Analysis of the Otorhinolaryngological Doctoral Theses Submitted in Spain Between 1976 and 2005

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Introduction and objective: The importance of otorhinolaryngology as a separate branch of medicine has grown in the last decades. The objective of this work is to analyze the doctoral theses in ENT presented in Spain between 1976 and 2005.
Methods: The TESEO database was searched for theses on otorhinolaryngology produced in Spain between 1976 and 2005. The search criteria used were the terms "Otorhinolaryngology," "Ear, nose, and throat surgery," "Hearing physiology," "Vestibular physiology," "Hearing physics," and "Bioacoustics."
Results: 468 theses were found (15.6 theses/year). Of these, 343 (73.6%) were submitted by otorhinolaryngologists. The Universities of Valencia (Estudi General) (49), Complutense of Madrid (42), Salamanca (39), Barcelona (35), and Autònoma of Barcelona (31) accounted for most of the theses. The name of the supervisor was listed in 376 of the 468 theses (80.4%); 286 of them had only 1 supervisor (76.1%) and 90 had 2 (23.9%). The most frequent topics were otology and audiology (35.1%).
Conclusions: Otorhinolaryngology in Spain has produced a similar number of theses as other areas of knowledge evaluated. The supervision of theses has tended to be shared in the most recent years studied. The number of theses submitted each year did not have only academic influences but also non-academic reasons.

Key words: Doctoral theses. Otorhinolaryngology. Research. Spain.

Análisis de las tesis doctorales en otorrinolaringología presentadas en España en el período 1976-2005
Introducción y objetivo: La importancia de la otorrinolaringología como disciplina independiente ha crecido en las últimas décadas. El objetivo de este trabajo es analizar las tesis doctorales defendidas sobre el tema en España entre 1976 y 2005.
Métodos: Mediante la base de datos TESEO se obtuvieron los registros de las tesis doctorales sobre otorrinolaringología elaboradas en España entre 1976 y 2005. Como criterios de búsqueda empleamos los descriptores: "otorrinolaringología", "cirugía de garganta, nariz y oídos", "fisiología de la audición", "fisiología del equilibrio", "física de la audición" y "bioacústica".
Resultados: Se identificaron 468 tesis (15,6 tesis/año). Del total de ellas, 343 (73,6%) fueron leídas por otorrinolaringólogos. Las universidades donde se leyeron más tesis fueron: Valencia (Estudi General) (49), Complutense de Madrid (42), Salamanca (39), Barcelona (35) y Autónoma de Barcelona (31). El director de la tesis pudo ser identificado en 376 (80,4%) registros; de ellos 286 (76,1%) tenían un solo director y 90 (23,9%) estaban codirigidas por 2 directores. Los temas más frecuentemente abordados son los de otología y audiología (35,1%).
Conclusiones: La otorrinolaringología en España genera un número de tesis similar a las de otras áreas de conocimiento evaluadas. Su dirección tiende a ser compartida en los últimos años estudiados. El número anual de tesis presentadas está influido no sólo por motivos académicos, sino también por razones coyunturales extraacadémicas.

Palabras clave: Tesis doctorales. Otorrinolaringología. Investigación. España.

INTRODUCTION

The primary purposes of the University Reform Act (Fundamental Law 11/1983) included increased support for postgraduate education in order to prepare researchers and

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form new research teams.[1] Royal Decrees 185/1985[2] and 778/1998,[3] issued as successive developments of the provisions of article 31 of this Fundamental Law 11/1983, regulated during their periods of validity post-graduate university studies and the obtaining and issuing of doctoral degrees. According to the first one (185/1985)[2] the doctoral students, over a period of at least 2 years, should complete 32 credits in the form of monographic doctoral courses before reading a doctoral thesis. In the second (778/1998)[3] the credits allocated to courses decreased to 20, but the 12 remaining had to be completed in the form of academically supervised activities. These were to be presented to a commission appointed by the department concerned, after which the student was awarded a diploma of advanced studies (DEA). This situation contrasted with that prior to the year 1985 in which the studies consisted of a few courses not structured into credits, after which doctoral students could request to read and defend their theses.

At present, Royal Decree 56/2005[4] (enacted pursuant to the 2001 University Organization Act [LOU]) is still in its deployment phase and obliges postgraduate students to undertake a master's course of between 60 and 120 credits within an official Ph.D. program.

However, regardless of the administrative structure acquired by the first stage of postgraduate studies, each of the subsequent laws led to a common goal, namely obtaining the highest academic honour of a university: the title of doctor.[5]

The purpose of this article is to analyze the doctoral theses on otorhinolaryngology defended in Spain between 1976 and 2005, in order to know their number, time sequence, thematic approach and bibliometric characteristics.

MATERIAL AND METHODS

The University Co-ordination Council makes the TESEO database publicly available and allows us to find data about the doctoral theses read and approved at all Spanish universities since 1976.[5] This database is available on the Internet (www.mec.es/TESEO/index.html). We have accessed it in July 2007 using the following 6 general descriptors as our search strategy: "otorhinolaryngology," "ear, nose, and throat surgery," "physiology of hearing," "physiology of balance," "physics of hearing," and "bioacoustics." We have superimposed the information from these 6 searches to obtain the records of the theses between 1976 and 2005. The reason not to include the year 2006 and the first half of 2007 is that information from each calendar year is introduced into the TESEO database at the end of the following year. Thus we have tried to minimize the chances of not obtaining all the information from recent years by not trying to obtain it too soon.

Each of the searches allowed access to a text file with expanded information (author-doctor, director, title, abstract, university, faculty, study centre, academic year, and descriptors). Also, the gender of the author-doctor was inferred from the name, and the topic and/or approach of the work from the title and/or summary of each thesis.

On the other hand, 2 tactics have been used to find out the qualifications of the authors-doctors: *a)* a nominal search for them in the list of otorhinolaryngologists on the website of the Spanish Society of Otorhinolaryngology and Cervico-Facial Pathology[6]; and *b)* analysis of the information obtained from a search using their full names on the Google search engine.[7]

All data obtained was processed by an Inves Pentium computer, with the BMDP statistical programme (Statistical Software 12.0, 2004).

RESULTS

During the period analyzed a total of 564 theses appeared (328 in the descriptor "otorhinolaryngology," 172 in "ear, nose, and throat surgery," 26 in "physiology of hearing," 18 in "physiology of balance," 11 in "physics of hearing," and 9 in "bioacoustics." After removing those which overlapped several descriptors, the total number of different theses was 468; 339 (72.4%) were from males and 129 (27.6%) from females. Of the overall number of doctoral students, 343 (73.6%) were otorhinolaryngologists. The distribution by qualifications of the authors-doctors is detailed in Table 1.

An annual average of 15.6 (14.5) theses was defended. There was one year in which there were none (1977) and another in which there were 32 (1995) (Figure 1). All theses were defended at 30 universities (29 public and 1 private). The University were more theses were read was in Valencia (Estudi General) (49), followed closely by the Complutense of Madrid (42), Salamanca (39), Barcelona (35), and the Autonomous University of Barcelona (31) (Figure 2). Three of the universities in which theses on otorhinolaryngology have been defended (Alicante, León, and the Polytechnic of Madrid) do not have a medical school. Excluding these, 9 of the 27 remaining universities (those which do offer medical studies) group 64.5% of the theses found (302 of 468) (Figure 1).

A percentage of 95.1% of the theses were exposed in medical schools (445 of 468). The rest of the faculties are reflected in Table 2. There are 2 medical schools (from the University of Castilla-La Mancha and San Pablo CEU) for which no data has appeared in our search.

With regard to the departments, in the files of 116 theses (24.8%), the department in which the thesis was defended did not appear. Of the 352 in which this information was shown, 222 (63.1%) were in surgery departments. The relative percentages of the other departments are detailed in Table 3.

In 92 (19.7%) records no thesis director was mentioned. Of the remaining 376 which did show this information, 286 (76.1%) had a single director and 90 (23.9%) were co-directed by 2 directors. The evolution of this trend (working with 1 or 2 directors) over the period studied is shown in Figure 3.

Likewise, we obtained 241 different names of directors in the files in which this information was shown. Of these, 168 (69.7%) had directed a single thesis and 1 (0.4%) had 13 under his leadership. The distribution of directors depending on the total number of theses is detailed in Table 4.

Table 1. Distribution of Doctoral Theses on Otorhinolaryngology Read in Spain During the Period 1976-2005, by Degree of the Doctoral Student (n=468)

Degree	*Theses, No (%)*
Otolaryngology	343 (73.6)
General or family medicine	33 (7.2)
Maxillofacial surgery	12 (2.6)
Biological sciences	9 (1.9)
Engineering	9 (1.9)
Stomatology	8 (1.8)
Physical sciences	5 (1.1)
Radiotherapy	5 (1.1)
Anaesthesia	3 (0.6)
Pathology	3 (0.6)
Chemical sciences	3 (0.6)
Paediatric surgery	3 (0.6)
Internal medicine	3 (0.6)
Paediatrics	3 (0.6)
Psychiatry	3 (0.6)
Allergy	2 (0.4)
Clinical analysis	2 (0.4)
Cardiology	2 (0.4)
General surgery	2 (0.4)
Work medicine	2 (0.4)
Microbiology	2 (0.4)
Pneumology	2 (0.4)
Teaching	2 (0.4)
Radiodiagnostics	2 (0.4)
Plastic surgery	1 (0.2)
Pharmacy	1 (0.2)
I.T.	1 (0.2)
Neurology	1 (0.2)
Ophthalmology	1 (0.2)

Finally, about one third of the theses were done on topics of otology/audiology (35.1% between both), followed by those studying issues related to laryngology and rhinology (15.9% and 8.9%, respectively). The overall distribution by thematic blocks is reflected in Table 5.

DISCUSSION

As is mandatory, the teachings of a doctorate in otorhinolaryngology follow the general rules in force from time to time for postgraduate teachings. However, depending on each medical school, they may be included within a doctoral program in otorhinolaryngology itself or within the overall programme of the department covering that area of knowledge in the university (this is generally surgery, but it can be a separate department associated to other disciplines such as ophthalmology or urology).

Although some of the data obtained could cause surprise at first glance, when confronted with our personal impressions, we must take into account a number of facts. On the one hand, in this work we have analyzed the theses on otorhinolaryngology and not those performed by otorhinolaryngologists.[5] Thus, we must consider, on the one hand, that people practising our speciality are intertwined with increasing frequency in research in other areas related to ours (such as oncology, physiology, physics of hearing, etc), and thus generate theses that are not registered by the descriptors used in our study. On the other hand, graduates who are not doctors and medical specialists who are not otorhinolaryngologists may seek in our area of knowledge an appropriate field in which to conduct their doctoral theses. Therefore, it seems logical to think that our work does not collect all the contributions from otorhinolaryngologists and, conversely, we can see that other graduates not specializing in otorhinolaryngology may write their theses in our area of expertise. Something similar happens with the directors of theses, who may have directed a greater number than those we have been able to register, but in other areas of knowledge which may be related to ours but classified under other descriptors.

The average number of theses defended annually (15.6) is not excessively high if we consider the number of specialists who have been trained by different routes during the 30 years covered by the study. This fact is also reflected in other articles published on these topics in our setting.[5,8,9] Also, the wide standard deviation in relation to the average (14.5) shows great variability, with some years in which the average is doubled (in 1995) and others in which there are no theses reflected (1977) (Figure 1). However, some of those ups and downs seem to coincide in time with various vicissitudes that have affected both our speciality in particular and universities in general. We shall discuss this last point in more detail.

If we look at Figure 1, there are 4 periods (years 1988-1990, 1995, 1998-1999, and 2001-2003) showing clear increases in the reading of doctoral theses. The first and last (1988-1990 and 2001-2003) coincide with the last 2 official competitions for tenured positions at national level, in which being in possession of the title of doctor provided valuable points to secure the position permanently. The year 1995 was characterized by a lower offer of positions in the public health system, which on the one hand, promoted the acquisition of any additional merit to obtain a "contract" and, secondly, carried with it an increased availability of time to specialists who became unemployed (which was sometimes used to make or complete the thesis). However, between 1998 and 1999 the situation, in our opinion, was related to the suspension of Law 185/1985[2] and the subsequent administrative indeterminacy on the fate of those who had completed 32 credits in the form of courses on doctoral studies and had not submitted and defended a thesis. It was a way of not taking risks and

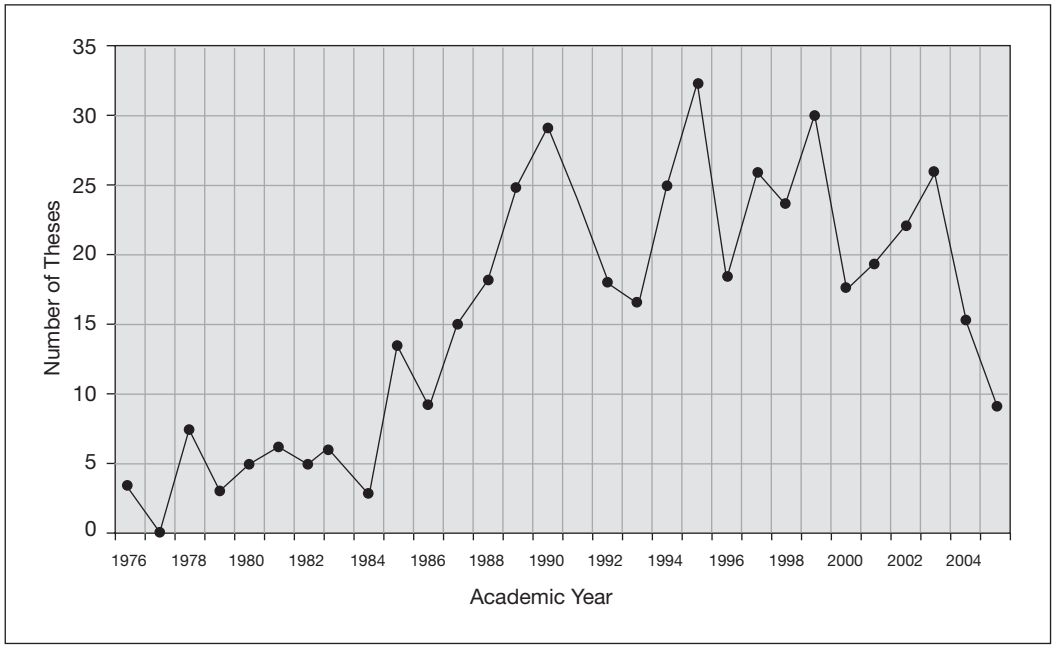

Figure 1. Annual evolution of the number of theses read in otorhinolaryngology in the period 1976-2005.

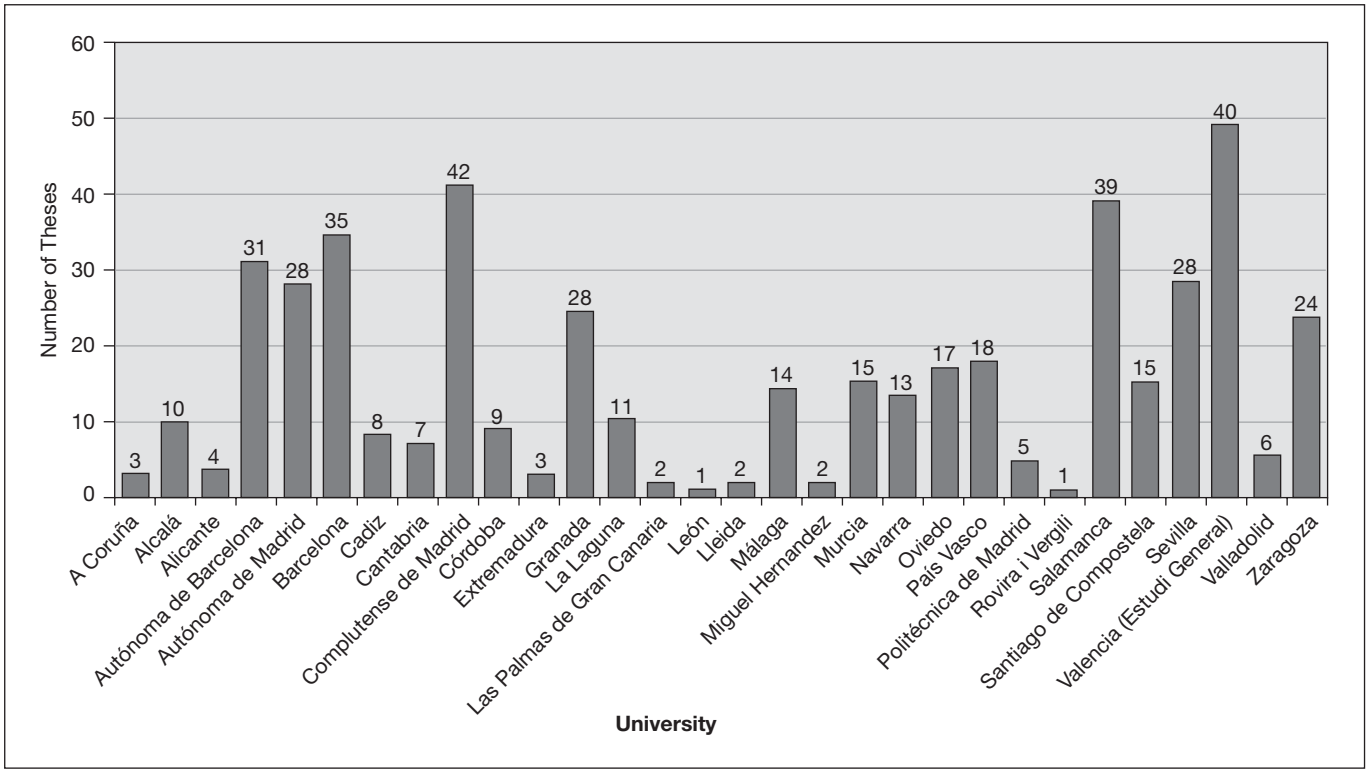

Figure 2. Distribution of the otorhinolaryngology theses by the associated university.

"wasting" the time and money used in obtaining the credits for a doctorate.

Whatever the short-term issues addressed in the previous paragraph, the realization of a thesis must be seen as a valuable complement to the training of any medical specialist. The time to start it may very well be during their residency, even if one paper considers both activities to be incompatible.[10] In fact, that article makes an abstraction which is excessively philosophical and, in our view, too far removed from reality; not only does it state that the thesis cannot be done simultaneously with the training in a speciality, but also considers a thesis to be incompatible and

Table 2. Distribution of the Doctoral Theses on Otorhinolaryngology Read in Spain During the Period 1976-2005, by the Associated School (n=468)

Faculty	*Theses, No. (%)*
Medicine	445 (95.1)
Polytechnic schools	6 (1.3)
Biology	4 (0.9)
Science	4 (0.9)
I.T.	3 (0.6)
Physics	2 (0.4)
Pharmacy	1 (0.2)
Odontology	1 (0.2)
Psychology	1 (0.2)
Veterinary science	1 (0.2)

calls for its abolition as a merit for health-care jobs ("academic hygiene").[10] While it is true that, applying the definition of "simultaneously" in the strict sense as it appears in the Dictionary of the Spanish Royal Academy ("performing 2 operations or purposes in the same period of time"),[11] it does not seem very feasible in practice to match up both activities and finish them successfully, it is nonetheless considered not only possible but highly desirable in otolaryngology to begin theses during residence training.[12]

As for the topics most commonly studied, they have turned out to be those related with disorders of the ear (otology

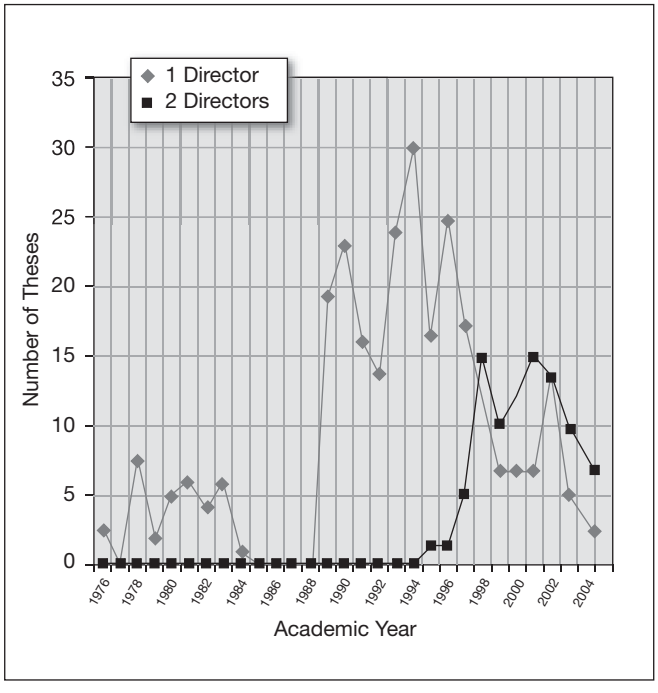

Figure 3. Annual evolution of the theses on otorhinolaryngology by number of directors. In 1977 there were no theses read at all in this area of knowledge; in the years 1987, 1988, and 1989 the names of the directors do not appear in any of the records.

Table 3. Distribution of the Doctoral Theses on Otorhinolaryngology Read in Spain During the Period 1976-2005 According to the Department Where Students Were Affiliated (n=352)

Department	*Theses, No. (%)*
Surgery	222 (63.1)
Otorhinolaryngology	25 (7.1)
Medicine	21 (6.0)
Morphological science	15 (4.3)
Biology	10 (2.8)
Paediatrics	5 (1.4)
Radiology	5 (1.4)
Pathological anatomy	4 (1.1)
Biochemistry	4 (1.1)
Dermatology	4 (1.1)
Physics	4 (1.1)
Engineering	4 (1.1)
Microbiology	4 (1.1)
Neuroscience	4 (1.1)
Ophthalmology	4 (1.1)
History of medicine	3 (0.9)
Histology	3 (0.9)
Preventive medicine	3 (0.9)
Electronics	2 (0.6)
Stomatology	2 (0.6)
Obstetrics and gynaecology	1 (0.3)
Psychology	1 (0.3)
Psychiatry	1 (0.3)
Toxicology	1 (0.3)

and audiology), a finding which has also been identified in previous publications on the subject.[13] Next come those on laryngology, rhinology, cervicofacial pathology, and pharyngology (Table 5). In other words, the subjects most frequently intertwined in the usual practice of otorhinolaryngologists and those with the greatest presence in the undergraduate curricula for our discipline.[14] This fact is not observed evenly in other areas of knowledge, as there are some in which the subjects chosen for academic theses are frequently far from those most commonly encountered in clinical practice.

Finally, there remains an issue both interesting and controversial: who is the person under whose tutelage we are going to feel comfortable with during the arduous and expensive process of developing and reading our thesis? or, put in another way, who is the ideal director for a thesis? The answer is as clear as it obvious: the ideal director would be one of the best experts on the subject to be treated who, in turn, holds a high academic rank in a university and/or research institute.[15,16] However, as in many other issues of

Table 4. Distribution of Directors of the Theses on Otorhinolaryngology Read in Spain During the Period 1976-2005 Based on the Number Directed (n=241)

Theses, No.	*Directors, No.*	*%*
1	168	69.7
2	33	13.7
3	10	4.1
4	10	4.1
5	1	0.4
6	5	2.1
7	3	1.3
8	2	0.8
9	3	1.3
10	3	1.3
11	0	0.0
12	2	0.8
13	1	0.4

life, sometimes "the best is the enemy of the good." Thus, the ideal director (a great expert on the subject and professor or state researcher) usually has a limited availability due to a large number of commitments, so it can be a good idea to have a co-director. The recommended profile for this figure is that of a trainee teacher with, if possible, a contractual link to the university department in which the thesis is intended to be read.[15,16] This work philosophy may be reflected in our results in the trend seen recently toward the co-direction of many theses (Figure 3).

CONCLUSION

Otorhinolaryngology in Spain generates a number of theses similar to other areas of knowledge evaluated. In the years analyzed, leadership tends to be shared. The topics covered most frequently are those related to the ear (otology and audiology). The annual number of theses presented is influenced not only by academic motives, but also by cyclical extracurricular economic reasons.

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Table 5. Doctoral Theses on Otorhinolaryngology Read in Spain During the Period 1976-2005 in Terms of Thematic Focus of the Study (n=468)

Focus of the Study	*Theses, No. (%)*
Otology	86 (18.4)
Audiology	78 (16.7)
Laryngology	74 (15.8)
Rhinology	42 (9.0)
Cervicofacial pathology	28 (6.0)
Pharyngology	25 (5.3)
Voice	18 (3.8)
Vestibular pathology	16 (3.4)
Pharyngolaryngology	14 (3.0)
Oral pathology	14 (3.0)
Bronchoesophagology	12 (2.6)
Sinusal pathology	9 (1.9)
Facial paralysis	9 (1.9)
Salivary glands	7 (1.5)
Rhoncopathy	6 (1.3)
Cochlear implants	3 (0.6)
Thyroid	2 (0.4)
Tinnitus	2 (0.4)
Others	23 (5.0)

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