

# Publication of physiology theses in scientific journals: Analysis of the status from Turkey

## Fizyoloji tezlerinin bilimsel dergilerde yayınlanması: Türkiye’den durum analizi

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### Abstract

**Aim:** Theses, one of the main sources of scientific articles, are the main indicators of scientific productivity of the country. To the best of our knowledge, the publication status of physiology specialty theses have not been reported before. This study was planned in order to evaluate the publication status in scientific journals of specialty theses by physiology departments in our country.

**Methods:** An observational study is planned. Eighty-two physiology specialty theses available in the Council of Higher Education National Thesis Center web database (<https://tez.yok.gov.tr/UlusalTezMerkezi/>) on February 2019, which were entered in the system via the departmental physiology units of all medical faculties in our country and published between 2004 and 2014, were included in this study. These theses were examined regarding the year they were conducted, whether the thesis is clinical or animal study, the gender of the author, the academic title of the thesis advisor, the publication status and the other characteristics of the thesis authors.

**Results:** Forty-seven (57.3%) out of 82 physiology specialty theses that are included in our study were published in the scientific journals. Fifteen (18.3%) of these were published in a journal with Science Citation Index (SCI), 17 (20.7%) in Science Citation Index-Expanded (SCI-E), 9 (11.0%) in the other international indexes, 5 (6.1%) in Ulakbim TR index, 1 (1.2%) was published in the national peer-reviewed journals.

**Conclusion:** It is asserted that the publication rate of the theses as articles that were written at the end of the physiology specialization training is quite high.

**Keywords:** Physiology, Thesis, Publication

### Öz

**Amaç:** Bilimsel makalelerin ana kaynaklarından biri olan tez çalışmaları, ülkenin bilimsel verimliliğinin temel göstergeleridir. Bildiğimiz kadarıyla, fizyoloji uzmanlık tezlerinin yayınlanma durumu daha önce bildirilmemiştir. Bu çalışma ülkemizdeki fizyoloji anabilim dalları tarafından yayınlanan fizyoloji tıpta uzmanlık tezlerinin bilimsel dergilerde yayınlanma durumunun değerlendirilmesi amacıyla planlanmıştır.

**Yöntemler:** Gözlemsel olan bu çalışmaya Şubat 2019 tarihinde Yüksek Öğretim Kurulu Başkanlığı Ulusal Tez Merkezi internet veri tabanında (<https://tez.yok.gov.tr/UlusalTezMerkezi/>) yer alan, ülkemizdeki tüm tıp fakültelerinin fizyoloji anabilim dalı birimlerinden sisteme girilmiş 2004- 2014 yılları arasında yayınlanmış 82 adet fizyoloji uzmanlık tezi dahil edildi. Bu tezler yapıldıkları yıl, yapıldıkları kurum, tezin klinik ya da hayvan deneyi olma durumu, yazar cinsiyeti, tez danışmanın akademik ünvanı, yayınlanma durumu, yayına ait özellikler ve tez yazarlarına ait diğer özellikler açısından incelendi.

**Bulgular:** Çalışmamıza dahil edilen 82 adet fizyoloji uzmanlık tezinin 47’si (%57.3) bilimsel dergilerde yayınlanmıştır. Bu yayınların 15’i (18.3%) Science Citation Index (SCI), 17’si (20.7%) Science Citation Index-Expanded (SCI-E), 9’u (11.0%) uluslararası diğer indekslerde, 5’i (6.1%) Ulakbim TR dizin, 1’i (1.2%) ulusal hakemli dergilerde yayınlanmıştır.

**Sonuç:** Çalışmamızda fizyoloji uzmanlık eğitimi sonunda yazılan uzmanlık tezlerinin makale olarak yayınlanma oranının oldukça yüksek olduğu ortaya konulmuştur.

**Anahtar kelimeler:** Fizyoloji, Tez, Yayın

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## Introduction

Physiology is the discipline that tries to explain the normal operation of the human body, the functions of the organs and tissues, the relationship between these functions and the mechanisms of these functions. Physiology specialization student participates in the educational activities that are predetermined by the department. This training aims to enable the student to learn the basic subjects of physiology, to acquire the basic knowledge and skills necessary for conducting experimental research and carrying out and evaluate the practical student applications.

It is mandatory to conduct a thesis study in the physiology specialization of the medical faculties in our country. Thesis preparation provides the students in medicine the skill of generating a hypothesis, designing a study to prove the hypothesis, data collection, data analysis, interpretation of the results and writing it as a scientific text. The publication of the thesis provides significant contributions to personal, academic progress and science. Publication of the theses is a very challenging process, and according to the studies, it is seen that the rates of the specialty theses in medicine turning into publications are quite low [1-4]. No studies evaluating the publication status of the physiology specialty theses published in our country on the scientific journals were found in the literature.

This study was planned in order to evaluate the publication status in the scientific journals of the physiology specialty theses by the physiology departments of the medical faculties in Turkey.

## Materials and methods

In this study, which is descriptive research, the scanning model was used. All steps of the study were carried out according to the basic principles of Helsinki declaration. The study was approved by Local Ethics Committee.

All of the physiology specialty theses available in the Council of Higher Education National Thesis Center internet database (<https://tez.yok.gov.tr/UlusalTezMerkezi/>) on February 2019, which were entered in the system via the departmental physiology units of all medical faculties in our country and published between 2004 and 2014, are included in this study. Considering that the period of the thesis turning into publication might be prolonged, the specialty theses published between 2015 and 2019 were not included in the study. Additionally, theses with multiple entries (e.g., Subject: Physiology and ophthalmology, Subject: physiology and emergency medicine, etc.) were examined one by one, and the theses which did not belong to physiology department were excluded from the study.

Whether or not the thesis turned into publication was determined by comparing the title and abstract of the article with the title, subject and abstract of the thesis through using the names and surnames of the thesis author and advisor and the Turkish and English title of the thesis via Google scholar (<https://scholar.google.com.tr/>) and PubMed Central (PMC) (<https://www.ncbi.nlm.nih.gov/pubmed>). The publications with full text, abstract or author names and the articles that have titles specifying being derived from thesis were evaluated. Which database among Science Citation Index (SCI), Science Citation

Index-Expanded (SCI-E), the other international platforms (PubMed, Medline, Scopus, Index Copernicus, etc.), Ulakbim TR index, national peer-reviewed journals, the journals that the theses were published on were included in was asserted through the examination of the websites of these databases and journals? Whether the physicians who wrote the theses are working as physicians or in another field and the institutions that they are currently working were determined through web scanning. The gender of the thesis author, the faculty of medicine in which the thesis is conducted, the institution that the author is currently employed, continuation to career in the field of physiology, the order of the thesis author's name in the publication, the academic title of the thesis advisor, the case whether the thesis is clinical or animal study, the national or international index in which the article was published in and the time is taken for the publication of the thesis were evaluated.

### Statistical analysis

The data were analyzed by using the SPSS 15.0 package program. The numerical data were indicated as mean  $\pm$  standard deviation and the categorical variables as number and percentage. Chi-square test was used to analyze the categorical data. The test results were considered statistically significant if  $p < 0.05$ .

## Results

A total of 122 physiology specialty theses which were published between 2004 and 2018 in the National Thesis Center internet database were reached. No thesis that was entered in the system via a departmental physiology unit of any medical faculty was found in 2019. A total of 14 theses were excluded from the study since they were published between 2015 and 2018. 29 out of the remaining 108 theses were determined to have multiple entries in the subject section, and 9 of them were physiology specialty theses whereas the remaining 20 belonged to other fields. In addition, 1 thesis which was entered to the system as a specialty thesis in 2009 was determined to be a master's thesis indeed, similarly, 4 theses which were entered to the system as specialty theses in 2004 were determined to be master's theses indeed and these 5 master's theses were excluded from the study.

Additionally, 1 specialty thesis that was entered to the system in 2009 was determined to be dated 2001 and was excluded from the study. A total of 82 physiology specialty theses published were included in the study after evaluation of eligibility.

Thirty-six of the thesis owners were male (43.90%), and 46 were female (56.10%). 55 (64.7%) of the thesis advisors were professors, 21 (24.7%) associate professors, 8 (9.4) doctor faculty members, 1 was the thesis owner himself (1.2%).

It was determined that 47 (57.3%) of the specialty theses conducted in the field of physiology between 2004 and 2014 were published in a scientific journal and 35 (42.7%) were not published. 15 (18.3%) of the publications were published in SCI, 17 (20.7%) were published in SCI-E, 9 (11.0%) were published in the other international indexes, 5 (6.1%) of them were published in Ulakbim TR index, 1 (1.2%) was published in national peer-reviewed journals. The publication status of the theses is provided in Table 1.

Table 1: Publication pattern of physiology specialty thesis

Publication	n	%
SCI	15	18.3
SCI-E	17	20.7
Other international indexes	9	11.0
Ulakbim TR	5	6.1
National peer-reviewed journal	1	1.2
Total published	47	57.3
Total unpublished	35	42.7

In 2 (2.4%) of the theses cell culture study was performed, in 20 (24.4%) theses clinical study was performed and in 60 (73.2%) theses animal study was performed. 38 (63.3%) of the animal studies and 9 (45.0%) of the clinical studies were published. The cell culture studies were not published. Among the 47 theses published, 38 (80.9%) were animal studies, and 9 (19.1%) were clinical studies. The publication rate of the animal studies was found higher than the others ( $p=0.037$ ).

The mean number of people in the publications was  $5.23\pm 2.07$  (2-11). Thesis owners were the first name in 40 of the publications (85.1%), the second name in 6 (12.8%) of the publications and the third name in 1 (2.1%) of the publications.

When the distribution of the theses according to the universities that they were conducted in was evaluated, in the first 5 ranks there were Hacettepe University (HU) (8 theses, 9.8%), Ondokuz Mayıs University (OMU) (7 theses, 8.5%), Istanbul University (IU) (6 theses, 7.3%), Ankara University (AU) (6 theses, 7.3%) and Fırat University (FU) (5 theses, 6.1%). When the publication status of the theses according to the universities were evaluated, HU had the first rank with 5 publications (10.6%), IU and OMU had the second rank with 4 publications (8.5%), AU, FU and Marmara University (MU) had the third rank with 3 publications (6.4%). There was no statistically significant difference in terms of the publication status of the theses according to the universities and the journals in which they were published according to the universities ( $p=0.480$ ,  $p=0.155$ , respectively).

When the institutions that the thesis owners currently working are examined, 38 (46.3%) of them were working as faculty members in the physiology departments of the medical faculties of various universities, 36 (43.9%) of them were working as specialist doctors in various hospitals, 7 (8.5%) of them were working as specialist doctors in clinical branches and 1 of them (1.2%) was working as a physiology teacher at TUS private teaching institution. Among the 38 people who worked as physicians in the physiology departments of various medical faculties, 17 (44.7%) were male, and 21 (55.3%) were female. Among the 38 physiology specialists, 14 (36.8%) were employed as faculty members at the university where they received their specialization training, and 24 (63.2%) were working as faculty members in the physiology department in the faculty of medicine of a different university. Among the 38 people working in the physiology departments in the medical faculties of various universities, the theses of 28 of them (73.7%) were published in a scientific journal (9 in SCI, 12 in SCI-E, 4 in the other international indexes, 3 in Ulakbim TR index), the theses of 10 (26.3%) of them were not published. Among the 36 people working as specialist doctors in various hospitals, the theses of 15 of them were published in a scientific journal (6 in SCI, 3 in SCI-E, 3 in the other international indexes, 2 in Ulakbim TR

index, 1 in the national peer-reviewed journal, the theses of 21 (58.3%) of them were not published.

## Discussion

This is the first study evaluating the status of publication in the scientific journals of the physiology specialty theses published in our country. In our study, the publication rate of the physiology specialty theses between 2004 and 2014 was found to be 57.3%.

Our primary aim was to demonstrate the current results. Similar to the other studies in the literature, we also evaluated an 11-year process in our study [2,3]. Scherer et al. [5] reported that 5 years are necessary for a study to turn into a publication. Therefore, we did not include the data after 2014 in our study. In some SCI journals, the period between sending of the publication and publishing is 3.5 years [6]. Çetin et al. [7] found that the mean period for otorhinolaryngology specialization theses to be published was 3.15 years in the study that they conducted in 2017, in which they evaluated the publication rate of the otorhinolaryngology specialization theses on the scientific journals in the years between 2007-2012. In our study, the mean period to be published was  $3.02\pm 1.95$  (0-8) years.

In our study, the publication rate of the physiology specialty theses between 2004 and 2014 was found to be 57.3%. It was seen that 15 of these publications were published in SCI (18.3%), 17 (20.7%) were published in SCI-E, 9 (11.0%) were published in the other international indexes, 5 (6.1%) were published in Ulakbim TR index, 1 (1.2%) was published in the national peer-reviewed journals. It is remarkable and pleasing that the rates determined in our study are quite high compared to the rates reported from different branches in our country. In Turkey, there are many studies examining the rates of the theses conducted in various specialization fields turning into publications [1-4, 7-10]. In these studies, the rate of the thesis turning into publications vary between 6.5% and 49.7% [1-4, 7-10]. Özgen et al. [1] reported that the rate of 22,625 medical theses conducted between 1980-2005 turning into publications in the journals within the scope of SCI-E was 6.2%. Yüksel et al. [8] reported that the publication rate of urology specialization theses was 49.7% and 32.7% of these publications were published in SCI-E, 10.4% in international journals, 6.5% in the other international journals and 6.5% in the national indexed journals in the study that they conducted in 2017, in which they evaluated the publication rate of the urology specialization theses written between 2008-2011 in the scientific journals. Çetin et al. [7] reported that the publication rate of otorhinolaryngology specialization theses was 35.6%, the publication rate in the national journals was 14.1%, and the publication rate in the international journals was 21.4%. Cevik et al. [9] reported that the publication rate of the theses conducted in the field of Emergency Medicine between 1998 and 2013 was 27.1% and Öğrenci et al. [2] reported that the publication rate of the theses conducted in the field of neurosurgery between 2004-2013 on the indexed journal was 18.0%. Sipahi et al. [3] reported that the rate of turning into publication for the doctorate theses was 13.7%, for the Microbiology and Clinical Microbiology specialization theses was 10.7%, for the Infectious Diseases and Clinical Microbiology specialization theses was 10.2%, in the study they

conducted in 2014, in which they evaluated the publication rates in the international journals of the specialization in medicine theses and doctorate theses conducted in the fields of Medical Microbiology, Clinical Microbiology and Infectious Diseases and written between 1997-2007. In a study examining the total of 538 theses -243 doctorate theses and 295 specialization theses- conducted in the field of public health between 1978 and 2010, the publishing rate in the international journals was reported to be 11.9%, 9.9% of the doctorate theses and the 13.6% of the specialization theses were published in the international journals [10]. It was reported that the publication rate in the scientific journals of the thesis at the end of the family medicine specialization training was 11.5%, 0.8% of them were published in SCI journals, 3.1% in SCI-E journals and 7.6% in national journals [4].

Among the 82 theses included in our study, in 2 (2.4%) of the theses cell culture studies was performed, in 20 (24.4%) theses clinical studies was performed and in 60 (73.2%) theses animal studies was performed. 38 (63.3%) of the animal studies and 9 (45.0%) of the clinical studies were published. The cell culture studies were not published. Among the 47 theses published, 38 (80.9%) were animal studies, and 9 (19.1%) were clinical studies. In our study, the publication rate of the animal studies was found higher than the others.

When the institutions that the thesis owners currently working are examined, 38 (46.3%) of them were working as faculty members in the physiology departments of the medical faculties of various universities, 36 (43.9%) of them were working as specialist doctors in various hospitals, 7 (8.5%) of them were working as specialist doctors in clinical branches and 1 of them (1.2%) was working as a physiology teacher at TUS private teaching institution. The publication rate of those who were working as faculty members in the physiology departments of the medical faculties of various universities was 73.7%, whereas the publication rate of those who were working as specialist doctors in various hospitals was 41.7%.

However, this study has some limitations. Firstly, the change of the title of the thesis during the conversion to the article may have caused the missing evaluation. Secondly, the change of the female authors' surname may have caused the missing evaluation.

In conclusion, it is asserted that the publication rate of the theses as articles that were written at the end of the physiology specialization training is quite high.

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