Original Article* / *Çalışma - Araştırma

Publication rates of otolaryngology theses from Turkey in peer-reviewed journals

Türkiye'de kulak burun boğaz tezlerinin hakemli dergilerde yayımlanma oranları

M. Tayyar Kalcıoğlu, MD,[1] Oğuz Kadir Eğilmez, MD,[1] Servet Karaca, MD,[1]
Fatih Mehmet Hanege, MD,[1] Yavuz İleri, MD[2]

[1]*Department of Otolaryngology, İstanbul Medeniyet University, İstanbul, Turkey*
[2]*Faculty of Medicine, İstanbul Medeniyet University, İstanbul, Turkey*

ABSTRACT

Objectives: This study aims to examine the publication or presentation rates of theses in scientific journals and scientific meetings in the field of otorhinolaryngology in Turkey.

Materials and Methods: We randomly surveyed 2,705 specialists in the field of otorhinolaryngology in Turkey as of April 2014. Of these, 245 were applied a questionnaire on the continuation of their academic education, qualifications of the institutions where they were graduated from and worked and the status of their theses in terms of whether their theses were converted into a scientific article or presentation.

Results: Overall, 47.8% of the participants were still continuing their academic education, while 52.2% were not. The rate of the presentation of the theses at a national meeting was 58.4% and at an international meeting was 10.6%. The rates of publication in a national and international journal were 26.1% and 36.3%, respectively.

Conclusion: As the physical and economic opportunities for experimental researches have increased, students have been encouraged to conduct researches and supportive solutions for the publication of theses have been created.

Keywords: Otolaryngology; publication rate; resident; thesis.

ÖZ

Amaç: Bu çalışmada Türkiye'de kulak burun boğaz alanında yapılan tezlerin bilimsel dergilerde ve bilimsel toplantılarda yayımlanma veya sunulma oranları araştırıldı.

Gereç ve Yöntemler: Nisan 2014 itibariyle Türkiye'de kulak burun boğaz alanında rastgele seçilen 2705 uzman araştırıldı. Bunların 245'ine akademik kariyere devam durumları, mezun oldukları ve çalıştıkları kurumların nitelikleri ve tezlerinin makaleye veya kongre bildirisine dönüştürülme durumlarına ilişkin bir anket uygulandı.

Bulgular: Genel olarak, katılımcıların %47.8'i akademik kariyere devam ederken %52.2'si devam etmiyordu. Tezlerin ulusal bir kongrede sunulma oranı %58.4, uluslararası bir toplantıda sunulma oranı %10.6 idi. Ulusal ve uluslararası bir dergide yayımlanma oranları ise, sırasıyla %26.1 ve %36.3 idi.

Sonuç: Deneysel araştırmalar için gereken fiziki ve maddi imkanların artması ile öğrenciler bilimsel araştırmalara özendirilmekte ve tezlerin yayına dönüşümünü destekleyici çözümler oluşturulmaktadır.

Anahtar Sözcükler: Kulak burun boğaz; yayımlanma oranı; asistan; tez.

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Correspondence / İletişim adresi: M. Tayyar Kalcıoğlu, MD. İstanbul Medeniyet Üniversitesi Tıp Fakültesi Kulak Burun Boğaz Hastalıkları Anabilim Dalı, 34700 Üsküdar, İstanbul, Turkey.

Tel: +90 532 - 433 06 95 e-mail *(e-posta):* mtkalcioglu@hotmail.com

A thesis, which is required to obtain a Master of Business Administration (MBA) or a Doctor of Philosophy (PhD) degree in our country, is one of the main resources for creating scientific articles, which are the main indicators of the scientific productivity of a doctor and his or her institution and country. The aim of a thesis is to create a hypothesis that would be useful for science, systematically gather information, analyze the information and interpret the data according to the literature. Important aims of a thesis are to teach the trainee scientific research methods, increase the trainee's ability to write an article and provide new information.[1] The conversion of a thesis into a scientific article is the best indicator of its scientific value. The results of a thesis can only be shared with the scientific world when they are published in peer-reviewed journals. Publishing the results in famous journals demonstrates the quality of the thesis.[2]

Data on the publication of theses as scientific articles in Turkey and around the world show that theses in developed and developing countries are not published or shared in the scientific world at the expected rate. The publication rate is between 1.2% and 52.3%.[1-6] There are many reasons why the publication rates are so low, such as the work involved, time limitations, and fact that the students consider a thesis as only required to complete their specialization training. After some time, students no longer consider publishing their work, and there are no regulations to support or enforce the publication of theses.[7] Sometimes, the quality of the thesis may also help determine whether it should be published. Some supportive solutions and the fact that topics that will contribute to scientific improvement are selected for publication may enhance the rate of conversion of theses into scientific articles and publications.

This study aimed to evaluate how many student theses are presented as papers in national and international scientific meetings and how many are published in national or international journals, and attempted to determine the rate at which ENT theses are converted into scientific publications.

MATERIALS AND METHODS

The local ethics committee approved of the study. A questionnaire with 13 questions was administered to ENT specialists who completed their specialization training in an institution in Turkey after January 1, 1990 and before December 31, 2011, during national and international ENT meetings and congresses in our country between March 2014 and June 2014. Before the study, the number of the ENT specialists was obtained from Ministry of Health data, and the target number was minimum 220 determined using power analysis. Therefore, we aimed for participation above this number. Those who competed their specialization training before January 1, 1990 and after December 31, 2011, as well as those completed their training abroad, were excluded from this study.

Statistical analysis

IBM SPSS version 22.0 (IBM Corporation, Armonk, NY, USA) software was used to evaluate the study findings. To assess the study data, the chi-square, Fisher's exact and Yate's Continuity Correction tests were used to compare quantitative data. The significance level was set at $p<0.05$.

RESULTS

According to the data from Ministry of Health, the number of the ENT specialists working in Turkey as of April 2014, was 2,705. Of these, 1,297 (48%) worked at Ministry of Health hospitals, 359 (13%) at university hospitals and 1,049 (39%) at private hospitals. The ranges of those who completed their specializations according to the years evaluated in this study were as follows: 330 between 1990 and 1994, 491 between 1995 and 1999, 520 between 2000 and 2004 and 579 between 2005 and 2009. In 2010, the number of ENT specialists who completed their specializations was 143.

The distribution of the doctors who participated in the study was highly homogeneous. Among the participants, the number of those who continued with their academic careers was 117, while 128 did not continue with their academic careers. Additionally, when assessed in five-year periods, the participants in our study changed in accordance with the norms in our country and increased in parallel with the number of those who completed their specialization training. Between 1990 and 1994, of 330 doctors who completed their specializations, only

33 participated in the questionnaire (10%). For 1995-1999 graduates, 38/491 (7.4%) participated, while 52/520 (10%) participated for 2000-2004 graduates and 122/722 (16.9%) participated for 2005-2009 graduates.

Our questionnaire was applied between March 2014 and June 2014, and a total of 245 ENT specialists [48 female (19.6%) and 197 male (80.4%)] participated. The year of specialist training completion, institution of education, location of the institution where they continue to work and status of continuation with academic life are shown in Table 1.

Whether participants' theses are presented in national or international meetings and published as scientific articles in national or international journals are shown in Table 2. According to these data, the rate of presentation of theses at a scientific meeting was 67.97%, and the theses of 76 doctors (31.03%) were not presented orally or via arbitrary notices. The rate of the doctors who stated their theses were published, or about to be published, in national or international journals was 71.45% (175 doctors), while 28.57% (70 doctors) stated that their theses were not published in any journal.

The distribution of thesis topics is shown in Table 3. Eighty-five doctors (34.7%) studied otology-neurotology, 76 (31%) rhinology, 62 (25.3%) laryngology/head-neck surgery, 18 (7.3%) general ENT and four (1.6%) other areas.

In Table 4, the specialization in graduation years and rates of presentation of theses in meetings and publication in journals have been compared. As observed in the table, there was a significant difference between the specialization years in terms of publication of specialization theses in a national journal ($p<0.05$). Among the doctors whose theses were published in

Table 1. The distribution of general properties

	n	%
Year of gaining speciality		
Between 1990 and 1994	33	13.5
Between 1995 and 1999	38	15.5
Between 2000 and 2004	52	21.2
After 2005	122	49.8
Institution where ENT		
Training and Research Hospital specialist specialized	85	34.7
Government University Hospital	156	63.7
Private/Foundation University Hospital	4	1.6
City of institution		
Istanbul-Ankara-İzmir*	148	60.4
Other	97	39.6
Current institution		
Government University Hospital	83	33.9
Private/Foundation University Hospital	10	4.1
Training and Research Hospital	67	27.3
Public Hospital	53	21.6
Private Hospital	32	13.1
Continuing in academic career		
Yes	117	47.8
No	128	52.2

ENT: Ear Nose and Throat; * Cities with a population of more than three million and several medical faculties and training and research hospitals.

Table 2. Assessment of the rates of Ear Nose and Throat specialization theses in terms of publication in journals and presentation in congresses

	n	%
Presentation of the thesis in a national congress		
Yes	143	58.4
No	102	41.6
Presentation of the thesis in an international congress		
Yes	26	10.6
No	219	89.4
Publication of the thesis in a national journal		
Yes	64	26.1
No	177	72.2
Sent and waiting for reply	4	1.6
Publication of the thesis in an international journal		
Yes	89	36.3
No	138	56.3
Sent and waiting for reply	18	7.3

Table 3. Distribution of thesis topics

Study area	n	%
Otology/Neurootology	85	34.7
Rhinology	76	31
Laryngology/Head and Neck	62	25.3
General Ear Nose and Throat	18	7.4
Other	4	1.6

Table 4. The evaluations according to the specialization in graduation years

	Between 1990 and 1994		Between 1995 and 1999		Between 2000 and 2004		After 2005		
	n	%	n	%	n	%	n	%	*p*
Presentation of ENT speciality theses in national congress									
Yes	16	48.5	21	53.3	33	63.5	73	59.8	0.561
No	17	51.5	17	44.7	19	36.5	49	40.2	
Presentation of theses in international congress									
Yes	5	15.2	3	7.9	3	5.8	15	12.3	0.379
No	28	84.8	35	92.1	49	94.2	107	87.7	
Publication of theses in national journal									
Yes	9	27.3	18	47.4	17	32.7	20	16.4	0.011*
No	25	72.7	20	52.6	35	67.3	98	80.3	
Sent and waiting for reply	0	0	0	0	0	0	4	3.3	
Publication of theses in international journal									
Yes	10	30.3	8	21.1	18	34.6	53	43.4	0.012*
No	23	69.7	29	76.3	32	61.5	54	44.3	
Sent and waiting for reply	0	0	1	2.6	2	3.8	15	12.3	

ENT: Ear Nose and Throat; Fisher's exact test; * $p<0.05$.

national journals, the rate of those who acquired their degrees between 1995 and 1999 was high; after 2005, this rate was the lowest. There was a significant difference between the specialization years in terms of the publication of theses in an international journal ($p<0.05$). Among the doctors whose theses were published in international journals, the rate of those who completed a thesis after 2005 was high.

When the correlation between the institution where the participant doctors acquired their specialization and presented their theses in meetings or scientific journals as articles was assessed, there were significant differences between the doctors who specialized at public university hospitals and those who specialized at private university hospitals ($p<0.05$). The presentation/publication rate of doctors who specialized at private university hospitals was higher than the rate of those who specialized at public university hospitals (Table 5). It should also be noted however that the number of those who specialized at private universities was low.

Table 6 summarizes the assessment of the locations where the ENT specialists specialized and the rates of the theses presented in meetings and published in journals as articles. According to the city where the doctors specialized, there was a statistically significant difference in terms of the presentation of theses in national or international meetings and their publication in national and international journals ($p<0.05$). Additionally, when the presentation of theses in national or international meetings was assessed according to the institution where participants continued working, the rate of those who worked at university hospitals was significantly higher than those who worked at other hospitals (excluding those who worked at private university hospitals because participation was low) ($p<0.05$). There was no significant difference between the institution where the participants continued working and rates of publication of the thesis in national journals ($p>0.05$). In terms of the rates of publication in international journals, the rates from private university hospitals were significantly higher than those from public hospitals ($p<0.001$) (Table 7).

There was a statistically significant difference in presentation of the thesis in national or

Table 5. The evaluations according to the institution where the participant doctors acquired their specialization

	Institution where the participant doctors acquired their specialization						
	Training and Research Hospital		Public University Hospital		Private or Foundation Hospital		
	n	%	n	%	n	%	*p*
Presentation of ENT speciality theses in national congress*							
Yes	38	44.7	102	65.4	3	75	0.004*
No	47	55.3	54	34.6	1	25	
Presentation of theses in international congress							
Yes	5	5.9	19	12.2	2	50	0.023*
No	80	94.1	137	87.8	2	50	
Publication of theses in national journal							
Yes	22	25.9	40	25.6	2	50	0.373
No	63	74.1	112	71.8	2	50	
Sent and waiting for reply	0	0	4	2.6	0	0	
Publication of theses in international journal							
Yes	24	28.2	63	40.4	2	50	0.048*
No	57	67.1	80	51.3	1	25	
Sent and waiting for reply	4	4.7	13	8.3	1	25	

ENT: Ear nose and throat; Fisher's exact test; ** p<0.01; * p<0.05.

international meetings and publication of thesis materials in an international journal when the rates were compared between doctors who continued an academic career and those who did not (p<0.001, p<0.012, p<0.001) (Table 8).

DISCUSSION

In our study, the rates of presentation of theses in national or international meetings and publication in national and international journals respectively, were: 58.4%, 10.6%, 26.1% and 36.3%. Additionally, these rates were higher than those reported in other studies in our country and around the world. When the publication rates of the theses are considered, the rate was 11.2% in the study by Sipahi et al.[1] for Medical Microbiology and Infection Diseases. The rate was 6.2% in the study by Özgen et al.[8] which assessed 22,625 medical theses. The rate was 9.4% in the study by Yaman et al.[9] which assessed 140 family physician specialization theses. The rate was 11.9% in the study by Sipahi et al.[7] which assessed 538 Public Health specialization theses. The rate was 18.5% in the study by Bayramlar et al.[10] which assessed 308 eye diseases specialization theses. In similar studies around the world, the rates are as follows: 23.8% in Finland, 17% in France, 30% in India and 17.6% in Peru.[3,6,11,12] In our study, the publication rate of theses in international SCI and SCI-E journals was 36.3%, compared to 26.1% in other national or international journals. The total publication rate was 62.4%. Although the rates were higher in our study, the publication rates of theses on medical and health sciences in scientific journals were not as high as expected. There are several difficulties with converting scientific studies from theses into published articles. The difficulties include the following: the lack of information about writing the article in MBA education; absence of applications that enforce and encourage publication; fact that most journals are written in English, which is considered an international language; and lack of a foreign language.[12] Moreover, in countries in which the patient population and number of patients per doctor is high, there are more considerations as follows: lack of time for thesis because of the workload; student's understanding that the thesis is a

Table 6. The evaluations according to city of institution where the Ear Nose and Throat specialists specialized

	The city of institution where the ENT specialists specialized				
	İstanbul, Ankara and İzmir*		Other		
	n	%	n	%	*p*
Presentation of ENT speciality theses in national congress					
Yes	87	58.8	56	57.7	0.87†
No	61	41.2	41	42.3	
Presentation of theses in international congress					
Yes	12	8.1	14	14.4	0.174‡
No	136	91.9	83	85.6	
Publication of theses in national journal					
Yes	41	27.7	23	23.7	0.331§
No	106	71.6	71	73.2	
Sent and waiting for reply	1	0.7	3	3.1	
Publication of theses in international journal					
Yes	55	37.2	34	35.1	0.957§
No	82	55.4	56	57.7	
Sent and waiting for reply	11	7.4	7	7.2	

ENT: Ear Nose and Throat; * Cities with a population of more than three million and several medical faculties and training and research hospitals; † Pearson chi-square test; ‡ Yate's Continuity Correction test; § Fisher's exact test.

requirement to graduate; lack of insistence of the thesis advisor; low quality of the studies and their results, journals' refusal to publish, and researchers' loss of motivation.[7,8]

To the best of our knowledge, although there are several studies on the rates of publication of arbitrary notices presented at some meetings,[13,14] this is the first study on specialization theses in the ENT field. In this study, ENT specialists were surveyed via questionnaires. Therefore, the results are completely subjective. In previous studies, data were collected from a database and seem objective. They also have a high false negative rate. Possible causes of mistakes include mistakes while searching for the names and surnames of authors in the database, errors in transcribing the author's name in the article, differences in the thesis title or key words throughout the article, or similarities between author names. Although it may be problematic that the questionnaire data were subjective, the results could still be useful. Moreover, such questionnaires are often used in studies on patient pleasure and quality of life. Due to the aforementioned possible mistakes and imperfections with studying databases, the results of our study may be higher than in previous reports.

Another possible cause of the higher results are from the academic enhancement criteria applied by the Higher Education Institution (HEI) in Turkey and stipulating article publication in SCI and SCI-E journals. Most of the doctors who participated in our study (49.8%) acquired their specialization after 2005. The rates may be high from academic improvement in carefully choosing thesis topics to meet the conditions demanded by HEI in the last decade as well as the efforts to publish thesis research in international scientific articles. Overall, 30.3% of those who acquired their specialization between 1990-1994, 21% of those between 1995 and 1999, and 34.6% of those between 2000 and 2004 published their theses in international journals, while this rate was 43.4% between 2005 and 2011. These findings were statistically significant (Table 4). Additional data support that there is a relationship between the publication of thesis material in an international journal and the hospital where the doctor still works. While most of the doctors who work at university hospitals, and therefore continue their

Table 7. The evaluations according to the institution where the participants' continued working

	The city of institution where the ear nose and throat specialists specialized										
	Public University Hospital		Private/Foundation University Hospital		Training and Research Hospital		Public Hospital		Private Hospital		
	n	%	n	%	n	%	n	%	n	%	*p*
Presentation of ENT speciality theses in national congress											
Yes	59	71.1	9	90	37	55.2	23	43.4	15	46.9	0.002† *
No	24	28.9	1	10	30	44.8	30	56.6	17	53.1	
Presentation of theses in international congress											
Yes	17	20.5	1	10	4	6.0	3	5.7	1	3.1	0.015† *
No	66	79.5	9	90	63	94.0	50	94.3	31	96.9	
Publication of theses in national journal											
Yes	23	27.7	5	50	21	31.3	9	17.0	6	18.8	
No	59	71.1	5	50	44	65.7	43	81.1	26	81.2	0.346‡
Sent and waiting for reply	1	1.2	0	0	2	3.0	1	1.9	0	0.0	
Publication of theses in international journal											
Yes	43	51.8	4	40	28	41.8	9	17.0	5	15.6	
No	35	42.2	6	60	37	55.2	35	66.0	25	78.1	0.001‡ **
Sent and waiting for reply	5	6.0	0	0	2	3.0	9	17.0	2	6.3	

ENT: Ear nose and throat; † Fisher's exact test; ‡ Pearson chi-square test; * p<0.05; ** p<0.01.

academic career, have published their theses in international journals, this rate is lowest for doctors who work in public or private hospitals (Table 7). This rate is increasing at the Ministry of Health Hospitals as well as in training and research hospitals, which may be due to the tendency for doctors to work to improve their academic careers.

Table 8. The evaluations according to continuing in academic career

	Continuing in academic career				
	Yes		No		
	n	%	n	%	*p*
Presentation of ENT speciality theses in national congress					
Yes	61	47.7	82	70.1	0.001† *
No	67	52.3	35	29.9	
Presentation of theses in international congress					
Yes	7	5.5	19	16.2	0.012‡ **
No	121	94.5	98	83.8	
Publication of theses in national journal					
Yes	26	20.3	38	32.5	
No	100	78.1	77	65.8	0.077§
Sent and waiting for reply	2	1.6	2	1.7	
Publication of theses in international journal					
Yes	31	24.2	58	49.6	
No	84	65.6	54	46.2	0.001§ *
Sent and waiting for reply	13	10.2	5	4.2	

ENT: Ear nose and throat; † Pearson chi-square test; ‡ Yate's Continuity Correction test; § Fisher's exact test; * p<0.01; ** p<0.05.

Currently, a criterion that demonstrates the scientific value of a thesis is its publication in a journal that is overseen by a science committee. The same is true for sharing the results with the scientific world. Though not sufficient, the rate of publication of theses in the field of ENT is high according to similar studies in Turkey and around the world. This rate should be increased, which will require support.

One type of support is financial support. Both financial support and enforcing the effects of academic improvement criteria would enhance the publication rates. Similar to the Turkey Scientific Research Institution's support for each article, Scientific Research Units of universities and projects of public-private hospitals encourage improvements in scientific research. Effort is required to perform a worthwhile scientific study or to present the data from scientific studies. The scientist may have to work long hours, through the night or on holidays. Therefore, they should receive the financial support that they deserve.

Additional support solutions are required. Thesis advisors have substantial responsibility in this case. Thesis advisors should provide support for young students to participate in studies, encourage that they publish their work, list the authors fairly during the publication process and respect the student's roles. Advisors and institutions may contribute by hosting seminars about how to write scientific articles and providing advice on which journals articles should be sent or by simplifying the process of applying for ethical committee approval.

Additionally, the publication of theses for academic applications or specialization training should be compulsory. The most important source of motivation for this aim is to meet the requirements of academic improvement for an assistant or associate professor.

In conclusion, theses in medical specializations are prepared with intense effort, time and money. The studies should provide fundamental information for our country and science; they should also be comprehensive studies. The results of this study may be stated as follows: it helps the HEI to enhance the academic improvement criteria and stipulate a certain number of publications in SCI and SCI-E journals. Progress at the development level, and the fact that the EU funds and The Scientific and Technological Research Council of Turkey (TUBITAK) and Scientific Research Funds of Universities could support scientific research, has facilitated the writing of theses with sufficiently high quality for publication in a scientific journal. The publication rates will likely increase with improvements in physical and financial opportunities for experimental studies, encouraging students to do research, as well as supportive solutions for the publication of theses.

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