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SPECIAL ARTICLE

Demand and supply of otolaryngology specialists based on evidence: What is the required number of specialists that should be trained?

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Abstract
Several concurrent circumstances have created an impression through the media of a presumed lack of specialists in Spain, which has one of the highest densities of doctors per population in the world: simultaneous creation of jobs in many newly built hospitals; accepting garbage contracts (for months, half/thirds of days, shifts) in relevant hospitals rather than moving to unattractive positions; full dedication to the field of public or private healthcare rather than making them compatible; bad public healthcare working conditions (low wages, excessive healthcare pressure, lack of respect from the public and from healthcare managers, on-call shifts, scarce professional promotion, difficult family reunification); decreased mobility due to insulation of the markets as a result of decentralization of healthcare by regions.

There is no shortage of specialists in otolaryngology, but instead there are sporadic inequalities in their geographical distribution. The current number of training doctor positions offered annually is higher at the moment than the demand of Spanish society, for specialists who have adapted smoothly to the requirements of the new medical practice: clinical management, care quality, technology-based efficiency, and evidence-based medicine. The modification of working conditions through higher flexibility in the working models and an increase of salaries based on activity and quality will show that the otolaryngology workforce generated by the current offer can assume the present and future demand. High quality in specialised otolaryngology training is the foundation to be improved, so that future otolaryngology specialists can continue facing health challenges without unduly increasing their number.

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PALABRAS CLAVE
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Demanda y oferta de otorrinolaringólogos basada en la evidencia: ¿cuál es el número necesario de especialistas que se deben formar?

Resumen
Varias circunstancias concurrentes han difundido mediáticamente la presunción de falta de especialistas en España, donde existe una de las más altas densidades de médicos por población del mundo: creación simultanea de puestos de trabajo en numerosos hospitales recién construidos; aceptación de contratos basura (por meses, medias/tercios de jornadas, guardias, etc.) en hospitales relevantes antes que ocupar plazas poco atractivas; dedicación exclusiva al ámbito sanitario público o al privado en lugar de compatibilizarlos; condiciones laborales del sector público (bajos salarios, excesiva presión existencial, falta de respeto de la población y de la administración sanitaria, guardias, escasa promoción profesional, difícil agrupamiento familiar, etc.); reducción de la movilidad por impermeabilización de los mercados por la descentralización sanitaria por comunidades autónomas.
En ORL no cabe hablar de déficit de especialistas, sino de desigualdades esporádicas en su distribución geográfica. Las plazas de MIR (Médico Interno Residente) ofertadas anualmente en el momento actual superan la demanda de especialistas de la sociedad española en una especialidad que se ha ido adaptando armoniosamente a los requerimientos del nuevo ejercicio de la medicina: gestión clínica, calidad asistencial, eficiencia basada en la tecnología y medicina basada en la evidencia. La modificación de las condiciones laborales mediante la flexibilización de los modelos de trabajo y la percepción de remuneraciones basadas en actividad y calidad evidenciarían que la fuerza laboral de ORL que se genera con la actual oferta puede asumir las demandas actuales y futuras.
La calidad de la formación especializada en ORL es el sustrato que debe mejorarse para que los futuros especialistas de ORL sigan asumiendo los retos sanitarios sin necesidad de aumentar injustificadamente su número.

In 2000, the WHO Health for All Program informed that, in 1998, health personnel categories were under-staffed/over-staffed with respect to the needs of the population, and also reported an uneven geographical distribution across countries, country areas and specialties. Since then, many papers have raised the alarm about the situation of health professions in general and doctors[1] in particular, such as the Health Overview of the Organization for Economic Cooperation and Development (OECD) in 2005.[2] The OECD report of 2006[3] forecasted that the clear upward trend would aggravate the current deficit. Spain, with 3.8 doctors per 1000 inhabitants, is above the OECD average (3.0) and is exceeded only by Belgium and Greece (4.0 and 4.9, respectively).

Countries with a deficit recruit professionals from other countries, which in turn receive them from other countries in a cascade absorption, mainly by salary incentive. The most dominant effect is the depletion of healthcare in countries with an outflow, with weak health systems and low health standards. In 2000, over 20% of doctors in New Zealand, UK, USA, and Canada had been trained abroad.

Spain, with low pay, poor opportunities for professional development and excessive demand from the population, witnesses the emigration of doctors towards countries in our socio-political-economic environment (over 8000, mainly to the United States, Portugal, the United Kingdom, Sweden, France, and Germany), while hiring foreign doctors. Catalonia, Castilla La Mancha, Extremadura, Andalusia, and the Canary Islands lead the autonomous communities that have hired foreign doctors for multiple hospital specialties and primary care. In 3 years (2004-2006), 8228 new doctors from outside the EU have come to practice medicine in Spain, 10% of them with non-recognised degrees.

Spain has already experienced previous situations of deficits of specialists. The enormous expansion of the health sector that took place at the end of the 1970s and early 1980s in the twentieth century was combined with the introduction of incompatibilities, exclusive dedication and the introduction of a new primary care model. The demand for specialist medical staff exceeded the supply of qualified specialists, and many jobs were covered by graduates without specialist qualifications. The great heterogeneity in professional qualifications and the chronic problem of specialists working without official degrees (MESTOS) was not resolved until the extraordinary Offer of Public Employment (OPE) was issued in 2001, legalizing 3.4% of MESTOS in Ears, Nose and Throat (ENT) in 2006 (ranked 19th among 40 specialties). But the problem is resurfacing, as specialist places are being covered by doctors without the corresponding degree.

In Spain, Law 55/2003 of the Framework Statute for established health services staff requires health centres to implement European Directive 93/104/EC, which regulates working time, mainly in relation to the 48-hour week. Its implementation will require increasing the number of contracted physicians. It coincides with the implementation of mandatory retirement at the age of 65: in the first year following its enactment, 233 were forcibly retired in

Catalonia and 432 in Andalusia. Gonzalez-Lopez-Valcarcel[4] points out that replenishment is currently assured, but, as the years progress, more new doctors will be needed every year, around 7085 in 2016. Spain will be less affected than other countries in our environment since the current workload is already similar to the standard.

The 2006 Gonzalez model sets out three scenarios of population growth (0%, 0.5%, and 1%per annum) from which he sets the gap between supply/demand that determines the need for specialists. These consider the impact of factors that tend to stimulate demand (feminisation, legal limitation of working hours, population, income level, technology, and opening of new centres and services) against factors that tend to reduce it (dedication of more time to patients through computerisation and organisational changes). Only surgical specialties (ENT among them) are still training more men than women.

All studies suffer from the lack of robust data on the number, type and dedication of professionals in each area studied. The main conclusion is directed toward the need for a comprehensive register of specialists, without which all planning is reduced to mere speculation. It is crucial to clarify the baseline figure for the number of ENT specialists, because it is the basis on which estimates of future needs are made. All authors agree that the data handled is approximate due to the absence of official records. An exhaustive study by Cobeta[5] used the database of the Spanish Society of Otolaryngology and Cervical-Facial Pathology (SEORL-PCF in Spanish) as a source, providing figures on the number of ENT specialists and the age distribution by gender, following the line of work started by SEORL-PCF[16] in collaboration with the UEMS (Union Européenne des Médecins Spécialistes).[6]

Gonzalez's figure of 1779 differs by 86 with the 1865 indicated by Cobeta (2003) and by 421 with that of the UEMS. The additional sources of Gonzalez (SEORL-PCF, medical colleges, public services in the autonomous communities, hospitals and private specialty centres [74.6% of ENT with private activity develop it at a consult or rent it[16]]) suffer from similar deficits of reliability. Sanchez-Gómez[7] showed that the Autonomous Communities themselves do not provide exact figures for their number of specialists: they exclude quota and area specialists and only provide data for organic staff. They do not detail the number of specialists with whom they really count: covered sick leaves should be counted as 2 specialists; they do not usually count ENT specialists hired to cover shifts; the distribution of a position into 2 half-days or 3 thirds disguises 2 or 3 specialists as 1; and ENT hiring due to task overload is not usually ascribed to structural staff. Thus the actual number of specialists is lowered by up to 20% (depending on the time of the year when the cut is made). There would, therefore, not be a shortage of ENT specialists, but an uneven geographical distribution, as confirmed by the recent Collegiate Medical Organisation study.[8]

The precariousness of the estimates is evident when the same authors of the first study were forced to revise many of its findings in a second report only a year later,[9] because some of the variables changed substantially: the autonomous communities submitted updated staff figures; the number of medical students and resident positions increased; more foreign specialists were recognised, and more appropriate analysis criteria were implemented. And the authors did not take into account that the current economic crisis has suddenly slowed the population increase from immigration, with many people returning to their home countries. Simultaneously, the family budget for private health care has been restricted (directly or through health insurance), with an increased demand for health care in the public sector at the expense of a staff that is more stable and less flexible to rapid changes.

Gonzalez points out the dangers of interpreting the realities of other countries and health systems in the Spanish context, due to both the lack of information on the number and dedication of specialists and because the degrees are not comparable across countries (defining what is a ENT specialist and what degree of response capacity primary care physicians have in each country), and to the fragility of census population figures on which rates are created. All sources agree on the low variability of otolaryngologists between autonomous communities (coefficients of variation of 0.2), with ENT escaping the new trend of competition between autonomous communities for acquisition and retention of specialists: salaries are increased or exclusive dependence in the public sector is made more flexible, even allowing the performance of 2 jobs once again (Catalonia, Madrid).

The current state of opinion paints a troubling picture for Spain of shortage of specialists in certain specialties and a forecast that this deficit will increase and spread to more specialties in the coming decades. This opinion prevails on the core issue, that the deficit does not cause as much impact at the moment as the uneven geographical distribution of human resources and the perpetuation of health areas and regions that make this asymmetry more pronounced. As noted by Furedi,[10] as Western societies have become richer and more secure, they have become victims of panic and have developed a hysterical aversion to risk; they thus propose solutions to lower fear, even if these are not the most appropriate.

Even the question itself is debatable: when is there a deficit, balance or surplus of specialists? There is no consensus. Gonzalez assumes the 2005 proposal from Tess and Armstrong[11] for his projection: clear deficit (>10%); mild deficit (between -5% and -10%); balance (between -5% and +5%); mild surplus (between +5% and +10%) and clear surplus (>10%).

The projections of the Gonzalez model reveal the importance of having flawless starting figures. If that model was interpreted with Cobeta's current number of ENT specialists or the UEMS figure, which is probably closer to reality, then there would not be a deficit of ENT staff. This would be true even during the decline in the number of ENT professionals that would occur when professionals who are now between 40 and 46 left the healthcare market due to retirement.

Following these tangible warnings and, in a context of absence of optimal ENT by population rates, proposed solutions arise. Many are only the result of the tension of the moment and of the replacement of analytical reflections by quick decisions based on the need for patching. Therefore, the studies by Lázaro and Gonzalez stand out despite their shortcomings, making sound projections for the short and medium term. Although the value of the Gonzalez study lies primarily in its very extensive field work, it is surprising

that it concludes with such simplistic solutions, following and reinforcing those most highlighted in the media, such as progressively increasing the "numerus clausus" of medicine and offering resident positions, expediting degree validations, developing core subjects and using incentives of various types and intensities to attract and retain professionals in certain jobs and, particularly, to increase the prestige and quality of primary care.

The increase of the "numerus clausus" in medicine is already taking place in nations with a clearer deficit than ours (such as Britain). The effect this will cause in Spain, whose doctors go to Britain, has not been adequately assessed. It is possible that if Britain and other countries that receive Spanish doctors approached self-sufficiency, this would then make the arrival of Spanish doctors impossible. These doctors would then have to seek new markets (would there be any?) or would add to national underemployment or unemployment once again. This is a further argument showing that purely local solutions can fail in a globalised world. The same is true of the general increase in resident positions, when it is being observed that, except in some specialties, in most cases there is a situation of selective geographical deficits and inadequate distribution of human resources and, in other cases, there is a surplus.

The Gonzalez model weighs the feminisation factor heavily for all specialties in the sense of forcing the increased demand for specialists through reducing the overall effective working time, reducing full-time workloads and some changes in patterns of activity, periods of sick leave and maternity leave, giving priority to reconciling family life with work and minimising overtime and shifts. ENT is less affected than other specialties by the process of feminisation and by the tendency to substitute shifts with physical presence by those with localised specialists. Households are frequently created in the field of health (couples of doctors or doctors and nurses) and family reconciliation is not possible if market conditions do not allow for it. Consequently, many couples settle in the best location of one of its components, even if the other does not have a good job or any job at all.

ENT is one of 39 specialties with more than 50% of its members younger than 50. However, its concentration in resident teaching hospitals makes their replacement easier than the occupation of the few positions that are less desired by post-resident ENT specialists.

The proposals for encouraging the occupation of unattractive positions represent a fundamental change in healthcare market conditions, passing from a preferential civil service employer to a competitive market on the basis of the facts. One option for obtaining coverage in deficient areas could be to regain the confidence of the productive medical force within the statutory scheme, with competitions and annual transfer contests currently being almost nonexistent. It has been demonstrated that purely competitive markets have the same problems, or more, in covering unattractive positions and their experiences have not achieved the intended results.

The solution referred to the increase in prestige and quality of primary care exhausts the reader through its repetition[12] and lack of progress. The public tends to focus its demand continuously towards specialist care at the expense of primary care, and even clamours for second and third specialist opinions. A more resolute primary care has failed to fully assume the health care demands of the population, generating surpluses of low clinical value that surpass this level, either by structural failure or by decision of the customer, but requiring primary level structures of specialised care to be maintained. The known pockets of inefficient use of resources do not lie only in physicians' inadequate use of their time of entering and leaving work. These areas of inefficiency are often the result of a fragmented healthcare organisation in which the physician has suffered a significant loss of managerial or decision capacity, together with the assumption of non-care duties with negligible added value that reduce the time devoted to clinical aspects: allocating appointments, issuing prescriptions, providing administrative documentation, calling patients, giving hospital information, etc.

The high growth in Spanish population over the past decade, universal healthcare, the growing push for private healthcare, provision of public ENT jobs in multiple services and health centres that have been opened (especially following health decentralisation) have so far been absorbed by the ENT specialist quotas at each moment. Spanish ENT has evolved dramatically in recent decades, placing itself at the same level as the most advanced countries and having an average level far higher than the majority of them. While it has incorporated the best technologies, it has quickly streamlined its content, probably due to starting from a delayed global position, decidedly incorporating Evidence Based Medicine in its clinical practice. Simultaneously, ENT has adopted the newer forms of health, quality and efficiency management (ambulatory major surgery, clinical pathways, care processes, etc.), and SEORL-PCF and other regional societies have contributed significantly through continuing training. Although there are important areas for improvement, we are seeing a better utilisation of material (technology, clinic and surgery hours) and human resources.

Health administration has tended towards the elimination of residual quota and area positions through more or less forced rankings or through redundancy, while enhancing ranking. Under a dubious argument of efficiency, the intention to end the best paid job in the medical profession within the public health system can be seen. The weight of its negative aspects (inability of the user to choose the doctor; low quality of health care in some cases derived from significant training deficits; and lack of update due to distance from the hospital) has shifted the reality of its advantages: its condition of capitative remuneration produced comprehensive care for its beneficiaries and better relationships with its assigned population; its professionals tended not to follow the prevailing trend of focusing on hospitals; they carried out an important filtering step to prevent non-relevant conditions from going to the hospital and even reached the point of being surgically self-sufficient for its target population. Substituting hierarchised ENT physicians reported little benefit and has led to a delay in the development of many specialists. With few exceptions, this healthcare system is not taken as an extension of the hospital or an approach towards primary care. The scarce interest in the pathology seen at that first level creates disaffection, even the sense of punishment, among doctors when they are appointed to attend the position. The most

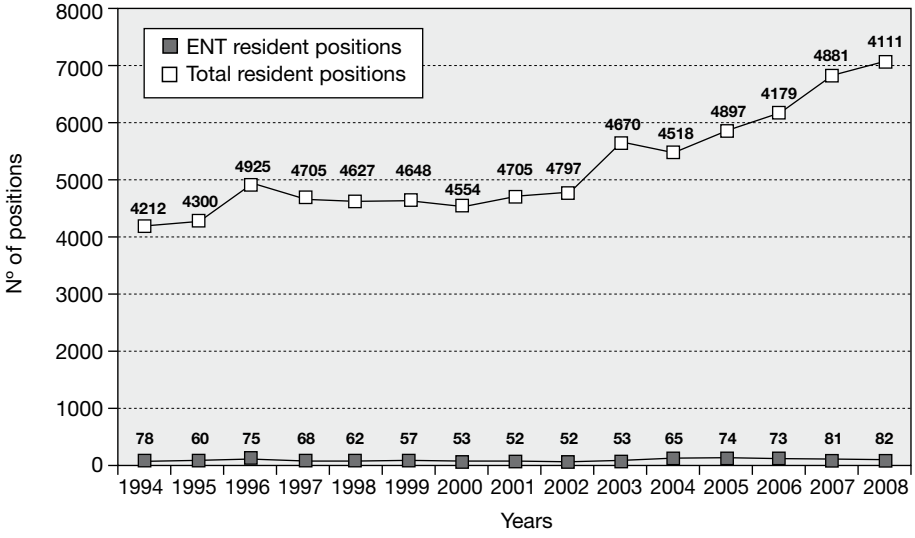

Figure 1 Number of ENT resident positions in relation to the total number of resident positions.

common result has been that younger, recently qualified specialists, generally with precarious contracts, have occupied these positions. And at a time in their professional life when they most need to acquire surgical experience.

The slow introduction of information technology in the health sector is enabling digital records, telephone consultations and telemedicine for primary attention.[13] These are opportunities to circulate adequate and sufficient clinical information to prevent patient travel and ensure optimal care without compromising security. A correct design of these systems can replace clinical hours in unattractive jobs with actions of high resolution and quality.

Many views on the need for specialists are generated from the current health organisation perspective, with rigid hospital staff, bypassing new lines for making clinical services into more businesslike legal formulas such as Clinical Management Units, Clinical Institutes, Consortia or Public Companies. These are more flexible formulas which adapt to the demand without attempting to have a specialist with specific office hours, turning a civil service position into a "no stock" ''or "just in time" model: eg, need to resolve 120 requests for consultation, need to resolve 75 surgeries, and so on.

The supply of resident positions, the main instrument for long-term human resource planning, has been increasing gradually but intensely since the late 1980s, both in absolute terms and, especially, in proportion to the number of new graduates (Figure 1). The number of accredited resident teaching hospitals has also gone from 96 in 1987 to 227 in 1997. However, since 1996, an unknown phenomenon has been happening: not all the resident positions are covered, although the volume of foreign doctors who opt for Spanish residency has grown to reach 30% of candidates. There have been 771 ENT specialists trained in the last decade (Figure 2), but it is not a specialty particularly in demand: it occupies positions 20 to 23 from 47 options.

Career opportunities for Spanish doctors are increasingly more open in international "markets", while in Spain they have been restricted in regional areas that are less permeable due to nationalistic and language barriers. Spanish doctors have a strong preference (up to 70%) for carrying out residency in the autonomous region where they live,[14] heavily weighing the expectations of income in private practice when choosing their specialty; they prefer to operate in their autonomous region later, and to remain in the centre where they were trained. Positions in teaching hospitals are filled first (especially in surgical specialties), while it is difficult to meet the staff requirements in district hospitals in rural areas or outside province capitals and large cities. The profession of resident is emerging in Spain, starting a new specialty in the same hospital upon finishing the previous one. The 2003 SEORL survey[15] identified that 13% of ENT residents had previously completed another speciality and that most did not have a definite vocation and decided their choice during the preparation for the resident exam or at the time of choosing the position. Significant dissatisfaction was detected among ENT residents in relation to the contents of the specialty (which they consider should be acquired over 5 years) and the chosen hospital (from R2 [second-year resident], 40% would not choose the same hospital, while 90% would choose the same specialty). This dissatisfaction is greater among residents of hospitals with more than 1,000 beds, probably due to feeling less attended rather than due to the educational opportunities of the hospital, as opposed to smaller hospitals. Residents demand more dedication from their tutors and an extension of the teaching period against the dominance of the healthcare activity versus training, mainly due to the attention in emergency care (40% do 6 or more shifts; 25% do 7 shifts or more per month) and inter-consultations. The biggest surgical training deficit is found in otology, followed by paediatric ENT, endoscopic nasal sinus surgery (ENS) and phonosurgery. While 16% had already received a job offer before finishing residency, 70% would abandon their autonomous region for a temporary position (85% said they would do so for a fixed post), but in

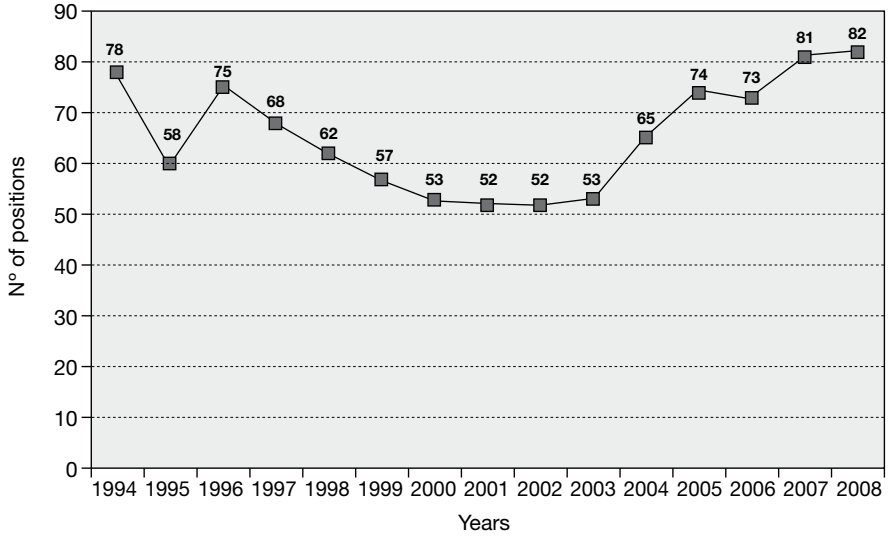

Figure 2 Evolution of the offer of specialized resident training positions.

reality 44%would remain in their city on a temporary shift contract against a fixed contract in another city.

A new fact is also arising: against the traditional reconciliation of public medical activities with private (46.2%[6]), there has been a shift towards full-time dedication restricted to one or the other. Fifteen percent of residents who have completed ENT in Andalusia in the last 10 years are working solely in the private sector.

The history of human resource planning for health care is a story of failures.[17] The demographics, technology, the emergence of new diseases, the way of approaching the classical pathologies, working conditions, health care organisation, etc. are factors that can suddenly change the healthcare situation. In Spain, there have been studies and implementation proposals for cardiologists,[18] allergists,[19] and urologists.[20]

In Spain, the biggest failure in the planning of human resources stems from the nature of the main source of doctor recruitment: a public health system with a statutory basis that has ignored the universal system access form (examination) and career development (from staff movement to professional career) for nearly 15 years. No nationwide general examinations were convened from 1989 until the extraordinary OPE of 2001; this was the result of intense pressure for more than 2 years from the collective of internal medical specialists, joined by the latest disappointed group (those specialist doctors who got their position in less attractive regional hospitals and expected they would progress to better hospitals through transfer contests). This experience has marked several generations of post-residence specialists, who lack confidence in the public administration to act as a foundation for their careers as the administration does in other basic pillars of the state (such as justice and education). These latter sectors keep the pace of annual or biannual offers for coverage of positions, responding to the needs of society in all geographical locations where their presence is required, ensuring rotation and avoiding unfilled vacancies. The biggest problem faced by Spain at present and in the near future is not so much the number of specialists as their distribution, with selective geographical deficits in some regions and, within them, in some specific locations that are not attractive to specialists.

Suarez[21] evidenced the atomisation of the training offer in Spanish ENT into 65 credited units, while in the United States, with a population 6 times greater, there are 110. Residents are being trained in scarcely competitive environments, where other interests take precedence over providing the best training. Accredited services should develop all the major subspecialties, both in terms of equipment[22] and of specific qualified personnel and research staff, in addition to carrying out a specific number of interventions or attending a designated number of patients. This is beyond the reach of many hospitals, and the occasional visit to centres with the training offer that the service of origin does not supply is not enough to acquire the knowledge and skills provided by daily absorption, which is the current basis of the residence system in the absence of a final evaluation.

Many surgical specialties have studied the importance of the critical volume of surgery to be performed by a hospital to ensure a minimum quality of care in relation to indicators such as mortality, complications and good results.[23,26] For the ENT specialty, one reference is the Canadian studies[27] on how the number of ENT specialists practicing tonsillectomy was reduced by comparing its management and its complications; another is the recent study by Esteban[28] on complications of laryngectomies and their impact on the duration of hospital stay.

The Gonzalez reports assume that resident training positions are equivalent and produce specialists qualified to carry out their specialist work in available jobs. The SEORL-PCF study shows that the quality of training in ENT residency is very heterogeneous and that numerous and severe learning deficits exist. The study also indicates that these must be resolved to provide ENT specialist training in accordance to current requirements and should be handled

in a homogeneous manner for all accredited units. The figures obtained enable, for the first time, an analysis based on solid and rigorous facts that should initially serve to renew the obsolete accreditation criteria of ENT teaching units and adjust them to current realities. Secondly, this valuable information should be used so that teaching units in deficit applied immediate actions for improvement that would lead to real competition in training quality that includes discrediting those not meeting the requirements.

In light of this study, there is no justification for increasing the number of ENT residencies for each annuity, nor for expanding the number of accredited teaching units under the sole criterion of an unfounded need for more specialists.

We are at a crucial time, with a specialty that has lost its appeal among the candidates for residency, with residents dissatisfied with the teaching being given and with a highly evolved specialty that is virtually impossible to adapt to 4 years of training. We now have accurate and reliable information to work with in the field of accreditation of teaching units, and should, therefore, have a primary aim of making ENT training the highest quality possible, which will satisfy both the aspirations of ENT residents and the Spanish society. This should be possible without falling into the whim of an unreasonable, unnecessary increase of accredited teaching positions and the number of new resident positions offered annually.

Conflict of interests

The authors declare no conflict of interests.

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