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ORIGINAL ARTICLE

Publication Status of Urology Theses in Turkey

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ABSTRACT

Objective: Production of a thesis during residency requires a great deal of dedication and effort. It is an honor to share the results of this effort with everyone when the thesis is published. In this study, we aimed to investigate the factors affecting the publication of a thesis in the field of urology.

Methods: Theses completed between 2014 and 2018 were searched in the Institution of Higher Education Thesis Center. Keywords, title, and authors on the thesis were searched in the PubMed and Google Scholar databases. Journal tags were categorized according to whether they are indexed in Medline or not. Publication status was analyzed with the subject of the thesis, the year of thesis was completed, hospital where urology residents graduated, and the current workplace of the urologists.

Results: Three hundred and fifty-three theses were analyzed in this study. The number of theses that were published in index journals and non-index journals was 65 (18.4) and 15 (4.2%), respectively. The median citation for published theses was 2 (0-21). The subject of the thesis, time passed after the thesis, and the current workplace of urologist was found to be statistically significant in the publication status of the theses ($p<0.001$, $p= 0.02$, $p<0.001$, respectively).

Conclusion: Most of the theses produced by urologists were not published. Published theses received few citations. Theses produced from animal studies and a long period passed over the thesis increase the rate of publication. Urologists whose theses have been published mostly work in tertiary care hospitals.

Keywords: Publication, thesis, citation, urology, index

INTRODUCTION

In most countries, completion of a thesis before graduation from medical school is mandatory. In Turkey, the completion of the thesis is necessary for postgraduate physicians before specializing in their field. It is not only mandatory to complete their specialization in their field but also upgrades their skill in the production of hypothesis, analyzing and interpreting of data, and comparing these results with current literature [1].

The academic productivity of residents can be considered as a quality of center to compose the next generation of scientists. For this purpose, academic staff works as a supervisor with residents to produce a scientifically valid thesis. The process from finding a topic to the completion of the thesis is one of the most challenging processes as it needs time and effort for research assistants as well as urology residents. Research skills in this process are not only to introduce an investigation but also to make residents ready with the experience to assess evidence-based medicine before applying it in their future life.

The publication of the thesis, which is the end-point of this tough process, in indexed journals

and citations of this publication in higher impact journals make the thesis more valuable. Additionally, the published thesis is also important in the future academic life of the urologist in Turkey.

Previously, there have been studies from other disciplines and even urology investigating the publication rate of theses [2-4]. However, in our study, all hospitals providing residency training were taken into consideration, and to the best of our knowledge, this is the first study to investigate the importance of places where urologists work currently in the case publication of theses. Furthermore, in the present study, we aimed to investigate the factors affecting the publication rate of thesis produced in the field of urology.

MATERIALS AND METHODS

This study was approved by the institution ethics review committee by providing the decision/protocol number of 2020/224 in November 3rd, 2020. Theses that have been completed in the field of urology between 2014 and 2018 in Turkey were searched in the Electronic Archive of Higher Education Council Dissertation Center (http://tez.yok.gov.tr/UlusalTezMerkezi/) database by using the terms ''urology'' or ''üroloji''.

It is thought that publication and citation of a thesis need approximately two years after the completion of theses (4). So, theses completed after the year of 2018 were not included in this study. Overall, three hundred and fifty-three theses were evaluated in this study. The author's name, institution's name, the place where the residents graduated, and the subject and the completion year of the thesis were recorded.

Subjects of the thesis were categorized into clinical or experimental studies. Clinical studies are also subcategorized into oncology, urolithiasis, andrology and infertility, functional urology, pediatric urology, female urology, and transplantation, and others. The institutions of urology residents graduated were categorized into university hospitals and education and research hospitals. Cities of hospitals located that residents graduated were categorized into three-biggest cities which are Istanbul, Ankara, and Izmir, and others. Current workplaces of urologists were categorized into secondary or tertiary care hospitals.

Keywords, title, and authors of the thesis were searched in the PubMed and Google Scholar databases to check the thesis was published or not. Journal tags are categorized according to whether they are indexed in Medline or not by searching in the United States National Library of Medicine catalog. The citation status of published theses was checked from the Google Scholar database. Publication status was analyzed with the subcategory of the subject of the thesis, hospitals where residents graduated, time passed after the thesis was completed, and the current workplace of the urologists.

Statistical Analysis

All statistical analyses were performed using the SPSS 22.0 (IBM Corp, Chicago, USA) software. Kolmogorov-Smirnov test was applied to examine the normality of variables. After the distribution was checked, descriptive statistics were presented as median (minimum-maximum) to define the parameters. Pearson Chi-square or Fisher's exact test were used for categorical variables comparison to assess statistically significant differences between groups. The level of the confidence interval was 95% and $P<.05$ was regarded as statistically significant.

RESULTS

Three hundred and fifty-three theses were analyzed in this study. Two hundred and fifty-nine (73.4%) residents graduated from the university hospital and 168 (47.7%) of residents graduated from hospitals in the three biggest cities. One hundred and thirty-four (40.9%) urologists work in the secondary care state hospitals followed by tertiary care hospitals (39%). The number of theses that are published was 80 (22.7%) in total, 65 of which were in index journals and 15 were in non-index journals. Published theses had a median of 2 (0-21) citations and no difference was found between published thesis in Medline or not (2 vs 2, p=0.30). The number of published thesis completed in 2014, 2015, 2016, 2017 and 2018 were 23 out of 89 (25.8%), 22 out of 70 (31.4%), 14 out of 60 (23.3%), 14 out of 71 (19.7%), and 7 out of 63 (11.1%), respectively (p=0.068). Comparing the publication

status of theses before and after the year 2016, it was found 45 out of 159 (28.3%) versus 35 out of 194 (18%) (p=0.02). The demographics of urologists and features of the theses are summarised in Table 1.

Most of theses were clinical studies, mostly oncology (n=105) followed by urolithiasis (n=78), while 48 (13.6%) of theses were animal studies. The highest publication rate (50%) was in animal studies (24 out of 48) followed by andrology and infertility (36.8%). The citation score per publication according to the subject of thesis was found higher in pediatric urology and functional urology groups but there was no statistically significant difference between subjects of published theses (p=0.52). Publication and citation status of theses illustrated in Figure 1 and summarized in Table 2.

When the factors affecting the publication status were analyzed, the subject of the thesis, year of the thesis completed, and the current workplace of urologist were found to be statistically significant in multivariate analysis (p<0.001, p=0.017, and p<0.001, respectively). In multivariate analysis, the group of animal experiments for the production of the thesis was the most powerful factor in the publication status of the thesis [OR= 4.68 (2.33-9.37)] (Table 3).

DISCUSSION

The main purpose of education is the use of acquired knowledge and skills actively throughout life by transforming them into behavior. Reaching the available information by research-based education model rather than didactic learning and lecture-based pedagogic education helps to keep the information more in mind [5]. To be up to date by following the literature with the help of research-based learning is mandatory for everyone who has completed their specialty training to refresh their post-graduate knowledge in new diagnoses and treatment methods. For this purpose, producing scientific publications by using scientific thinking and research methods from a doctoral thesis should be within the framework of basic education in medical residency. Shaping the future academic life might be started from finding the unique topic of the thesis. Hence, in this study, we emphasize that it should be taken into consideration by urology

Table 1. Demographics of urologists and features of theses.

		n (%)
Hospitals of residents graduated	University hospitals	259 (73.4)
	Education and research hospitals	94 (26.6)
Cities of hospitals located	Three biggest cities*	168 (47.7)
	Others	185 (52.3)
Subjects of thesis	Oncology	105 (29.7)
	Urolithiasis	78 (22.1)
	Animal experiment	48 (13.6)
	Andrology and ınfertility	38 (10.8)
	Functional urology	37 (10.5)
	Pediatric urology	21 (5.9)
	Female urology	13 (3.7)
	Transplantation and others	13 (3.7)
Publication status of thesis	Published in medline indexed journals	65 (18.4)
	Published in non-medline indexed journals	15 (4.2)
	Unpublished	273 (77.3)
Year the thesis completed	2014	89 (25.2)
	2015	70 (19.8)
	2016	60 (17)
	2017	71 (20.1)
	2018	63 (17.8)
Current workplace of urologists***	Secondary care state hospitals	134 (40.9)
	Tertiary care hospitals**	128 (39.0)
	City hospitals	29 (8.8)
	Private clinics	37 (11.3)

Abbreviations: n, number; %, per cent; (min- max), (minumum-maximum). * refers to Istanbul, Ankara, Izmir; ** refers to University Hospitals and Education and Research Hospitals, *** stated for 328 theses.

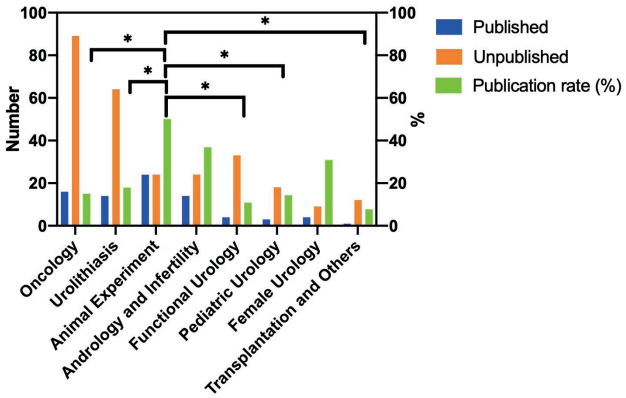

Figure 1. The number of published and unpublished theses, and publication rate according to the the subject of thesis. Chi-square test was used to assess statistically significant differences between groups (* stated for p<0.001).

Table 2. Publication and citation status according to subjects of theses.

		Published n (%)	p	Citation Score median (min-max)	p
Subjects of theses	Oncology (n=105)	16 (15.0)	**<0.001**	2 (0-17)	0.52
	Urolithiasis (n=78)	14 (17.9)		4.5 (0-18)	
	Animal experiment (n=48)	24 (50.0)		2 (0-19)	
	Andrology and infertility (n=38)	14 (36.8)		3 (1-21)	
	Functional urology (n=37)	4 (10.8)		8 (0-16)	
	Pediatric urology (n=21)	3 (14.3)		11 (0-11)	
	Female urology (n=13)	4 (30.8)		1.5 (0-10)	
	Transplantation and others (n=13)	1 (7.7)		0 (0-0)	

Abbreviations: n, number; %, per cent; min-max, minumum-maximum. Chi-square test was used and p<.05 was considered statistically significant and marked in bold.

Table 3. Factors affecting the publication of theses.

		Published n (%)	P	Multivariate Analysis	
				OR (95% CI)	p
Categories of theses	Animal experiments (n=48)	24 (50)	**<0.001**	4.68 (2.33-9.37)	**<0.001**
	Clinical studies (n=305)	56 (18.3)			
Years of theses	2014-2015 (n=159)	45 (28.3)	**0.02**	1.94 (1.12-3.33)	**0.017**
	2016-2018 (n=194)	35 (18.0)			
Hospitals of residents graduated	University hospitals (n=259)	55 (21.2)	0.28		
	Educ and res hospitals (n=94)	25 (26.5)			
Cities of hospitals located	Three biggest cities* (n=168)	41 (24.4)	0.46		
	Others (n=185)	39 (21.0)			
Current workplaces of urologists	Tertiary care hospitals (n=154)	54 (35.0)	**<0.001**	3.30 (1.88-5.79)	**<0.001**
	Others (n=174)	26 (14.9)			

Abbreviations: n, number; %, per cent; OR, odds ratio; CI, confidence interval; Educ and Res; Education and Research. * refers to Istanbul, Ankara, Izmir. Chi-square test was used p <.05 was considered statistically significant and marked in bold.

residents to determine the subject in publication potential as the first step.

The publication rate of thesis in different scientific fields has been investigated in many studies and has been found between 3.5% to 49.7% from nationally and 17.6% to 30% internationally [3,4,6-9]. Ozgen et al. investigated publication patterns of more than twenty-five thousand medical theses between the years 1980 to 2004. The distribution of publication rate in the different fields was from 0.6% to 13.4% as the urology thesis on average (5.7%) in that study [4]. Apart from this study, Yuksel et al. investigated the publication rate of dissertations in the field of urology from medical faculties before the year 2011 [2]. It was found that the overall publication rate was 49.7% and the publication rate in science citation indexed journal was 32.7%. The citation score per publication was between 0.6 to 28 (median citation was 2) according to the subjects of theses. This study included the thesis at least five years after the thesis was completed according to the suggestion of Scherer et al. [10] . In fact, we included the theses at least 2 years after completion and found almost half of the rate of the publications and similar citation score per publication but still comparable to other medical fields published previously [3,11]. However, in our study, a thesis was written 5 years before today more possibility to be published both in univariate and multivariate analysis [(28.3% vs 18%, OR 1.9 (1.1-3.3), p=0.02)].

Both medical students and residents are educated in medical faculties but education and research hospitals only have residents in Turkey. Considering the rate of publication from the thesis in hospital groups and cities residents graduated from, state hospital was found relatively lower rate than the university hospitals and military hospitals and three biggest cities group was found higher rate than the other cities [4]. In our study, we found that there was no difference in hospital groups and cities of residents who graduated. This result which is desirable should show that there is not

any inequality between cities and hospitals where residents graduated from in terms of publication rate.

Publication rate and citation score are affected by subject or type of thesis. Mostly, prospective and experimental animal models have more chance to be published [3,12,13]. In our study, similar to the previous studies, it was seen that there was more publication rate on theses produced from animal-model experimental studies compare to the clinical studies [(50% vs 18%, OR=4.68 (2.33-9.37), p<0.001)]. Although there is a higher publication rate in theses produced from animal studies, there is a discrepancy between citation scores and publication rate in animal studies. In our study, statistically insignificant higher citation scores in theses produced from pediatric urology may be due to the relatively low number of thesis in that group.

The publication also affected by the author's feature (lack of time or ability to use English), subject and method of study (barriers to get ethical approval for prospective clinical studies or negative/unoriginal results), or journals to be submitted (publication fee, lack of funding for open access, and mismatch of the subject of study with the field of the journal [14]. Despite all these limitations and difficulties, it is known that publishing is to share the acquired knowledge about current literature and skills in your field with an academic environment thus serving all these results to the progress of science. This is not only the desire to present their studies to academic life and also to become a part of the academic community which has been supported in the study of Sayek et al. [15] that theses of people with academic career expectations have been published more. The result we obtained in our study was found to be more than three times published theses of people working in tertiary care hospitals compared to those working in secondary care [(35% vs 14.9%, OR=3.3 (1.8-5.7), p<0.001)]. This outcome seems that is a rationale since specialists in academic hospitals tend to publish their work. Our study confirms statistically that if urologists want to work in a tertiary care hospital they should start by producing higher-quality thesis to be published.

We have some limitations in our study. We did not analyze the seniority of consultant effect in the publication rate of theses. Another limitation is that urologists were not investigated whether they were published their thesis before or after they started to the tertiary care hospital.

In conclusion, most of the theses written in the field of urology between 2014 to 2018 were not published. Published theses got relatively low citation scores. Theses produced from experimental studies and a long period passed over the thesis completion increase the rate of publication. To increase the publication rate of theses, the residents should be encouraged to study especially in the animal model experiments under a qualified supervisor for enough time. A great majority of the residents who published their theses have been currently working in a tertiary academic hospitals. The urologist who wants to work in a more comprehensive tertiary care hospital should make an effort to publish his/her thesis.

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Author contribution

Study conception and design: ES and MK; data collection: MK; analysis and interpretation of results: ES; draft manuscript preparation ES. All authors reviewed the results and approved the final version of the manuscript.

Ethical approval

This study by decision/protocol number of 2020/224 was approved by the institution ethics review committee and was performed in accordance with the ethical standards of the Declaration of Helsinki.

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Conflict of interest

The authors declare that there is no conflict of interest.

Availability of data and material

The data that support the findings of this study are available from the corresponding author, E.S. upon reasonable request.

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