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Is an Academic Title an Aim or a Device? Publication Productivity of Urologists in Turkiye

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What's known on the subject? and What does the study add?

As it is known, producing a scientific publication requires a long effort and endeavor. Scientific researches play a key role not only in the contribution of individuals at the academic level but also contribute to the development of countries. This study is a unique study to evaluate publication productivity of urologists by comparative analysis of parameters affecting the quality of publications in Turkiye for the first time. This bibliometric study showed that the number and quality of publications of urologists in Turkiye are very low. Relatively younger and at the beginning of their academic level and also tertiary care physicians publish more and receive more citations for their publications.

Abstract

Objective: The publication performance is an objective indicator for individuals and institutions as well as science policy and healthy implementation of the country. We revealed the quality of the publications and citations of current urologists in Turkiye.

Materials and Methods: The publication and citation status of 1200 urologists working in Turkiye between the years 2016-2020 were included in the study. Socio-demographic characteristics of urologists like age, title, type of city, geographical region of the city, and type of hospital they work in and the number of publications, citations, indexed journal publications, and the first author publication status were examined in December 2020. The Social Security Instution database was used for sociodemographic characteristics of urologist; while PubMed and Google Scholar were used for information on publications.

Results: The median age of the urologists was 44 (30-76) years. The median number of publications, index journal publication, the first author publication, and citations were 1 (0-68), 1 (0-66), 0 (0-24), and 1 (0-1025) for the years specified, respectively. The publication status was significantly higher in the groups the age range of 30 and 40 years, associate professors (odds ratio 44.61 and 35.97, respectively) ($p<0.001$).

Conclusion: Publications produced in the field of urology in our country are still not of sufficient quality. Urologists between the ages of 30-40 years old, associate professors, and who working in tertiary care hospitals have published more articles and received more citations to these publications.

Keywords: Number of citations, number of publications, publication quality, urologist

Introduction

Scientific research is a planned and systematic study that collecting, interpreting, and evaluates data to contribute to producing knowledge in various types of documents, such as journal articles, conference proceedings, research reports, and books for the benefit of society (1). The publication and citation are objective indicators of the scientific performance of individuals and institutions as well as science policy and healthy implementation of the country (2).

The number of publications, especially scientifically indexed international journals with higher impact factors and the number of citations to the publications are known as the main factors in the performance evaluation of the researchers. The relative citation ratio is another predictive value for publication quality, which is obtained by dividing the average citation rate per publication in a subject area of a country by the average citation rate per publication in the relevant field worldwide (3).

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There has been an increase in bibliometric studies, especially recently, with the help of the online database. Although there are national or international bibliometric studies in different fields of science as well as medicine in the literature; to the best of our knowledge, there were no bibliometric research that included publication productivity urologists in Turkiye (3-6). Therefore, we investigated the quality of the publications and citations in the field of urology and demographic parameters affecting the publication productivity of current urologists in Turkiye.

Materials and Methods

This study was approved by the Local Institutional Ethics Review Committee (protocol number: 2020/443). We included and evaluated the publications of a total number of 1.200 urologists between January 2016 and December 2020 in this study. Since this is a bibliometric study, informed consent of participants was not conducted in this study. Socio-demographic characteristics of urologists, such as age, title, type of city, geographical region, and the type of hospital they work in examined comparatively with the number of publications, the number of citations of those publications, the number of publications published in MEDLINE index journals, and the number of first-the author publications. The Social Security Institution database was used for sociodemographic characteristics of urologists; and PubMed and Google Scholar databases were used for information on features of publications. The group of age and titles of urologists, and the cities, geographic regions, and hospital types of the urologist worked in are categorized accordingly seen in Table 1.

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 of normality was checked, quantitative data were presented as median (minimum-maximum) and categorical variables were expressed as numbers and percentages to define the parameters. Comparison of categorical variables was accomplished using Pearson chi-square or Fisher's Exact tests. Logistic regression analysis was performed for multivariable analyses. The confidence interval (CI) was 95% and the level of significance was considered at the value of $p<0.05$.

Results

The median age of a total number of 1.200 urologists' was 44 (30-76) years. Thirty-four percent of urologists were between the ages of 30-40 and 60.4% of urologists were specialists. Of the urologists, 43.3%, 37.7%, and 30.3% were working in three metropolitan cities (Ankara, İstanbul, and İzmir), in the Marmara Region, and in state hospitals, respectively. The median number of publications, index journal publications, the first author publications, and citations in the relevant years were 1 (0-68), 1 (0-66), 0 (0-24), and 1 (0-1025), respectively.

The highest number of median publications was 3 (0-51) in 30-40 years old, 10 (0-51) in associate professors, 1 (0-68) in the three biggest metropolitan cities, 3 (0-25) in the Eastern Anatolia Region, and 6.5 (0-47) in university hospital groups. Although similar results in the number of citations, the number of the index journal publications, and the number of first-author publications were seen, only the median number of citations in the private university hospital group was higher 22 (0-1025). The number of publications and citation parameters according to the demographics of urologists is shown in Table 1.

There were no publications, indexed journal publications, the first author publications, and citations to their publications in 44.2%, 47.2%, 72.2%, and 48.4% of urologists in the relevant years, respectively. Seventy-six point five percent and 69.1% of urologists in 30-40 years old had publications and citations, whereas, urologists in 61 and over years old had 31.3% and 26.7% had publications and citations, respectively ($p<0.001$). The higher the first author and the indexed journal publication rate was seen in 30-40 years old group. Ninety-two point four percent and 91.7% of associate professors had publications and citations, respectively, whereas, almost only one of three specialists had publications and citations. Eighty-seven point five percent and 85.5% of urologists working in university hospitals and private university hospitals had publications, respectively. Eighty-five point one percent of urologists working in university hospitals had indexed journal publications and 55.1% of urologists working in private university hospitals had the first author publication. The distribution of publication, citation, indexed journal publication, and the first author publication status according to demographics are presented and summarized in Table 2 and Table 3. In multivariable regression analyses, age ranges, titles, and hospital types, urologists' work was a predictive factor in publication status. Among age ranges, the odds ratio (OR) of 30-40 years old compared to the years of 61 and over the group was 44.61 (95% CI 22-71-87.66), and it was seen that as increased age range decreased, the rate of publication status ($p<0.001$). On the basis of titles of urologists, although all academic staff had higher OR than specialists, the associate professor group had the highest OR (OR 35.97, 95% CI 16.62-77.80) ($p<0.001$). As it was seen publication status was higher in the university hospital group in univariate analyses, urologists working in education and research hospitals were more likely to produce publication when it was compared to urologists work in secondary care state hospitals (OR 5.34, 95% CI 3.28-8.71). Multivariate analysis of publication status according to the demographics of urologists is shown in Table 4.

Discussion

Criteria in the scientific evaluation of countries are the number of scientific publications, the number of citations, the number of citations per publication, the amount of patents, innovative utility models, entrepreneurship, and national and international projects. Hence, this bibliometric research was a unique study to evaluate publication productivity of urologists since by comparative analysis of parameters affecting the quality of publications in Turkiye for the first time.

Especially, the number of citations is more important than the number of publications in scientific evaluation. Turkiye addressed publications, especially in clinical science, had a low relative citation ratio when it was compared to the world average (0.25 vs. 1.0) (7). Because of this, the publication impact value of Turkiye is below the average of the world and it was ranked 51st in the world (2.92 vs 6.2). Switzerland is excluded from the top 10 according to the total number of publications, while it is at the top of the world in terms of publication impact value. Fifty-five percent and 48% of the publications produced worldwide and in Turkiye were cited, respectively. In a study comparing publications of countries between 2010 and 2015, was stated that although the number of publications from Turkiye is in the upper-middle rank, whereas the number of citations was in the middle-lower rank, which revealed that relatively lower impact studies had been conducted. Obviously, it is seen that the quality of relevant Turkiye addressed scientific publications

Table 1. Distribution of the number of publication, indexed journal publication, the first author publication, and citation of urologists according to demographics of urologists

	Frequency n (%)	Number of publication med (min-max)	Number of indexed journal publication med (min-max)	Number of the first author publication med (min-max)	Number of citation med (min-max)
Age ranges (y)					
30-40	408 (34.0)	3 (0-51)	2 (0-44)	0 (0-24)	7 (0-512)
41-50	400 (33.3)	1 (0-48)	0 (0-41)	0 (0-15)	0 (0-51)
51-60	261 (21.8)	0 (0-68)	0 (0-66)	0 (0-14)	0 (0-1.025)
61 and over	131 (10.9)	1 (0-68)	0 (0-23)	0 (0-4)	0 (0-237)
Titles					
Specialist	725 (60.4)	0 (0-34)	0 (0-32)	0 (0-18)	0 (0-19)
Assist. Prof.	121 (10.1)	6 (0-34)	4 (0-32)	1 (0-18)	19 (0-382)
Assoc. Prof.	145 (12.1)	10 (0-51)	7 (0-44)	2 (0-24)	36 (0-512)
Prof.	209 (17.4)	4 (0-68)	3 (0-66)	0 (0-11)	10 (0-1.025)
Cities					
Metropolitan cities*	520 (43.3)	1 (0-68)	1 (0-66)	0 (0-24)	2 (0-1.025)
Others[&]	680 (34.3)	1 (0-44)	1 (0-43)	0 (0-15)	0 (0-512)
Geographic Regions					
Marmara	453 (37.7)	1 (0-68)	1 (0-66)	0 (0-24)	1 (0-1.025)
Aegean	152 (12.7)	0 (0-33)	0 (0-30)	0 (0-10)	0 (0-220)
Mediterranean	104 (8.7)	1 (0-19)	0 (0-16)	0 (0-15)	2.5 (0-112)
Black Sea	147 (12.3)	1 (0-23)	0 (0-19)	0 (0-14)	0 (0-269)
Central Anat.	199 (16.5)	2 (0-37)	1 (0-31)	0 (0-19)	4 (0-382)
Eastern Anat.	78 (6.5)	3 (0-25)	2 (0-18)	0 (0-8)	6 (0-156)
Southeastern Anat.	67 (5.6)	1 (0-19)	1 (0-16)	0 (0-8)	1 (0-163)
Hospital types					
University H.	248 (20.7)	6.5 (0-47)	5 (0-44)	0 (0-24)	18.5 (0-512)
Educ and Res H.	203 (16.9)	3 (0-51)	2 (0-44)	0 (0-13)	9 (0-222)
Private H.	316 (26.3)	0 (0-25)	0 (0-23)	0 (0-15)	0 (0-251)
Private Univ H.	69 (5.8)	5 (0-68)	3 (0-66)	1 (0-11)	22 (0-1.025)
State H.	364 (30.3)	0 (0-33)	0 (0-32)	0 (0-18)	0 (0-199)
Total	1.200 (100)	1 (0-68)	1 (0-66)	0 (0-24)	1 (0-1.025)

*: States for Ankara, İstanbul, and İzmir, [&]: States for rest of the cities other than that metropolitan cities, N: Number; %, percent, min-max: Minumum-maximum, Assist. Prof: Assistant Professor, Assoc. Prof.: Associate Professor, Prof.: Professor, H.: Hospital, med.: Median, Educ.: Education, Res.: Research, Univ.: University, Anat.: Anatolia

(impacts of publication, citation per publication, etc.) is clearly low compared to similar countries in terms of population, the number of academic staff and universities, schooling rate, and socio-economical level (8). To the best of our knowledge, there were no data in relative citation ratio of other fields in medical science publication addressed from Turkiye. Here, in our study, we found that urologists got the number of median one citation and publications in the relevant years.

Countries with a high socioeconomic level correlate with the higher citation/publication rates and h indexes since they have better technical facilities, allocate more funds for scientific research and have deeper scientific traditions (9). The USA was among the top three during the years 2010 to 2015, while China ranked 5th in 2010 and 2nd in 2015 by increasing the number of publications by 122% (8). Considering the publication productivity of our country, it is seen that the publications addressed to Turkiye have increased gradually over the years. In the 2010 to 2015 period, Turkiye also increased the number of publications by 39% and is still ranked in the first 20s. Between the years 2010 to 2015, most of the publications produced in

Table 2. Distribution of publication and citation status according to demographics of urologists

	Frequency n (%)	Publication			Citation		
		No, n (%)	Yes, n (%)	p	No, n (%)	Yes, n (%)	p
Age ranges (y)							
30-40	408 (34.0)	96 (23.5)	312 (76.5)	**<0.001**	126 (30.9)	282 (69.1)	**<0.001**
41-50	400 (33.3)	199 (49.8)	201 (50.2)		208 (52.0)	192 (48.0)	
51-60	261 (21.8)	145 (55.6)	116 (44.4)		151 (57.9)	110 (42.1)	
61 and over	131 (10.9)	90 (68.7)	41 (31.3)		96 (73.3)	35 (26.7)	
Titles							
Specialist	725 (60.4)	455 (62.8)	270 (37.2)	**<0.001**	492 (67.9)	233 (32.1)	**<0.001**
Assist. Prof.	121 (10.1)	19 (15.7)	102 (84.3)		24 (19.8)	97 (80.2)	
Assoc. Prof.	145 (12.1)	11 (7.6)	134 (92.4)		12 (8.3)	133 (91.7)	
Prof.	209 (17.4)	45 (21.5)	164 (78.5)		53 (25.4)	156 (74.6)	
Cities							
Metropolitan cities*	520 (43.3)	218 (41.9)	302 (58.1)	0.33	240 (46.2)	280 (53.8)	0.38
Others[&]	680 (56.7)	312 (45.8)	368 (54.2)		341 (50.1)	339 (49.9)	
Geographic regions							
Marmara	453 (37.8)	207 (45.7)	246 (54.3)	**0.005**	224 (49.4)	229 (50.6)	**0.01**
Aegean	152 (12.7)	82 (53.9)	70 (46.1)		89 (58.6)	63 (41.4)	
Mediterranean	104 (8.7)	44 (42.3)	60 (57.7)		48 (46.2)	56 (53.8)	
Black Sea	147 (12.3)	71 (48.3)	76 (51.7)		77 (52.4)	70 (47.6)	
Central Anat.	199 (16.6)	76 (38.2)	123 (61.8)		82 (41.2)	117 (58.8)	
Eastern Anat.	78 (6.5)	22 (28.2)	56 (71.82)		28 (35.9)	50 (64.1)	
Southeastern Anat.	67 (5.6)	28 (41.8)	39 (58.2)		33 (49.3)	34 (50.7)	
Hospital types							
University H.	248 (20.7)	31 (12.5)	217 (87.5)	**<0.001**	38 (15.3)	210 (84.7)	**<0.001**
Educ and Res H.	203 (16.9)	51 (25.1)	152 (74.9)		62 (30.5)	141 (69.5)	
Private H.	316 (26.3)	196 (62.0)	120 (38.0)		208 (65.8)	108 (34.2)	
Private Univ H.	69 (5.8)	10 (14.5)	59 (85.5)		12 (17.4)	57 (82.6)	
State H.	364 (30.3)	242 (66.5)	122 (33.5)		261 (71.7)	103 (28.3)	
Total	1200 (100)	530 (44.2)	670 (55.8)		581 (48.4)	619 (51.6)	

*: States for Ankara, İstanbul, and İzmir, [&]: States for rest of the cities other than that metropolitan cities, N: Number, %, per cent, min-max: Minumum-maximum, Assist. Prof.: Assistant Professor, Assoc. Prof.: Associate Professor, Prof.: Professor, H.: Hospital, med.: Median, Educ.: Education, Res.: Research, Univ.: University, Anat.: Anatolia, chi-square test was performed and p<0.05 was considered statistically significant and marked in bold

Turkiye, same as in the world, were produced in the field of medical science. Whereas, most of the publications produced worldwide were in the field of biochemistry and molecular biology, but in Turkiye, mostly from the surgical disciplines. The number of publications produced in the field of urology and nephrology was ranked in 10th but, they were in 43rd place according to the impact value of publications (8).

Studies have shown that the publication of medical science in Turkiye about 40-44% of total publications. Eighty-five percent, 28%, and 17.33% of these publications were produced by university hospitals, training and research hospitals, and state, private and military hospitals, respectively (10). In our study, similar to the previous results, it was observed that urologists working in university and research and education hospitals published more, received more citations to their publications, had more publications in index journals and were more the first authors in the publications. This situation can be explained by the deep-rooted data history of the universities, the continuity

Table 3. Distribution of indexed journal publication and the first author publication status according to demographics of urologists

	Frequency n (%)	Indexed journal publication			The first author publication		
		No, n (%)	Yes, n (%)	p	No, n (%)	Yes, n (%)	p
Age ranges (y)							
30-40	408 (34.0)	116 (28.4)	292 (71.6)	**<0.001**	244 (59.8)	164 (40.2)	**<0.001**
41-50	400 (33.3)	207 (51.7)	193 (48.3)		280 (70.0)	120 (30.0)	
51-60	261 (21.8)	151 (57.1)	110 (42.1)		222 (85.1)	39 (14.9)	
61 and over	131 (10.9)	96 (73.3)	35 (26.7)		121 (92.41)	10 (7.6)	
Titles							
Specialist	725 (60.4)	479 (66.1)	246 (33.9)	**<0.001**	622 (85.8)	103 (14.2)	**<0.001**
Assist. Prof.	121 (10.1)	22 (18.2)	99 (81.8)		56 (46.3)	65 (53.7)	
Assoc. Prof.	145 (12.1)	14 (9.7)	131 (90.3)		48 (33.1)	97 (66.9)	
Prof.	209 (17.4)	55 (26.3)	154 (73.7)		141 (67.5)	68 (32.5)	
Cities							
Metropolitan cities*	520 (43.3)	235 (45.2)	285 (54.8)	0.36	360 (69.2)	160 (30.8)	0.09
Others&	680 (22.4)	135 (49.2)	345 (51.8)		507 (74.5)	173 (25.5)	
Geographic Regions							
Marmara	453 (37.8)	224 (49.4)	229 (50.6)	**0.01**	326 (72.0)	127 (28.0)	0.37
Aegean	152 (12.7)	83 (54.6)	69 (45.4)		117 (77.0)	35 (23.0)	
Mediterranean	104 (8.7)	54 (51.9)	50 (48.1)		90 (76.9)	24 (23.1)	
Black Sea	147 (12.3)	74 (50.3)	73 (49.7)		106 (72.1)	41 (27.9)	
Central Anat.	199 (16.6)	81 (40.7)	118 (59.3)		141 (70.9)	58 (29.1)	
Eastern Anat.	78 (6.5)	25 (32.1)	53 (67.9)		49 (62.8)	29 (37.2)	
Southeastern Anat.	67 (5.6)	29 (43.3)	38 (56.7)		48 (71.6)	19 (28.4)	
Hospital types							
University H.	248 (20.7)	37 (14.9)	211 (85.1)	**<0.001**	127 (51.2)	121 (48.8)	**<0.001**
Educ and Res H.	203 (16.9)	59 (29.1)	144 (70.9)		117 (57.6)	86 (42.4)	
Private H.	316 (26.3)	206 (65.2)	110 (34.8)		264 (83.5)	52 (16.5)	
Private Univ H.	69 (5.8)	15 (21.7)	54 (78.3)		31 (44.9)	38 (55.1)	
State H.	364 (30.3)	253 (69.5)	111 (30.5)		328 (90.1)	36 (9.9)	
Total	1200 (100)	570 (47.5)	630 (52.5)		867 (72.2)	333 (27.8)	

*: States for Ankara, İstanbul, and İzmir, &: States for rest of the cities other than that metropolitan cities, N: Number, %, per cent, min-max: Minumum-maximum, Assist. Prof.: Assistant Professor, Assoc. Prof.: Associate Professor, Prof.: Professor, H.: Hospital, med.: Median, Educ.: Education, Res.: Research, Univ.: University, Anat.: Anatolia, chi-square test was performed and p<0.05 was considered statistically significant and marked in bold

of the academic vision, and the use of their socio-economic, cultural, and scientific advantages.

Onat (11) revealed as a reason for the quantitative and qualitative decline of publications in advancing ages that decreased interest and encouragement in academic research due to insufficient government support for research, performance-based clinical functioning, and not finding enough time to conduct research. It has been observed that in our study, young urologists (30-40 years old) and associate professors because the effect of promotion criteria to becoming associate professors have more publications even in indexed journals, get more citations to their publications and are mostly the first authors in their publications.

International co-authored papers and multicenter collaboration positively affect the publication productivity and citation rate. Furthermore, it is known that the geographically improved region has better publication quality and productivity (12). In our study, in contrast to expected, urologists working in Eastern Anatolia, a relatively lower developed region has higher the number of publications (median: 3) and citations (median: 6). However, it was not statistically significant in multivariate analyses (p=0.79). We can explain that there was no geographic centralization in terms of publication productivity in the field of urology in our country.

Study Limitations

We also have some limitations to our study. Although we included a great number of urologists and their publications in this study, it was still sampled about one out of three of all urologists. We did not investigate which study with the highest number of citations conducted by urologists was multicenter or international collaboration.

Conclusion

It has been observed that the publications produced in the field of urology in our country are still not of sufficient quality. Young urologists tend to produce more publications especially due to the criteria for academic promotion. To increase the value of academic vision, the interest and awareness of academicians for the higher scientific quality of publication productivity can be increased with events organized by the Higher Education Council and universities by encouraging the scientists to produce science and technology.

Table 4. Multivariate analysis of publication status according to demographics of urologists

	p*	Multivariate analysis		
		OR	95% CI	p
Age ranges (y) (comparison to years of 61 and over)				
30-40	**<0.001**	44.61	22.71-87.66	**<0.001**
41-50		6.47	3.41-12.26	**<0.001**
51-60		2.44	1.32-4.51	**0.004**
Titles (comparison to specialist)				
Assist. Prof.	**<0.001**	5.19	2.49-10.81	**<0.001**
Assoc. Prof.		35.97	16.62-77.80	**<0.001**
Prof.		22.57	11.60-43.90	**<0.001**
Geographic Regions (comparison to Southeastern Anat.)				
Marmara	**0.005**	0.99	0.92-1.06	0.79
Aegean				
Mediterranean				
Black Sea				
Central Anat.				
Eastern Anat.				
Hospital types (comparison to state h.)				
University H.	**<0.001**	2.62	1.33-5.17	**0.005**
Educ and Res H.		5.34	3.28-8.71	**<0.001**
Private H.		0.97	0.63-1.49	0.9
Private Univ H.		2.44	0.96-6.17	0.059

*: States for p-value of publication status of urologists obtained from chi-square test, N: Number, %, per cent, min-max: Minumum-maximum, Assist. Prof.: Assistant Professor, Assoc. Prof.: Associate Professor, Prof.: Professor, H.: Hospital, Educ.: Education, Res.: Research, Univ.: University, Anat.: Anatolia, OR: Odds ratio, CI: Confidence interval, logistic regression analysis was performed and p<0.05 was considered statistically significant and marked in bold

Ethics

Ethics Committee Approval: This study was approved by the Local Institutional Ethics Review Committee (Bolu Abant İzzet Baysal University Clinical Researches Ethics Committee Approval, protocol number: 2020/443, date: 13.10.2020).

Informed Consent: Since this is a bibliometric study, informed consent of participants was not conducted in this study.

Peer-review: Externally peer-reviewed.

Authorship Contributions

Surgical and Medical Practices: G.A., E.S., Concept: G.A., E.S., Design: G.A., E.S., Data Collection or Processing: G.A., E.S., Analysis or Interpretation: G.A., E.S., Literature Search: G.A., E.S., Writing: G.A., E.S.

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