GKDA Derg 2020;26(4):244-9
doi: 10.5222/GKDAD.2020.60783

Araştırma / *Research Article*

From Theory to Science: Publication Characteristics of Medical Thesis Composed by Anesthesia Reanimation Residents in Turkey

Sibel Yılmaz Ferhatoğlu
Türkan Kudsioğlu
Nihan Yapıcı

Teoriden Bilime: Türkiye'de Anestezi ve Reanimasyon Asistanları Tarafından Hazırlanan Tezlerin Yayın Özellikleri

Çıkar Çatışması: Yazarlar çıkar çatışması bildirmemişlerdir.
Finansal Destek: Bu makale ile ilgili fon yoktur.

Conflict of Interest: No conflict of interest was declared by the authors.
Funding: There is no funding related to this article.

Cite as: Yılmaz Ferhatoğlu S, Kutsioğlu T, Yapıcı N. From theory to science: Publication characteristics of medical thesis composed by anesthesia reanimation residents in Turkey. GKDA Derg. 2020;26(4):244-9.

ABSTRACT

Objective: *Completing a medical thesis (MT) is regarded as a complementary component of residency training in Turkey. We believe, announcing these precious scientific records in worldwide accepted scientific journals is the most reliable way to promote their accessibility. In the presented research, our aim is to examine the publication statistics and the scientific quality of the MT written in the field of Anesthesiology and Reanimation (A&R).*
Method: *We collected the data about MTs from the web-site of the National Thesis data center of the Academic Educational Board in Turkey, and scanned the author name, title, and keywords of the MTs in the search engines of PubMed, Google Scholar, and Turkish Academic Network and Information Center Turkish Database.*
Results: *Between the years 1975-2019, three thousand three hundred and fifty-two MTs were published, and we accessed to full texts of 1207 (36%) MTs. The publication rate was 11.3% (n=137), and 76 (55.4%) of these theses were published in a journal indexed in SCI/SCIE databases. MTs focusing on peripheral blocks, algology, and the subjects related to the problems in outpatient clinics had higher publication rates (p=0.003; p=0.022; p=0.014, respectively). According to Levels of Evidence and Grades of Recommendation System only 21 MTs were in Level III (15.3%).*
Conclusion: *MTs in the field of A&R have low publication rates. The foremost cause of the problem is that most MTs have low scientific evidence levels.*

Keywords: *thesis, anesthesiology and reanimation, education, residency*

ÖZ

Amaç: *Bir tez (MT) oluşturmak, Türkiye'de, tıpta uzmanlık eğitiminin tamamlayıcı bir bileşeni olarak kabul edilmektedir. Bu değerli bilimsel kayıtları dünya çapında kabul gören bilimsel dergilerde duyurmak, bu bilimsel verilerin erişilebilirliklerini artırmanın en güvenilir yoludur. Sunulan bu çalışmada, Türkiye'de Anesteziyoloji ve Reanimasyon (A&R) alanında yazılan MT'lerin yayın istatistiklerini ve bilimsel kalitesini incelemeyi amaçladık.*
Yöntem: *MT'ler ile ilgili verileri Türkiye Yüksek Öğretim Kurumu, Ulusal Tez Veri Bankası web sitesinden toplandı. MT'lerin yazar adı, başlığı ve anahtar kelimeleri PubMed, Google Scholar ve Türk Akademik Ağı ve Bilgi Merkezi Türk Veritabanı kullanılarak aratıldı.*
Bulgular: *1975-2019 yılları arasında 3352 MT düzenlendi ve 1207 (% 36) tezin tam metnine ulaşıldı. Yayın oranı % 11.3 (n=137) idi ve bu tezlerin 76'sı (% 55.4) SCI / SCIE'de indekslenen bir dergide yayınlanmıştı. Periferik bloklar, algoloji ve poliklinik ile ilgili konulara odaklanan tezler daha yüksek yayın oranına sahipti (p=0.003; p=0.022; p=0.014, sırasıyla). Kanıt Düzeyleri ve Öneri Sistemi derecelerine göre yalnızca 21 MT'in Düzey III seviyesindeydi (%15.3).*
Sonuç: *A&R alanındaki MT'ler düşük yayın oranlarına sahiptir. Sorunun en önemli nedeni, çoğu MT'in düşük bilimsel kanıt seviyelerine sahip olmasıdır.*

Anahtar kelimeler: *tez, anesteziyoloji ve reanimasyon, eğitim, ihtisas*

Received/Geliş: 04.11.2020
Accepted/Kabul: 13.11.2020
Published Online/Online yayın: 31.12.2020

Sibel Yılmaz Ferhatoğlu
SBÜ. Dr. Siyami Ersek Göğüs Kalp ve Damar Cerrahisi Eğitim ve Araştırma Hastanesi Anesteziyoloji ve Reanimasyon Kliniği
İstanbul - Türkiye
sibelyf@yandex.com
ORCİD: 0000-0001-8726-0996

T. Kudsioğlu 0000-0003-4109-3170
N. Yapıcı 0000-0002-7684-8177
SBÜ. Dr. Siyami Ersek Göğüs Kalp ve Damar Cerrahisi Eğitim ve Araştırma Hastanesi Anesteziyoloji ve Reanimasyon Kliniği İstanbul - Türkiye

INTRODUCTION

Setting up a MT is the first scientific step required from medical residents in their specialization field. By composing a MT, they learn how to ask structured questions, build the perfect research methodology, control the research protocol, analyze the outcomes, and establish a judgement with medical implications [1-3]. The way to assign more scientific value to a MT is to publish it as an article in medical-scientific journals [4]. Also, the publication of a MT gives a positive impression about the medical education institution's scientific character [5]. Although regulations about medical specialization in Turkey obligate setting up a MT for medical residents before graduating, publishing it in a scientific-medical journal is not obligatory. It is also apparent that publishing in a scientific journal makes its scientific content more accessible [6,7]. However, publication rates of MTs in a scientific journal are not at a high level in our country [1,3,7,8]. In the present descriptive investigation, we aim to assess the publication rates of the MTs written by anesthesiology and reanimation (A&R) residents and assess their scientific characteristics.

MATERIAL and METHODS

WWe conducted online research, which included the MTs written by anesthesiology and reanimation residents between 1975-2019 on the National Thesis data center of the Academic Educational Board website on September 1, 2019. We filtered the departments as only "Anesthesiology and Reanimation" (Figure 1). Publishing time (the time pediod between the publication of medical theses and the publication of the thesis in a scientific journal), author names, the topics, and the keywords of the MTs were noted. We evaluated whether the MT was published or not by entering, and searching the author's name, title, and keywords on websites of PubMed, Google Scholar, and Turkish Academic Network and Information Center Turkish Database (ULAKBIM).

We analyzed the MTs into two main topics as subject and associated surgical/ clinic and subclassified the published theses into seven and eleven different main issues (Table 1).

After determining published MTs, we assessed the indexation data of the scientific journals (Scientific Citation index/ Scientific Citation index-expanded (SCI/SCI-E) indexed journals, ULAKBIM indexed journals, national and international journals (not indexed in SCI/SCIE, and ULAKBIM)). Secondly, we categorized published MTs according to Levels of Evidence and Grades of Recommendation System (LEGrS) [9]. The MTs that did not support open access reading were not included in the study protocol.

Statistical analysis

We used the JASP 0.13.1 (Netherlands) software

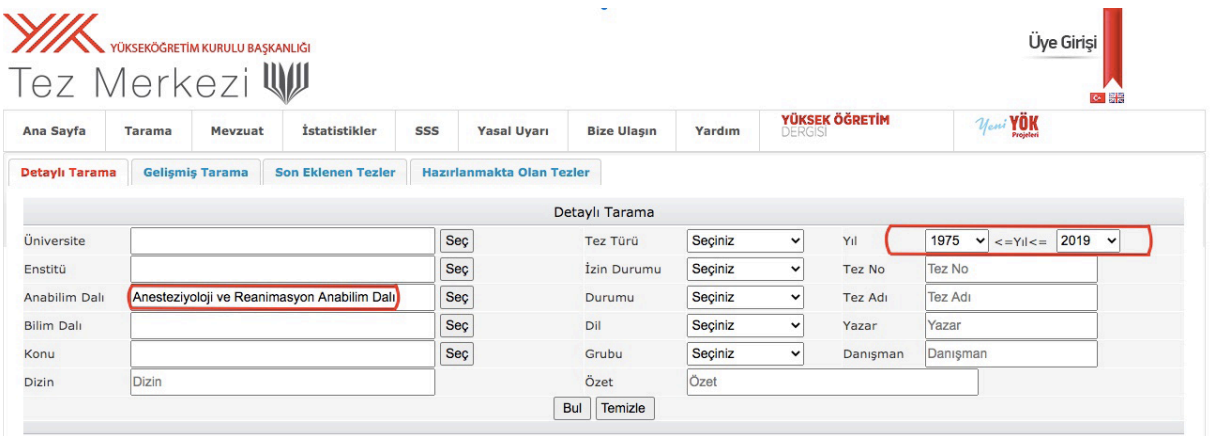

Figure 1. Website of National Thesis data center of the Academic Educational Board website.

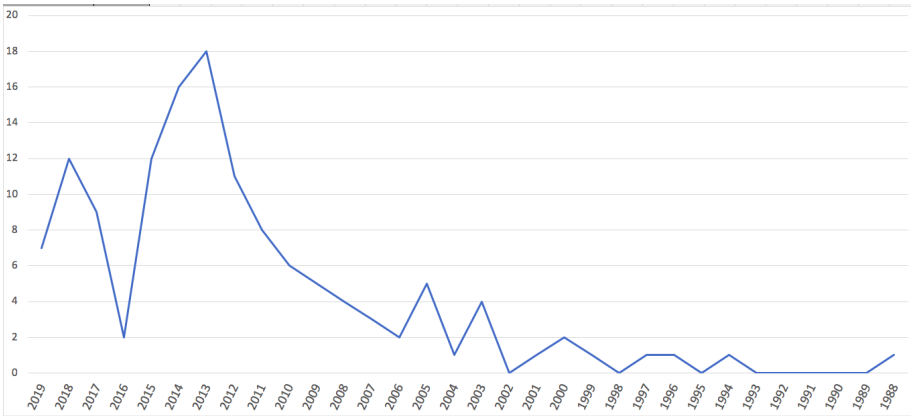

Figure 2. Publication productivity of the medical thesis according to years (including all indexation).

Table 1. Distribution of the published medical thesis according to subject and surgical/ clinic division.

	n	%
Subject		
General anesthesia	54	39.4
Regional anesthesia	60	43.8
Peripheral blocks	10	7.3
ICU*	4	2.9
Algology	1	0.7
Outpatient-clinic	3	2.2
Others	5	3.6
Surgical/ clinic division		
Urology	22	16.0
Gynecology and obstetrics	25	18.2
Orthopedics	12	8.7
Neurosurgery	8	5.8
Ophthalmology	5	3.6
General Surgery	13	9.4
Cardiovascular surgery	14	10.2
Psychiatry	6	4.3
Pediatric surgery	9	6.5
ENT*	4	2.9
Unrelated	19	13.8

**ICU: Intensive care unit, ENT: Ear-nose-throat*

Table 2. Research methodologies and indexation info of the published medical thesis.

		n (%)
Research methodologies	Experimental study Clinical study	1 (0.7) 136 (99.3)
SCI/SCIE*indexed journal	Yes	76 (55.4)
ULAKBIM** indexed journal	Yes	52 (37.9)
Other journals	Yes	9 (6.5)
Publishing time (years)	Mean± SD Min-Max (Median)	3.59±2.96 0-17 (3)

**Scientific Citation Index/Scientific Citation Index Expended*
***Turkish Academic Network and Information Center Turkish Database*

program for statistical assessment. Research data were shown as descriptive statistical methods (mean, standard deviation, median, first quadrant, third quadrant, frequency, percentage, minimum, maximum), and χ^2 test, Fisher's exact test, Fisher-Freeman-Halton exact test were applied to compare qualitative data. Statistical significance was accepted as $p<0.05$.

RESULTS

Three thousand three hundred and fifty-two MTs were composed between 1975-2019. One thousand two hundred and thirty-seven (36%) full texts were reached, and of 1027, (11.3%) of them were published in a medical-scientific journal. Seventy-six (55.4%) of the published MTs were published in an SCI/SCI-E- indexed journal. Research methodologies and journal information were demonstrated in Table 2. Figure 2 also demonstrates the publication productivity of the MTs, according to years.

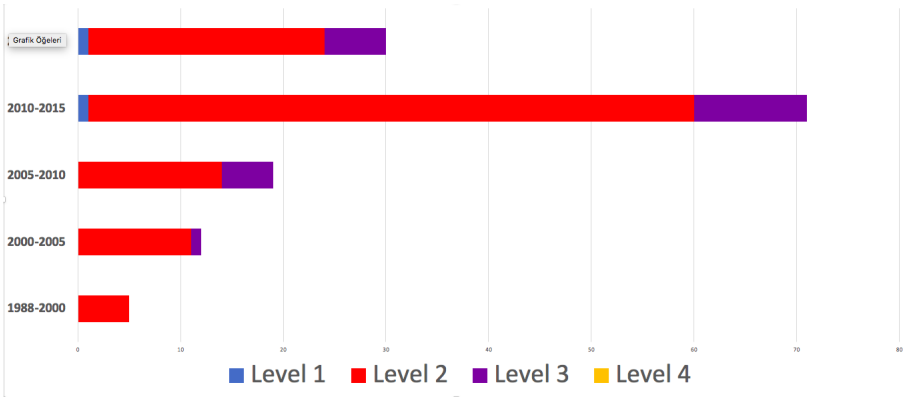

Figure 3. Assessment of published medical thesis in all indexation kinds according to Levels of Evidence and Grades of Recommendation System.

Table 3. The published medical thesis in SCI-SCIE† indexed journals according to subject and surgical/ clinic division (including clinical studies).

	Total†† n (%)	SCI/SCIE n (%)	p *(row vs. rest)*
Subject			
General anesthesia	54 (100)	32 (59.2)	[c]0.389
Regional anesthesia	60 (100)	33 (55)	[c]0.136
Peripheral blocks	10 (100)	5 (50)	[c]0.003**
ICU*	4 (100)	4 (100)	[c]0.111
Algology	1 (100)	1 (100)	[b]0.022*
Outpatient-clinic	3 (100)	2 (66.6)	[c]0.014*
Others	4 (100)	4 (100)	[c]<0.001**
Surgical/clinic division			
Urology	22 (100)	13 (59.1)	[c]0.136
Gynecology and obstetrics	25 (100)	10 (40)	[c]0.389
Orthopedics	12 (100)	5 (41.6)	[b]0.111
Neurosurgery	8 (100)	6 (75)	[b]0.028*
Ophthalmology	5 (100)	3 (60)	[b]0.016*
General surgery	13 (100)	4 (30.7)	[b]<0.446
Cardiovascular surgery	14 (100)	8 (57.1)	[b]0.539
Psychiatry	6 (100)	4 (66.6)	[b]<0.001**
Pediatric surgery	9 (100)	3 (33.3)	[b]0.566
ENT*	4 (100)	2 (50)	[b]<0.01**
Unclassified	18 (100)	18 (13.2)	[b]0.352

[a] Fisher-Freeman-Halton exact test, [b]Fisher's exact test, [c]Pearson chi-square test
**p<0.05, **p<0.01*
† SCI-SCIE: Scientific citation index-Scientific citation index expanded
†† Total means all indexation services including SCI/SCIE, ULAKBIM and others

The publication rates in SCI/SCI-E- indexed journals (55.4%) was higher (p<0.001). As a result of post-hoc analysis, the publication rates of MTs focusing on peripheral blocks, algology and outpatient clinics in the SCI/SCI-E- indexed journals were higher (p=0.003, p=0.022, p=0.014; respectively). Also, MTs about neurosurgery, ophthalmology, psychiatry and ear-nose-throat had higher rates of publication in SCI/SCI-E-indexed journals (p=0.028, p=0.016, p=<0.001, and p=<0.01; respectively) (Table 3).

According to LEGrS, two MTs were in Level I (1.5%), 114 in Level II (83.2%) and 21 of them were in Level III (15.3%) (Figure 3).

DISCUSSION

The curriculum regulations in medical doctorate and dentistry in Turkey oblige the medical residents to produce and advocate a MT, which is accepted as a 'Master's thesis' in their field, before completing their training programs [10]. Accessibility of a MT containing important scientific data is mostly insufficient, unfeasible, or dependent on only the sources of the limited number of academic libraries. Announcing these precious scientific records in worldwide accepted scientific journals is the most reliable way to promote their accessibility [2,7].

According to results of our survey, the publication rates of A&R MTs in non-SCI/SCI-E international and SCI/SCI-E –indexed journals were 0.49% and 6.2%, respectively. Many previous studies reported the publication rates of MTs ranging from 11.9 to 22% [1,11-13]. Another analysis, including 22625 MTs written from 1980 to 2005 in Turkey, found the publication rate as 6.2% in all indexes [8]. The publication rate of A&R MTs is below than expected, if regarding the tremendous effort in producing them and the expertise obtained from a five-year training. Excessive workloads of medical training institutions provide less chance for learning to compose a scientific work. Also, inadequate number of medical residents, crushed under this excessive workload are pleased with the state of not learning how to write a scientific paper. We believe the excessive workload and absence of sufficient education may be two great causes behind the fallen publication rates. Several medical institutions have carried out resident-oriented courses and programs to improve their scientific work abilities and improve scientific contents of MTs to solve these obstacles [14,15]. Another obstructing factor in publishing an MT is writing in a foreign language which strains residents [16]. Additionally, the inability to create enough time to further academic skills due to the heavy workload and the residents' view about the MTs as merely a ritual or obligation to fulfill the residency training adds more barriers to achieve desired publication rates. As a result of all these predicaments, the loss of scientific motivation in A&R residents makes scientific productivity impracticable [1,2]. Hollmann et al. advocated that causes of low publication rates were excessive workload, the bias for adverse outcomes, insufficient tutor support, low motivation/ personal interest, and family burdens [2].

In this study, we revealed that clinical studies are preferable by A&R residents. Also, LEGrS-Level I studies, which are the vital clinical investigations, showed a minimal rising ratio over the last decade. Despite this increase, the overall rate of MTs with LEGrS-Level I was just 1.5 percent. However, randomized controlled trials with lower scientific quality and comparatively designed prospective studies (LEGrS-Level II) were the most preferred research types. This is the evidence of gently shifting inclination to clinical/ prospective and high-quality studies. Another remarkable finding is that there is also a rapid improvement in the publication rate of the MTs, after 2006, which confirms the burgeoning attention to the scientific productivity among A&R residents. Our outcomes are harmonious with a previous study investigating the publication characteristics of MTs from Turkey [17]. However, we believe, this promising scientific trend should be financially supported.

Limitations of the study: There were weaknesses to the presented research. First, the website of the National Thesis data center of the Higher Educational Council of the Republic of Turkey had the intention to collect MTs, which were produced at university hospital clinics. The database center excludes MTs written at training and research hospitals affiliated by the Ministry of Health up to 2015. Also, the National Thesis data center records are not complete, and MTs that did not provide open access reading were excluded from the study. Secondly, indexation status of the journals is changeable (i.e., SCI and SCI-E are dynamic in and out situations). Finally, it is also possible that some MTs might have reached publication status after the time-point of retrieval of the dataset in this study.

CONCLUSION

In summary, an excessive number of MTs have never been printed in a scientific journal, and the valuable scientific data they contained have remained inaccessible. The scientific quality of MTs requires improvement, and scientific institutions should take adequate steps to improve their scientific value. We believe that these barriers would be overcome by allowing medical residents to give more time to improve their academic abilities, perhaps adding education programs related to composing a scientific article to the core medical curriculum. A second answer to this problem may be that residents whose MTs are not published in a scientific journal are deemed to have not finished their residency program.

REFERENCES

1. Sipahi H, Durusoy R, Ergin I, Hassoy H, Davas A, Karababa A. Publication rates of public health theses in international and national peer-review journals in Turkey. Iran J Public Health. 2012;41:31-5.
2. Hollmann M, Borrell C, Garin O, Fernandez E, Alonso J. Factors influencing publication of scientific articles derived from masters theses in public health. Int J Public Health 2015;60:495-504. https://doi.org/10.1007/s00038-015-0664-0
3. Akkecici SN. Publication of physiology theses in scientific journals: Analysis of the status from Turkey. J Surg Med. 2019;3:235-8.
4. Arriola-Quiroz I, Curioso WH, Cruz-Encarnacion M, Gayoso O. Characteristics and publication patterns of theses from a Peruvian Medical School. Health Info Libr J. 2010;27:148-54. https://doi.org/10.1111/j.1471-1842.2010.00878.x
5. Bordons M, Zulueta MA. Evaluation of the scientific activity through bibliometric indices. Rev Espanola Cardiol. 1999;52:790-800. https://doi.org/10.1016/S0300-8932(99)75008-6
6. Figueredo E, Sanchez Perales G, Villalonga A, Castillo J. Spanish doctoral dissertations on anesthesiology and the scientific publications of their authors. Rev Esp Anestesiol Reanim. 2002;49:124-30.
7. Ogrenci A, Eksi MS, Ozcan Eksi EE, Koban O. From idea to publication: Publication rates of theses in neurosurgery from Turkey. Neurol Neuroshir Pol. 2015;50:45-7. https://doi.org/10.1016/j.pjnns.2015.11.007
8. Ozgen U, Egri M, Aktas M, Sandıkkaya A, Ozturk OF, Can S, et al. Publication pattern of Turkish medical theses: Analysis of 22,625 medical theses completed in years 1980-2005. Turkiye Klinikleri J Med Sci. 2011;31:1122-31. https://doi.org/10.5336/medsci.2010-20737
9. American Academy of Orthopaedic Surgeons. Levels of Evidence and Grades of Recommendations. http://www2.aaos.org/bulletin/apr05/fline9.asp Accessed 21 March 2015.
10. The Official Gazette of Republic of Turkey: 26.04.2014, 28983
11. Koca K, Ekinci S, Akpancar S, Gemci MH, Erşen Ö, Akyıldız F. An analysis of orthopaedic theses in Turkey: Evidence levels and publication rates. Acta Orthop Traumatol Turc. 2016;50:562-6. https://doi.org/10.1016/j.aott.2016.03.001
12. Mayir B. Bilecik T, Cakır T, Dogan U, Gundur UR, Aslaner A, et al. Analysis of the publishing rate and the number of citations of general surgery dissertations. Turk J Surg. 2017;33:33-5. https://doi.org/10.5152/UCD.2016.3190
13. Ferhatoğlu MF, Kıvılcım T, Kartal A, Filiz Aİ, Kebudi A. An analysis of general surgery theses set up between years 1998-2018 in Turkey: Evidence levels and publication rates of 1996 theses. Turk J Surg. 2020;36:9-14. https://doi.org/10.5578/turkjsurg.4405
14. Guilford WH. Teaching peer review and the process of scientific writing. Adv Physiol Educ. 2001;25:167-75. https://doi.org/10.1152/advances.2001.25.3.167
15. Cunningham D, Viola D. Collaboration to teach graduate students how to write more effective theses. J Med Libr Assoc. 2002;90:331-4.
16. Dhaliwal U, Singh N, Bhatia A. Masters theses from a university medical college: publication in indexed scientific journals. Indian J Ophthalmol. 2010;58: 101-4. https://doi.org/10.4103/0301-4738.60070
17. Gurbuz Y, Sugun TS, Ozaksar K. A bibliometric analysis of orthopedic publications originating from Turkey. Acta Orthop Traumatologica Turcica 2015;49:57-66. https://doi.org/10.3944/AOTT.2015.14.0044