

Original Article

Analysis of cardiovascular surgery specialization theses and their publication rates

 Omer Faruk Rahman¹,  Mustafa Baris Kemahli²,  Fevzi Ayyildiz³

¹İzmir Bakırçay University, Faculty of Medicine, Department of Cardiovascular Surgery, İzmir, Türkiye

²Acıbadem Kent Hospital, Department of Cardiovascular Surgery, İzmir, Türkiye

³Aydın Adnan Menderes University, Faculty of Medicine, Department of Cardiovascular Surgery, Aydın, Türkiye

Received: June 05, 2024 Accepted: July 13, 2024 Published online: July 22, 2024

Content of this journal is licensed under a Creative Commons Attribution-NonCommercial 4.0 International License



Abstract

Aim: This study aimed to analyze the specialization theses in the field of cardiovascular surgery in Türkiye, and examine their rates of conversion to scientific publications.

Material and Methods: Specialization in medicine theses in the field of cardiovascular surgery published in Türkiye from 2015 to 2020 were evaluated using the Council of Higher Education Thesis Center database. For each specialization thesis, details such as the year, institution, city, study design, advisor's title, and author information were recorded. The conversion of theses into scientific publications was assessed using Google Scholar, PubMed, Dergipark, and TR Index databases based on the thesis title, advisor, and author information.

Results: A total of 204 specialization theses in medicine were examined in the study. Of the thesis authors, 171 were men (83.3%) and 33 were women (16.2%). When categorized by institutions, 130 theses (63.7%) were affiliated with institutions in the three major cities. It was observed that 79 of the evaluated theses (38.7%) were turned into scientific publications. The conversion rate into scientific publications was significantly higher in institutions affiliated with the University of Health Sciences ($p=0.002$). A significant relationship was observed between the study design, the index of the publishing journal, and the citation status ($p=0.029$, $p<0.001$, respectively).

Conclusion: The findings obtained in the present study showed that the majority of specialization theses in cardiovascular surgery were not turned into scientific publications. We believe that collaboration with professional associations and the Medical Specialty Board may contribute positively to the publication rate of specialization theses.

Keywords: Theses, publication, indexing, residency, cardiovascular surgery

INTRODUCTION

In Türkiye, 95 centers are registered to the Medical Specialty Board training program for the field of cardiovascular surgery [1]. The duration of training for cardiovascular surgery has been determined as 5 years by the National Board of Medical Specialties [2]. The educational objectives related to the specialty field have been outlined through the core curriculum developed by the Board for Curriculum Development and Standard Setting in Medicine (TUKMOS) [3]. Teaching scientific methodology,

presenting articles, and demonstrating writing styles are among the main objectives and goals of the cardiovascular surgery residency program.

For the residents to be able to take the medical specialty examination, they need to successfully complete not only the duration of their training and rotations but also complete a thesis in their own specialty field [4]. Teaching residents the necessary skills to implement all the steps of scientific research constitutes the main objectives of this thesis [5].

CITATION

Rahman OF, Kemahli MB, Ayyildiz F. Analysis of cardiovascular surgery specialization theses and their publication rates. Turk J Vasc Surg. 2024;33(3):132-8.



Corresponding Author: Omer Faruk Rahman, İzmir Bakırçay University, Faculty of Medicine, Department of Cardiovascular Surgery, İzmir, Türkiye
Email: omerfaruk.rahman@bakircay.edu.tr

The next step in thesis writing is sharing the study with the scientific community. Turning the specialization thesis into a scientific publication is important not only to enhance the value of the study but also to ensure that it reaches a wider audience [6,7]. However, there is no requirement in Türkiye for specialization theses to be published for residents to complete their training.

The aim of this study was to evaluate specialization in medicine theses in the field of cardiovascular surgery in Türkiye and examine their publication rates.

MATERIAL AND METHODS

The study was conducted with the approval of Süleyman Demirel University Faculty of Medicine Clinical Research Ethics Committee (Project number: 14/222 Date: 31.10.2023).

Specialization theses in the field of cardiovascular surgery were recorded through the Council of Higher Education (YÖK) Thesis Center database and included in the study. The publication status of recent specialty theses was investigated. Therefore, the period from 2015 to 2020 was selected. After collecting the data within the specified date range, the adequacy of the obtained sample size was assessed using power analysis. With 204 cases, a chi-square goodness-of-fit test indicated that reliable detections could be achieved with a medium effect size ($w=0.25$), 95% power, and a 5% margin of error. Theses published after 2020 were not included in the study considering the time required for publication. Data including the year, institution, city, study design, thesis advisor's title, and author details were recorded for each specialization thesis. The theses were examined in four groups according to their topics: arterial diseases, cardiac surgery, congenital heart diseases, and others. The study type was evaluated in two categories: clinical and experimental. Theses were grouped as "prospective" and "retrospective" according to the study design. Moreover, institutional information was analyzed in two groups based on their parent institutions: "Health Sciences University" and "YÖK". Institutions were further grouped based on the cities they were located, including the three major cities (Ankara, Istanbul, and Izmir) and other cities. Publication status was assessed using Google Scholar, PubMed, Dergipark, and TR Index databases based on the thesis title, thesis advisor, and author information. The journal names in which the theses were published and the indexing information of those journals were documented. Indexing information was evaluated in three groups: Science Citation Index (SCI) or Science Citation Index Expanded (SCI-E), international field indexes, and TR Index/ULAKBIM. Number of citations for the studies was recorded using the Google Scholar database based on the article title, author information, and thesis title. Furthermore, the publication status of specialization theses published in major journals in the field of cardiovascular surgery in Türkiye was also evaluated in the study.

Statistical Analysis

Statistical analysis was conducted using SPSS 23.0 software (SPSS Inc., Chicago, IL). Normality of the distribution was assessed using the Kolmogorov-Smirnov test. Descriptive statistics were presented as number, percentage, median, interquartile range, and minimum-maximum values. In the study, Pearson Chi-square test was used in the analysis of categorical data. When the expected value as a result of the Chi-square test was less than 5, the Fisher's exact test results were taken into account. A p value of <0.05 was considered statistically significant in all analyses.

RESULTS

The study evaluated a total of 204 specialization theses in the field of cardiovascular surgery submitted between 2015 and 2020. The distribution of specialization theses by year is presented in Figure 1. Of the authors, 171 (83.3%) were men and 33 (16.2%) were women. When categorized according to institution and city, 130 theses (63.7%) were affiliated with institutions in the three major cities, whereas 74 (36.3%) were from other cities.

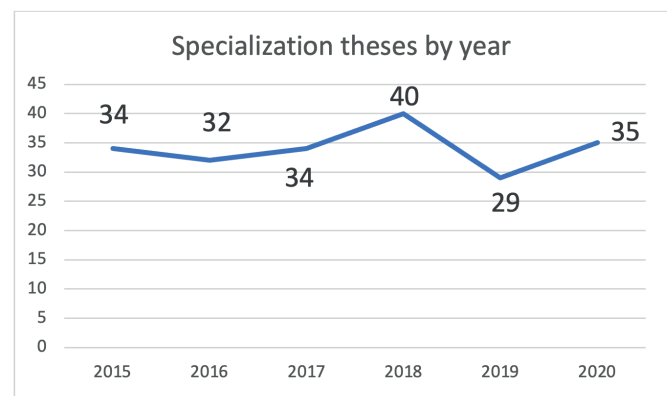


Figure 1. Number of specialization theses by year

It was noted that, out of the 204 specialization theses included in the study, 79 (38.7%) were turned into scientific publications. Upon examination of the institutional information of the specialization theses, it was observed that 71 (34.8%) were completed in institutions affiliated with Health Sciences University, and 133 (65.2%) were completed in institutions affiliated with the YÖK.

When compared with institutions affiliated with the YÖK, specialization theses from institutions affiliated with Health Sciences University had a significantly higher rate of being turned into scientific publications ($p=0.002$). The distribution of specialization theses turned into scientific publications according to author gender, city, institution, and other variables is presented in Table 1.

Table 1. Distribution of specialization in medicine theses according to publication status, author gender, city, institution, and other variables

	Transformation to scientific publication		Statistic	p value
	(+) n=79	(-) n=125		
Gender			0.482	0.487 ^x
Male	68 (39.8)	103 (60.2)		
Female	11 (33.3)	22 (66.7)		
Institution type			10.047	0.002^x
Health Sciences University	38 (53.5)	33 (46.5)		
Council of Higher Education	41 (30.8)	92 (69.2)		
Breakdown by city			0.245	0.620 ^x
Ankara–İstanbul–İzmir	52 (40)	78 (60)		
Other	27 (36.5)	47 (63.5)		
Distribution by year			0.060	0.971 ^x
2015–2016	26 (39.4)	40 (60.6)		
2017–2018	29 (39.2)	45 (60.8)		
2019–2020	24 (37.5)	40 (62.5)		
Distribution by subject			3.054	0.391 ^f
Arterial diseases	18 (32.7)	37 (67.3)		
Cardiac Surgery	55 (43)	73 (57)		
Congenital heart diseases	3 (37.5)	5 (62.5)		
Other	3 (23.1)	10 (76.9)		
Study type			0.431	0.512 ^x
Clinical study	69 (39.7)	105 (60.3)		
Experimental study	10 (33.3)	20 (66.7)		
Study design of clinical trials (n=174)			1.456	0.228 ^x
Prospective	17 (48.6)	18 (51.4)		
Retrospective	52 (37.4)	87 (62.6)		
Distribution according to thesis advisor title			1.911	0.385 ^x
Professor Dr.	34 (34)	66 (66)		
Associate Professor Dr.	36 (43.9)	46 (56.1)		
Assistant Professor Dr.	9 (40.9)	13 (59.1)		

x: Pearson's chi-square test, f: Fisher's exact test

When evaluated according to their topics, 128 specialization theses (62.7%) were related to cardiac surgery, 55 (27%) focused on arterial diseases, 8 (3.9%) addressed congenital heart diseases, and 13 (6.4%) were categorized under other topics. Among the specialization theses, 174 (85.3%) were classified as clinical studies, and 30 (14.7%) were classified as experimental studies. In terms of study design, 5 (2.87%) clinical studies were randomized controlled trials, 30 (17.24%) were prospective studies, and 139 (79.89%) were retrospective clinical studies. Regarding thesis advisors, 100 (49%) held the title of Prof.

Dr., 82 (40.2%) were Associate Prof. Dr., and 22 (10.8%) were Assistant Prof. Dr.

Of the 79 theses that were published, it was found that 44 (55%) were published in journals indexed in SCI or SCI-E, 28 (35.4%) were published in journals indexed in international databases, and 7 (9.6%) were published in journals indexed in TR Index/ULAKBİM (Figure 2). The number of publications receiving at least one citation was 35 (44.3%). For publications with at least one citation, the median number of citations was 2 (iqr: 6, min: 1, max: 18, and mean: 4.57±0.74).

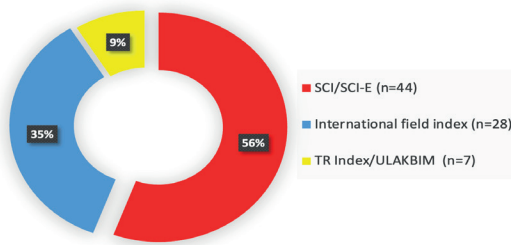


Figure 2. Distribution of published theses according to indexes

Subgroup analysis was conducted based on citation status for the 79 published specialization theses. Comparative analysis according to gender, institution type, city, and other variables is presented in Table 2. It was observed that all 35 studies receiving citations were published in journals indexed in SCI/SCI-E ($p<0.001$). Moreover, no statistically significant difference was found between citation status and other variables ($p>0.05$).

Table 2. Citation status of published specialization theses and distribution according to other variables

	Citation status		Statistic	p value
	(+) n=35	(-) n=44		
Gender				1.000 ^f
Male	30 (44.1)	38 (55.9)		
Female	5 (45.5)	6 (54.5)		
Institution type			0.006	0.941 ^x
Health Sciences University	17 (44.7)	21 (55.7)		
Council of Higher Education	18 (43.9)	23 (56.1)		
Breakdown by province			0.211	0.646 ^x
Ankara-İstanbul-İzmir	24 (46.2)	28 (53.8)		
Other	11 (40.7)	16 (59.3)		
Distribution by subjects			3.739	0.327 ^f
Arterial diseases	8 (44.4)	10 (55.6)		
Cardiac Surgery	23 (41.8)	32 (58.2)		
Congenital heart diseases	3 (100)	0 (0)		
Other	1 (33.3)	2 (66.7)		
Title of thesis advisor			0.932	0.691 ^f
Professor Dr.	17 (50)	17 (50)		
Associate Professor Dr.	14 (38.9)	22 (61.1)		
Assistant Professor Dr.	4 (44.4)	5 (55.6)		
Study type				0.325 ^f
Clinical study	29 (42)	40 (58)		
Experimental study	6 (60)	4 (40)		
Study design			4.761	0.029^x
Prospective	11 (64.7)	6 (35.3)		
Retrospective	18 (34.6)	34 (65.4)		
Index of the journal in which the thesis was published			57.347	≤0.001^f
SCI/SCI-E	35 (79.5)	9 (20.5)		
International field index	0 (0)	28 (100)		
TR Index/ ULAKBİM	0 (0)	7 (100)		

x: Pearson's chi-square test, f: Fisher's exact test

Out of the 79 specialization theses that were published, 16 (20.2%) were published in journals in the field of cardiovascular surgery in Türkiye, including “Cardiovascular Surgery and Interventions,” “Turkish Journal of Thoracic and Cardiovascular Surgery (TJTCVS),” and “Turkish Journal of Vascular Surgery” (Figure 3). Additionally, it was observed that 8 (10.12%) of the theses were published in the TJTCVS, which is an SCI-E indexed journal.

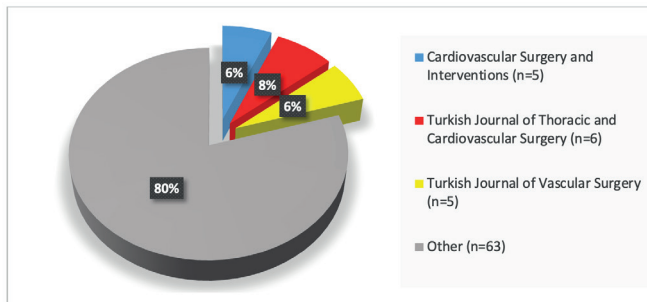


Figure 3. Publication status of specialization in medicine theses in major journals in the field of cardiovascular surgery in Türkiye

DISCUSSION

According to the Regulation on Medical Specialization Education, it is mandatory for residents to prepare and submit a thesis in their field of specialty to be eligible to take the specialty education final exam and graduate [4]. Although practical skills are crucial in cardiovascular surgery specialization training, the foundation of scientific literacy is developed through thesis writing. Despite the intensive nature of specialization training, the dissemination of specialization theses to a wider audience and their contribution to the scientific community can only be achieved through their conversion into scientific publications. If a thesis is not published, it may be considered that time, labor, financial resources, and thousands of experimental animals have been wasted, which is ethically objectionable [8]. There is currently no monitoring system in Türkiye regarding the transformation of theses into scientific publications. This study evaluates the specialization in medicine theses in the field of cardiovascular surgery in Türkiye.

Numerous studies in Türkiye have explored the conversion rate of specialization theses into scientific publications in various medical fields, and reports indicate that the publication rate is 30% in general surgery, 25.7% in anesthesia and reanimation, 20.8% in emergency medicine, and 39.1% in gynecology and obstetrics [8-11]. In the present study, the publication rate of theses in the field of cardiovascular surgery was 38.72%, which, similar to other specialties, is considerably low. Although the Board for Curriculum Development and Standard Setting in Medicine has set objectives related to reading and writing scientific articles, there are no specific targets for publication of specialization theses [3]. Consequently, the decision to publish

a thesis remains at the discretion of the thesis author. In a study conducted by Ferhatoglu et al. on general surgery theses, it was noted that the high workload and the perception of thesis writing as merely a ritual necessary for becoming a specialist doctor were factors reducing the publication rate of these theses [6]. In a study evaluating theses in the field of gynecology and obstetrics, it was stated that the absence of academic expectations, insufficient encouragement for publication, and the requirement of English language could be factors reducing the publication rate of these theses [11]. Majority of patients treated in the cardiovascular surgery department are at high risk in terms of morbidity and mortality, requiring meticulous follow-up. From this perspective, we believe that excessive workload is likely to be the most prominent factor reducing the publication rate of cardiovascular surgery theses.

TJTCVS is currently indexed in the SCI-E database. In the present study, it was observed that only one out of every ten theses published in SCI or SCI-E indexed journals was published in the TJTCVS. There could be several reasons for this. First, it may be due to the preference for journals with higher impact factors and quartiles. Alternatively, the articles may have been rejected by TJTCVS.

Although the present study revealed a higher rate of publication in the education and research hospitals group, no difference was observed in terms of citation status, with more than half of the publications in both groups receiving no citations. Moreover, all publications that received citations were published in SCI or SCI-E indexed journals. Although the number of citations for a publication may not be a sufficient parameter to determine its quality, it is commonly used for this purpose [12]. It is not surprising that articles published in SCI or SCI-E indexed journals receive more citations as they reach a wider audience.

In the present study, it was noted that 16% of cardiovascular surgery theses had a prospective design. In a publication examining the study design of specialization theses in general surgery, it was observed that 12.5% of the theses had a prospective design [8]. However, in another study focusing on theses in the field of anesthesia and reanimation, this rate was found to be 78.5% [9]. While it is expected that studies with a prospective design, due to their higher level of evidence and better-planned methodology, would have a higher publication rate, a significant relationship between study design and publication status could not be established in the present study. This may be attributed to a loss of motivation during the publication process despite the prospective planning and meticulous work involved in the theses. Moreover, the citation count of studies with a prospective design was found to be significantly higher in the present study. Therefore, a prospective study design and targeting publication in SCI-SCI-E journals can have a positive impact in terms of reaching a broader audience and increasing the number of citations.

In a study by Akpınar Mayir et al., it was shown that there was no difference in terms of publication rates between the three major cities and other cities in specialization theses written in the gynecology and obstetrics department [11]. Similarly, in the present study, no difference was observed in terms of publication rates in cardiovascular surgery theses across different cities. According to the study by Kervan et al., it is anticipated that in the coming years, cardiovascular surgeons and clinics in Türkiye will reach a sufficient number, quality, and distribution across Türkiye [13]. Thus, we believe that there is ample potential for scientific data generation throughout Türkiye.

Starting from March 2024, with the implementation of new criteria, it has become mandatory for associate professorship candidates in Türkiye to have their theses published [14]. Therefore, it can be anticipated that there will be a considerable increase in the publication rate of specialization theses in the field of cardiovascular surgery in the coming years. Additionally, certain steps that can further facilitate scientific publication can be taken by collaboration between professional associations and the National Board of Medical Specialties:

- Introduction of a national thesis tracking system,
- Incentive policies for thesis publication,
- Defining and supervising specific time intervals for planning and writing the thesis with the responsible faculty member during residency training.

Limitations

Although this is the first study evaluating specialization theses in the field of cardiovascular surgery, it has some limitations. Due to the potential difference between thesis titles and scientific publication titles, some studies may not have been identified. Furthermore, only PubMed, Dergipark, TR Index, and Google Scholar databases were used in the present study, and we acknowledge that studies not included in these databases could potentially impact our findings.

CONCLUSION

The results obtained in the present study showed that the majority of specialization theses written in the field of cardiovascular surgery in Türkiye were not published. Furthermore, published theses had a significantly low citation rate. Thus, we believe that collaborative efforts between cardiovascular surgery professional associations and the National Board of Medical Specialties could positively contribute to increasing the rate of scientific publications.

Ethics Committee Approval: Süleyman Demirel University Faculty of Medicine Clinical Research Ethics Committee (Project number: 14/222 Date: 31.10.2023).

Patient Consent for Publication: This study is a bibliographic work conducted using publicly accessible data. Therefore, patient consent for publication was not required.

Data Sharing Statement: The data that support the findings of this study are available from the corresponding author upon reasonable request.

Author Contributions: All authors contributed equally to the article.

Conflict of Interest: The authors declared no conflicts of interest with respect to the authorship and/or publication of this article.

Funding: The authors received no financial support for the research and/or authorship of this article.

REFERENCES

1. Yetkilendirilmiş Uzmanlık Eğitimi Programları (Yuep) Tıp-Dış Hekimliği Listeleri. Available at: <https://tuk.saglik.gov.tr/TR-30148/programlar.html>. Accessed November 06, 2023.
2. Uzmanlık Dallarının Eğitim Süreleri Hakkında. Available at: <https://tuk.saglik.gov.tr/TR-31567/uzmanlik-dallarinin-egitim-sureleri-hakkinda-karar-no--1087.html>. Accessed September 22, 2022.
3. Tıpta Ve Dış Hekimliğinde Uzmanlık Dallarının Çekirdek Müfredat Ve Standartları Kalp Ve Damar Cerrahisi V.2.4. Available at: <https://Tuk.Saglik.Gov.Tr/Tr-84694/V-24-Dokumanlari.html>. Accessed February 27, 2023.
4. Tıpta ve Dış Hekimliğinde Uzmanlık Eğitimi Yönetmeliği T.C. Resmi Gazete, Sayı: 31942. Available at: <https://www.resmigazete.gov.tr/eskiler/2022/09/20220903-2.htm>. Accessed September 03, 2022.
5. Saydam MB, Özgülnar N, Darendeliler F. Medical specialty thesis: contribution to a controversial issue with a research study. *J Higher Edu Sci*. 2014;4:176-81.
6. Ferhatoglu 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. *Türk J Surg*. 2020;36:9-14.
7. Kaya E, Üçer H, Ekinci Erdoğan Ö. Evaluation of publication rate of public health specialty theses in Turkey. *ESTÜDAM Halk Sağlığı Dergisi*. 2020;5:410-7.
8. Mayir B, Bilecik T, Çakır T, Doğan U, Gündüz UR, Aslaner A, et al. Analysis of the publishing rate and the number of citations of general surgery dissertations. *Türk J Surg*. 2016;33:33-6.
9. Güç Z, Hancı V, Özbilgin Ş. Thesis studies of universities in anaesthesiology and reanimation between 1970 and 2016: retrospective evaluation of work areas, publishing rates and evidence levels. *Türk J Anaesthesiol Reanim*. 2021;49:379-88.
10. Tekin E, Karagöz S, Akbaş İ. Analysis of the publication of emergency medicine specializases theses. *Ahi Evran Med J*. 2019;3:26-30.
11. Akpınar Mayir Y, Mayir B, Erkal N, Eren Yazıcı L. Assessment of publication rates and number of citations of dissertations in university hospitals gynecology and obstetrics clinics. *Türkiye Klinikleri J Gynecol Obst*. 2016;26:232-6.

12. Aksnes DW, Langfeldt L, Wouters P. Citations, citation indicators, and research quality: an overview of basic concepts and theories. SAGE Open. 2019;9:1-17.
13. Kervan Ü, Koç O, Özatik Ali M, Bayraktar G, Şener E, Çağlı K, et al. Distribution and service quality of the cardiovascular surgery clinics in Turkey. Turk Gogus Kalp Dama. 2011;19:483-9.
14. Üniversitelerarası Kurul Başkanlığı - Doçentlik Başvuru Şartları. Available at: https://www.uak.gov.tr/Documents/docentlik/2024/2024-mart-donemi/basvuru-sartlari/saglikBilimleriTemelAlani_08032024.pdf. Accessed May 05, 2024.