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ORIGINAL ARTICLE

From Thesis to Publication - Analysis of 2580 theses in the field of Anesthesiology and Reanimation

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ABSTRACT

Objectives: The primary aim of the study was to determine the publication rates of the theses produced in the department of Anesthesiology and Reanimation in Turkey between the years 2000 and 2018.

Methods: This cross-sectional study evaluated 2580 theses identified in the National Thesis Center using the keywords "Anesthesiology and Reanimation", to which online access was granted by the authors. Theses that had restricted access or were accepted as abstracts in congresses were excluded. The gender of the thesis writers, the date of completion of the thesis and the year of publication, the place where the thesis research was conducted (university or ministry of health), the field of thesis subject, the database where the publication is located, and whether the author began an academic career after the thesis, was investigated.

Results: Thesis authors were female in 52.4% of the 2580 theses included in the study while 59.1% were in the field of general anesthesia and 14.4% in the intensive care field. The proportion of authors obtaining an academic career was 15.5%. The rate of publication was 39.1% (n=1010). The mean time to publication was 3.46±2.62 years. Authors who established an academic career were significantly more likely to publish (72.5%; p<0.001)

Conclusion: Although higher than previously reported, thesis publication rate remains low at 39% although a higher proportion of authors were female. Furthermore, the time to publication was long.

Keywords: Publication rates, theses, academic careers, Anesthesiology and Reanimation

INTRODUCTION

Postgraduate education is a process that aims to educate scientists, who can solve problems with a way of thinking that produces, uses, and criticizes knowledge. The planning and effective execution of postgraduate education is closely related to the level of development of the specific country in which the postgraduate education is delivered [1].

A part of this challenging process is the writing of the thesis. The primary goal of writing a thesis is to provide the candidate with experience of scientific study systematics, improve the ability to write articles, and generate new knowledge. It is expected that the research assistant, who prepares the thesis, should be able to form a hypothesis, be familiar with good clinical practices, collect data in a systematic and disciplined fashion, analyze the data appropriately, scan the literature, and interpret the results in the light of relevant literature [1]. The next step is to share the results of the study with the scientific community.

Unfortunately, thesis-publication rates are poor, both in Turkey and in other countries [2]. Research in Turkey has shown that thesis publication rates are very variable. In psychiatry publication rates have been reported to be 37.4% [3]. However in other specialities these rates tend to be much lower: 0.9% in family medicine; 7.3% in emergency medicine; 1.5% in public health; 4.2% in microbiology; 5.7% in urology; 6.8% in neurosurgery; 5% in general surgery; 3.8% in eye disease and surgery; 4.2% in ear, nose and throat disease and surgery. The overall publication rate of theses among all medical specialities was 6.6% in universities and 1.3% in public hospitals [4]. In a study conducted by Yılmaz et al. [5] in the field of Anesthesiology and Reanimation, the rate of publication of theses (n=1207) written by university hospital specialists was 11.3%.

The primary aim of this study was to determine the publication rates of theses published by both universities and the Ministry of Health in Turkey originating from Departments of Anesthesiology and Reanimation and to examine the characteristics of the publications.

MATERIALS AND METHODS

This study was planned as a cross-sectional study. By using the keywords "Anesthesiology and Reanimation" in the area of the main discipline on the website of the National Thesis Center of the Council of Higher Education (CHE), we identified 3210 medical specialty theses submitted between 2000 and 2018. Of these 2580 (80.4%) theses whose full data was accessible and to which we were given permission for online access by the authors were evaluated. The clinical research ethics committee of Kocaeli Derince Education and Research Hospital waived ethical approval for this study, since the theses authors had given permission for access of evaluated theses (ClinicalTrials.gov ID: NCT04663984). The study started on 25 December 2020 and was completed on 20 February 2021.

The theses of authors who died before publication and those theses that the authors declined online access to were excluded from the study. Furthermore, theses that had only been published as congress abstracts were not accepted to have not been fully published.

Publications, derived from theses, were extracted from the publishing databases Web of Science (WOS), SCI (Science Citation Index), SCI-E (Science Citation Index-Expanded, Extended Science Citation Index), Google, Google Scholar, and PubMed using authors, advisors name, and keywords.

Parameters collected included the gender of the thesis writers, the date of completion of the thesis and year of publication, the place where the thesis research was conducted (university/ministry of health), the field of thesis subject (general anesthesia, intensive care, algology, peripheral nerve block, neuraxial blocks), whether the thesis had been subsequently published, the delay between the date of the dissertation and the date of publication, the database where the publication was located (SCI/SCI-E; ULAKBIM-TRİNDEX; other international index; Index Not Scanned), the number of names of the thesis student and whether the author began an academic career after the thesis.

The primary aim of the study was to be able to determine the publication rates of the theses produced in the speciality Anesthesiology and Reanimation between the years 2000 and 2018.

The secondary purpose was to investigate factors affecting publication status, such as gender, university or health ministry education, the subject of the thesis, the writing status in the publication, the intention of pursuing an academic career.

Statistical analysis

Categorical variables are presented as numbers and percentages while continuous variables are presented as mean ± standard deviation and/or median and minimum–maximum. Comparison of the categorical variables between groups was done using Chi-square or Fisher exact test. The normality of distribution for continuous variables was investigated with the Kolmogorov–Smirnov test. The statistical level of significance for all tests was considered to be 0.05. Statistical analysis was performed using SPSS, version (IBM Inc., Armonk, New York, United States).

RESULTS

Thesis authors were female in 52.4% of the 2580 theses included in the study while 59.1% were in the field of general anesthesia and 14.4% in the intensive care field. Furthermore, 88.5% of the thesis authors were from university hospitals. Regardless of publication status, the rate of following an academic career was 15.5%. The rate of publication was 39.1% with 1010 thesis published (Table 1).

The characteristics of the published thesis were as follows. The average delay to publication was 3.46±2.62 years with a wide range from the same year to 19 years. Of the 1010 theses published, 61.4% were in the field of general anesthesia (p<0.001) and 51.9% were written by women. In addition, publication occurred in journals listed on SCI or SCI-E indexes in 36.7%. However, theses were published at a similar rate (36.3%) in other international indexed journals. The rate of the thesis author being the first author in the resulting publication was 89.6%. (Table 2). In addition, although the rate of publication from universities tended to be was higher than from the ministry of health, the difference was not significant (39.5% vs. 36.5%, respectively; p=0.343). The thesis publication rate of those who went on to have an academic career was 72.5% (p<0.001) compared to authors who did not have an academic career (Table 2).

Table 1. Demographic data

Variables	Subgroups	n=2580 (%)
Gender	Female	1352 (52.4)
	Male	1228 (47.6)
Area of the Thesis	General Anesthesia	1526 (59.1)
	Neuroaxial blocks	338 (13.1)
	Intensive Care	372 (14.4)
	Peripheral nerve blocks	244 (9.5)
	Algology	100 (3.9)
Institution	University	2284 (88.5)
	Ministry Of Health	296 (11.5)
Academic Career	Yes	401 (15.5)
Published	Yes	1010 (39.1)

Table 2. Data of Published Theses

Variables		n (%)	
Publication		1010 (39.1)	
Mean±SD (range) publication delay (years)	3.46 ± 2.62 (0-19)		
			p value
Area of the Thesis	General Anesthesia	621 (61.4)	<0.001*
	Neuroaxial blocks	152 (15.0)	
	Intensive Care	126 (12.4)	
	Peripheral nerve blocks	87 (8.6)	
	Algology	24 (2.6)	
Gender	Female	524 (51.9)	0.686
	Male	486 (48.1)	
Published Journal Index	SCI / SCI-E	371 (36.7)	<0.001**
	ULAKBIM (TR INDEX)	236 (23.3)	
	Other International	365 (36.3)	
	Non-Indexed	38 (3.7)	
Authorship Order	1	905 (89.6)	<0.001***
	2	83 (8.2)	
	3	15 (1.5)	
	4	5 (0.5)	
	5	2 (0.2)	
Institution[1]:	University	902 (39.5)	0.343
	Ministry of Health	108 (36.5)	
Academic career[1]	Yes	291 (72.5)	<0.001*
	No	719 (33.4)	

Chi-square, *general anesthesia vs others, ** SCI/SCI-E vs non-indexed, *** first author position vs others.

[1]Percentage of published 2580 theses scanned.

Table 3. Characteristics of The Published Thesis

Variables				n (%)
Publication		Yes		1010 (39.1)
		Institution, n (%)		
		University (902)	Ministry of Health (108)	
Academic career	No	656 (72.8)	63 (58,4)	0.002*
	Yes	246 (27.2)	45 (41,6)	
		Author position		
		1st author	2nd author	
Gender	Female	475 (52.5)	41 (49.4)	0.521
	Male	430 (47.5)	42 (50.6)	
Index	SCI / SCI-E	307 (33.9)	53 (63.8)	<0.001**
	ULAKBIM (TR INDEX)	221 (24.4)	9 (10.8)	
	Other international	343 (37.9)	19 (22.8)	
	Non-indexed	34 (37.5)	2 (2.4)	

*Chi-square, ** for 2nd author: SCI / SCI-E vs others

Characteristics of the theses are given in Table 3. Of authors who published their theses as an academic article, there was no gender difference among those who made an academic career (30.8% vs. 26.9%; p=0.18). The indexes in which the journals that published theses articles were unchanged by whether or not the authors had an academic career (p=0.089) or by their gender (p=0.84).

In addition, in the group who published their thesis, those who received their specialization from the Ministry of Health were more likely to pursue an academic career than those who received their specialization from a university (41.6% vs. 27.2%; p=0.002). There was also a relationship between the index listing the published journals and the author name order. (Table 3).

DISCUSSION

This study investigated the publication rate and characteristics of theses in the Anesthesiology and Reanimation speciality, written between 2000 and 2018 in Turkey. The publication rate was 39.1% and the mean delay between thesis acceptance and journal publication was 3.46±2.62 years. Furthermore, there was no difference in publishing rate when examined in terms of gender of the author or in university-based or health ministry-based authors.

Thesis writing plays a key role in the completion of postgraduate education in both Turkey and the rest of the world. Thesis writing assists the candidate to develop a scientific spirit as well as develop the ability to use inquiry and research techniques, and in the long term, provides analytical problem solving and the ability to critically interpret scientific writing. Considering that the research skills, analytical and organizational skills learned in writing a thesis will serve the candidates for a lifetime, the significance of writing and publishing a thesis-based article is high. However, the publication rate of medical theses is much lower than expected. The low rate of theses publication is actually seen as an important scientific problem in many developing countries, and even in developed countries [2]. These rates vary from country to country and have been reported as 17% in France, 17.6% in Peru, 23.8% in Finland, and 30% in India [3]. In Turkey, these rates are much lower [4, 6, 7]. The publication rate for theses in the Anaesthesiology and Reanimation speciality in Turkey was 11.3% [5]. However, this study only considered 1207 theses produced from universities. In our study, although the publication rate of theses was relatively high (39.1%), it is still somewhat disappointing. We believe that the obligation to publish the theses introduced by the Inter-University Board (IUB) in 2018 has greatly contributed to this increase.

In addition to compelling reasons such as excessive workload, lack of sufficient education,

the requirement to publish in foreign languages, and the low acceptance rate of journals with a high impact factor, the requirement for publication in SCI or SCI-E indexed journals in the Turkish Associate Professorship criteria also caused both a decrease in the rate of publication and a prolonged delay in publication. This delay in publication has previously been reported to be 3.59±2.96 years, 2.9±2.31 years and 3.3 years [5, 8, 9]. In our study, in keeping with previous reports, the mean delay to journal publication was 3.46±2.62 years.

Anesthesiology and Reanimation is a multidisciplinary field of expertise that includes many areas. Hence, there are many subjects to be researched. There are broad research areas, such as general anesthesia, regional anesthesia, peripheral nerve blocks, algology, and intensive care. According to our findings, general anesthesia was the most studied area, and general anesthesia was also the most frequently published thesis topic. These results are similar to those of Yılmaz et al [5].

In accordance with the Associate Professorship criteria used in our country, the obligation to publish in SCI or SCI-E listed and other internationally indexed journals means that authors look first to these journals rather than national journals. This may explain the high publication rates in SCI/SCI-E and other international journals, both in the literature and in our article. (36.7% SCI/SCI-E and 36.3% other international index vs 23.3% Ulakbim/TR index).

In the literature, particularly in the field of Anesthesiology and Reanimation, the number of female authors has increased over the years. Pagel et al. reported the rate of female authors to be 22.9% [10], while it was 31.3% in a second study from the same group [11], both published in 2019. We found the rate of female authorship to be much higher at 51.9%, possibly reflecting gender differences in medical recruitment between Turkey and the USA.

The difference in the publication rate (6.6% vs 1.3%) between the university and the state hospital in the study conducted by Özgen et al. in 2011 [4] was not seen in our study. We found that the rate of publication of university- and Ministry of Health-based theses increased, and there is no difference between them (39.5% vs 36.5%). In addition, the publication rate of theses of those who went on to an academic career was found to be significantly higher.

Finally, our study showed that in the group of those who published their thesis, those who received specialization from the Ministry of Health were more likely to go on to an academic career than those who received specialization from a university (p=0.002).

Our study has some limitations. First, only theses on the CHE Thesis database and to which we were granted access were included. Second, theses that were only published in scientific congresses, were not accepted in the publication category. Third, as an academic career, Dr. Faculty member, Associate Professor, and Professor was included, minor major acquirers are not evaluated in the academic section. However, who has the titles such as Dr., Research Assoc., Assoc. Prof., in his/her minor majors, are included in the study.

This study showed that many theses are never published in a scientific journal and the valuable scientific data they contained therefore remains widely inaccessible. The scientific quality of theses requires improvement, and scientific institutions should take adequate steps to increase their scientific value. This should result in higher international journal publication rates and improve access of all to data obtained during scientific thesis research. We hope that these barriers will be overcome by allowing medical assistants to devote more time to develop their academic skills, perhaps by adding educational programs to write a scientific paper into the basic medical syllabus.

CONCLUSION

Although higher than previously reported, the publication rate of theses was still less than half and the average delay before journal publication was close to 3.5 years. Encouragingly, the proportion of female authors had increased, theses written under the auspices of university or the Ministry of Health were published at the same rate, most theses were published in international indexed journals, and the thesis owner was usually the first author in the journal article.

Author contribution

Study conception and design: İK, MYK, and AK; data collection: İK, MYK, and AK; analysis and interpretation of results: İK, MYK, and AK; draft manuscript preparation: İK. All authors reviewed the results and approved the final version of the manuscript.

Ethical approval

It was decided by the Clinical Research Ethics Committee of Kocaeli Derince Education and Research Hospital that the approval of the ethics committee was not required, since the theses allowed by the authors were examined.

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Conflict of interest

The authors declare that there is no conflict of interest.

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