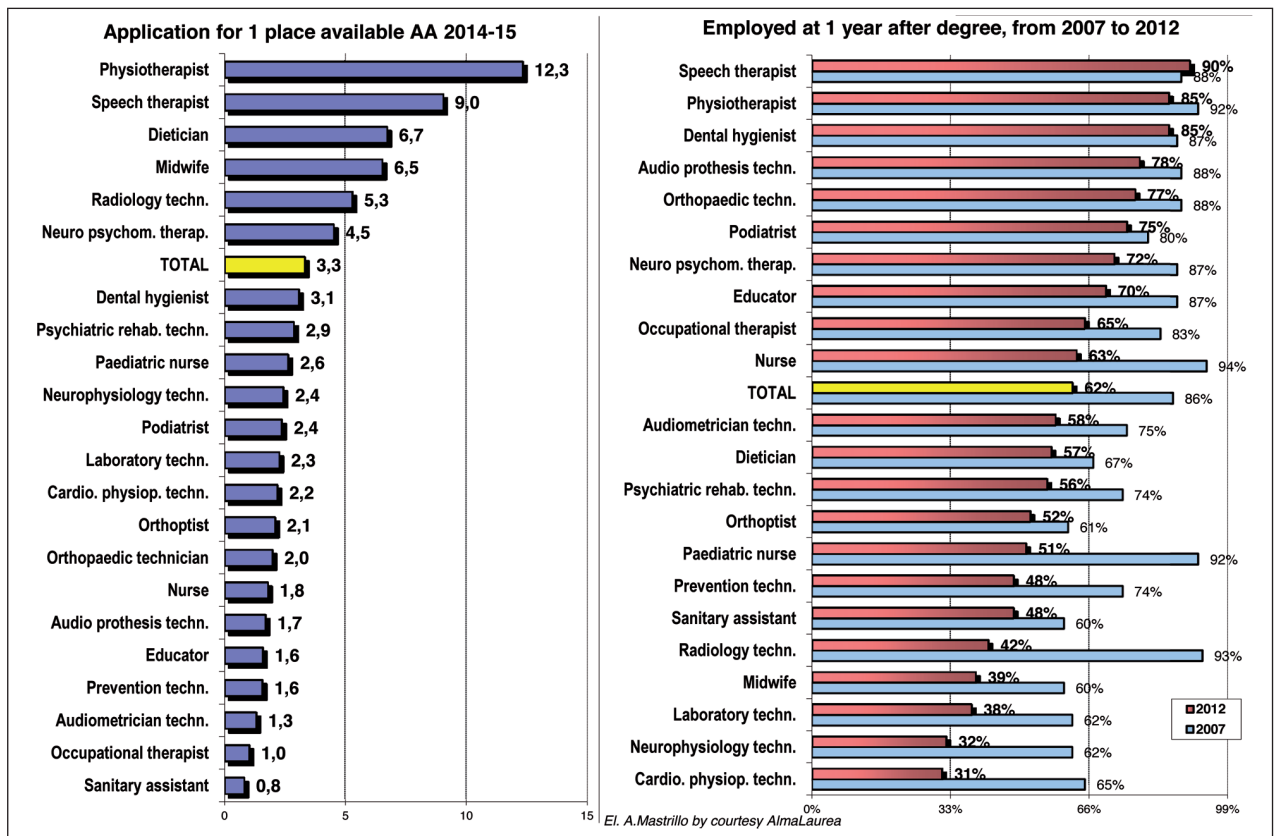


Figure 1. Ratio of applications to places available and employment rates 1 year from graduation from 2007 to 2012. THREE YEARS DEGREE COURSES FOR HEALTH PROFESSIONS: APPLICATIONS/PLACES AND EMPLOYMENT

Conclusions

The University training of the Health Professions is characterised by a high level of organisational and didactic cooperation between the Ministry of University Education and the Ministry of Health, the Regions, the local health authorities and the local Universities, with availability of structures and personnel constituting the teaching potential on the basis of which the number of student places is determined. This type of organisation derives from precise legislation issued from 1992 onwards.

The special nature of the limited-number degree courses for the Faculty of Medicine and Surgery stems from the need to provide students with adequate training and the certainty of finding employment in a relatively short time. Although the limited number is at times a subject of contention, especially on the occasion of the annual admission tests, since it raises the question of the "right to study", the passing years have borne witness to the wisdom of linking the number of university places available to the effective job prospects of the future graduates.

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