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CONTENT AND BIBLIOMETRIC ANALYSIS OF ARTICLES PUBLISHED IN THE JOURNAL OF TURKISH SPINAL SURGERY

TÜRK OMURGA CERRAHİSİ DERGİSİ'NDE YAYINLANMIŞ MAKALELERIN İÇERİKLERİ VE BİBLİYOMETRİK ANALİZİ

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SUMMARY:

Objectives: To conduct a content and bibliometric assessment of publications within the Journal of Turkish Spinal Surgery (JTSS) and report the publication trends.

Material and Methods: All available JTSS manuscripts published from 1990 through June 2016 were reviewed. The mentioned time period evaluated by dividing in 3 parts. Retrospective or prospective clinical articles, topical reviews, meta-analyses, case reports/series, experimental studies, expert opinions and biographies/chronologies were included in the current analysis. Articles were coded by 3 reviewers based on the first author and article characteristics.

Results: There was a total of 754 articles. The first author was orthopaedic surgeon in 559'u (74,1%) and neurosurgeon in 150 (19,8%) articles. The top 3 institutions to submit article were Dokuz Eylul University Medical Faculty (n=80, 10,6%), Ufuk University Medical Faculty (n=41, 5,4%) and Ankara University Medical Faculty (n=37, %4,9) respectively. The top 3 cities to submit articles were Ankara (n=214, 28,3%), İstanbul (n=197, 26,1%) and İzmir (n=108, 14,3%) respectively. The study was retrospective in 367 (48,6%), prospective in 35 (4,6%) and experimental in 31 (4,1%) articles. The most studied subjects of the studies were spinal deformity (n=181), spinal trauma (n=174), degenerative spine (n=130), spine tumors (n=71) and spine infections (n=65).

Conclusion: It is found out that most of the articles are consisted of retrospective studies, reviews and case report, which are with lower level of evidence. We think that this is due to the fact that the journal is not indexed in well-known data bases such as PubMed. It is essential to increase the impact factor of JTSS and make it better known in order to improve Turkish spine surgery research and practice. For this reason, we think Turkish spine surgeons supporting JTSS with scientifically qualified studies with higher levels of evidence will help achieving this goal.

Key Words: Spine surgery; Journal of Turkish Spinal Surgery; bibliometric analysis; publication trends; journal; research.

Level of Evidence: Bibliometric analysis, Level III.

ÖZET

Amaç: Türk Omurga Cerrahisi Dergisi'nde (JTSS) yayınlanmış makalelerin içerik ve bibliyometrik değerlendirmesinin yapılması ve yayın eğilimlerinin rapor edilmesidir.

Materyal ve Metodlar: JTSS dergisinde 1990- Haziran 2016 tarihleri arasında yayınlanmış olan tüm makaleler değerlendirildi. Bu periyod 3'e bölünerek incelendi. Retrospektif/prospektif klinik çalışmalar, derlemeler, meta analizler, olgu sunumları/serileri, deneysel çalışmalar, uzman görüşleri ve biyografiler/tarihçeler çalışmaya dâhil edildi. Tüm makaleler 3 değerlendirici tarafından makale ve birinci yazar özellikleri açısından etiketlendi.

Sonuçlar: Toplam makale sayısı 754 idi. İlk yazarların 559'u (%74,1) ortopedi ve travmatoloji uzmanı, 150'si (%19,8) nöroşirurji uzmanı idi. İlk yazarların kurumlarına göre en çok makale gönderilen ilk 3 kurum sırasıyla Dokuz Eylül Üniversitesi Tıp Fakültesi (n=10,6% ,80), Ufuk Üniversitesi Tıp Fakültesi (n=41, %5,4) ve Ankara Üniversitesi Tıp Fakültesi (n=37, %4,9) idi. Makalelerin en çok gönderildiği ilk 3 şehir sırasıyla Ankara (n=214, %28,3), İstanbul (n=197, %26,1) ve İzmir (n=108, %14,3) idi.. Çalışmaların 367'i (%48,6) retrospektif, 35'i (%4,6) prospektif, 31'i (%4,1) deneysel çalışma idi. Deformite (n=181), omurga travmaları (n=174), dejeneratif omurga hastalıkları (n=130), omurga tümörleri (n=71) ve omurga enfeksiyonları (n=65) başlıca işlenen ana konulardı.

Çıkarımlar: Yayınlanan makalelerin çoğunluğunu daha düşük kanıt düzeyine sahip retrospektif çalışmaların, derlemelerin ve olgu sunumlarının oluşturduğu görülmektedir. Bu durumun derginin Pubmed gibi internet veri tabanlarında taranmıyor olmasına bağlı olduğunu düşünmekteyiz. JTSS dergisinin bilinirliğinin arttırılarak, etki (impakt) faktörünün yükselmesi ve uluslararası indekslerde taranır hale gelmesi Türk omurga cerrahisinin gelişimi ve dünyada daha üst sıralarda yer alması açısından önem arz etmektedir. Bu sebeple Türk omurga cerrahlarının JTSS dergisinin bilimsel açıdan kaliteli, kanıt düzeyi daha yüksek çalışmalarla desteklemesinin bu amaca hizmet edeceğini düşünmekteyiz.

Anahtar Sözcükler: Omurga cerrahisi; Türk Omurga Cerrahisi Dergisi; bibliometrik analiz; yayın trendi; araştırma.

Kanıt Düzeyi: Bibliyometrik analiz, Düzey III

INTRODUCTION

The Journal of Turkish Spinal Surgery (JTSS) (International Standard Serial Number (ISSN) 1301-0336) is a peer-reviewed journal which is issued quarterly. The journal publishes clinical or basic research, topical reviews, and case reports/series after approval by the Editorial Board. It has been the official journal of the Turkish Spinal Surgery Society since 1990 being as old as the Turkish Spinal Surgery Society. The first congress organized by the Society took place in Çeşme, Izmir, coincident with the publication of the first four issues. Authors were encouraged by the Society to prepare original articles from the studies presented in international congresses organized by the Society every two years, and these articles were published in the Journal. As of 2016, the society began publishing only in English in order to promote the journal to an international audience. Moreover, the articles dating after the 1st issue of 23rd volume were all translated in English.

The word "bibliometrics" has been derived from the Latin and Greek words "biblio" and "metrics" which refer to the application of mathematics to the study of bibliography. The term was first described in 1969 [17]. It is a generic term for a range of evaluations directed at quantifying output levels, collaboration patterns and impact characteristics of scientific research. In other words, it is the organization, classification and quantitative evaluation of the publication pattern of macro-communication, along with their authorship, by mathematical and statistical calculations.

The focus of bibliometrics is on assessing patterns in published literature within a given field [20]. Bibliometric analysis is as a useful tool in evaluating the quality of a journal and its articles. Bibliometric studies have been applied mainly to scientific fields and are based principally on various metadata elements such as author, title, subject, citations, etc. related to scholarly publication within a discipline with the hope that such studies may help to provide an insight into the dynamics of the field under consideration. Thus, this type of analysis provides useful indicators of scientific productivity, trends, emphasis of research in various facets and researchers' preferences for publication [11]. More specifically, when a single journal is studied bibliometricaly, it draws a portrait of the journal, providing a description that offers an insight that is beyond the superficial. It can indicate the quality, maturity and productivity of the journal in any field, in a country or region. It also informs us about the research orientation that it supports to disseminate and its influence on author's choice as a channel to communicate or retrieve information for their research needs [24,26]. Moreover, bibliometric studies have been immensely useful for librarians in selection and weeding policies. It is useful for the academic community in identifying most popular authors, institutions and potential publications. Furthermore, it helps in determining the highly cited journals, ranking of prolific authors, authors' productive pattern, the journal impact factor, and other significant details of any specific literature under study [23].

Recently, bibliometric analysis for assessing the worldwide research productivity has been increasingly performed in topics related with spine surgery [1-10,12-16,18-19,21-22,25]. However, to our knowledge, bibliometric studies concerning solely the content of a spine surgery journal has not been reported yet. JTSS strives to be the premier journal for spinal surgery research in Turkey and is the official journal of the Turkish Spine Society. The current study was planned to investigate the different aspects of the articles published in JTSS. Therefore, the aim of the present study was to provide an insight into the characteristics of the articles published in JTSS, to know the contribution of authors' geographical affiliation, to know the types of the articles and to classify articles by spinal surgery sub-branches.

MATERIALS AND METHODS

In order to examine the characteristics and trends of articles published in JTSS, all available original articles, review articles and case reports published from 1990 to June 2016 (Volume 27, Issue Number 3) were analyzed. The archive of JTSS original web site (http://www.jtss.org/arsiv/arsiv.aspx) was used for this purpose. The mentioned time period was divided in 3 parts as 1990-1996 (Period 1), 1997-2008 (Period 2) and 2008-2016 (Period 3). In each time period, retrospective or prospective clinical articles, topical reviews, meta-analyses, case reports/series, experimental studies, expert opinions and biographies/chronologies were included in the current analysis. For each article, type of the article, the number of the authors, the author's geographical location (taken to be the country or region of their institutional affiliation at the time of publication and provided by the authors themselves), the institutional affiliation of the first author, the department of the first author and subject of the article were noted down. Geographical location was defined as the city in which the institutional affiliation of the first author was in and the geographical region in which the city was located in, as Turkey was divided into 7 regions: Marmara, Central Anatolia, Aegean, Mediterranean, Black sea, Eastern Anatolia and Southeastern Anatolia regions. Articles were comprehensively analyzed by 4 of the authors based on author and affiliation characteristics, research design, and the subject of the article. To find out the authorship productivity, the ranking of the most prolific contributors, the ranking of authors by geographical affiliation and the ranking of authors by institutional affiliation, the first authors were considered only.

RESULTS

The total number of the articles that were evaluated was 754. The total number of the issues was 91. The mean number of

the articles per issue was 8,3. The mean number of the authors per article was 4,04 (range,1-11). The top 3 cities which the institutional affiliation of the first authors were located in were Ankara (n=214, 28 %), Istanbul (n=197, 26 %) and Izmir (n=108, 14 %) respectively. The top 3 geographical regions which the cities of institutional affiliation of the first authors were located in were Marmara Region (n=242, 32 %), Central Anatolian Region (n=231, 30 %) and Aegean Region (n=144, 19 %). Sixty-five (8,6 %) of the articles were submitted from abroad. According to the institutional affiliation of the first authors, the first 3 institutions which sent the most articles were Dokuz Eylul University Medical Faculty (n=100, 13 %), Ufuk University Medical Faculty (n=41, % 5) and Ankara University Medical Faculty (n=37, 4 %) respectively.

The first author of the article was an orthopedic surgeon in 559 (74%) articles, a neurosurgeon in 160 (21 %) articles and from another department in 55 (5 %) articles.

According to the type of the article, 451 (59,8 %) articles were original article, 148 (19,6) articles were case report/series, 138 (18,3 %) articles were review, 13 (1,7 %) articles were biography/chronology, 2 (0,02%) articles were meta-analysis and 2 (0,02 %) articles were expert opinion. The study was retrospectively designed in 385 (85 %) articles, prospective in 35 (8 %) articles and the study was experimental in 31 (7 %) studies. The subject of the article was spinal deformity in 181 (24 %), spinal trauma in 174 (23 %), spinal infection in 65 (8,6 %) articles. The results of the three time periods which are evaluated separately are demonstrated in Table-1

Table 1. The results of the bibliographic analysis demonstrated in 3 separate time periods and in total.

	1990-1996	*1997-2008*	*2009-2016*	*Total*
Number of issues	26	34	31	91
Number of articles	278 (mean 10,7 per issue)	199 (mean 5,8 per issue)	277 (mean 8,9 per issue)	754 (mean 8,3 per issue)
Number of authors	4,06 (range,1-8)	3,21 (range,1-8)	4,63 (range,1-11)	4,04 (range,1-11)
City of the institutional affiliation	Ankara 91	Ankara 64	Istanbul 124	Ankara 214
	Izmir 63	Izmir 45	Ankara 59	Istanbul 197
	Istanbul 52	Istanbul 21	Bursa 11	Izmır 108
	Adana 11	Denizli 12	Edirne 9	Edirne 23
	Edirne 7	Edirne 7	Afyon 8	Adana 21
	Other 54	Other 50	Other 66	Other 191
Region of the institutional affiliation	Central Anatolia 94	Central Anatolia 73	Marmara 149	Marmara 242
	Aegean 64	Aegean 60	Central Anatolia 64	Central Anatolia 157
	Marmara 60	Marmara 33	Aegean 20	Aegean 144
	Mediterrenean 13	Mediterrenean 10	Mediterrenean 11	Mediterrenean 34
	Southeastern Anatolia 5	Blacksea 3	Blacksea 8	Blacksea 14
	Blacksea 3	Southeastern Anatolia 2	Eastern Anatolia 8	Southeastern Anatolia 13
	Eastern Anatolia 3	Eastern Anatolia N/A	Southeastern Anatolia 6	Eastern Anatolia 11
	Abroad 36	Abroad 18	Abroad 11	Abroad 65
Institution of the first author	Dokuz Eylul University 51	Ufuk University 31	Baltalimani Bone Diseases H 22	Dokuz Eylul University 80
	Ankara University 25	Dokuz Eylul University 26	Istanbul Education and Research H 12	Ufuk University 41
	Hacettepe University 21	Pamukkale University 12	Bakirkoy Education and Research 11	Ankara University 37
	Istanbul Medical Faculty 19	Trakya University 7	Ufuk University 10	Hacettepe University 28
	Dıskapi Training and Research H 18	American Hospital 6	Uludag University 10	Dıskapi Training and Research H 30
	Cukurova Medical Faculty 11	Osaka University 6	Baskent University 10	Istanbul Education and Research 23
	Cerrahpasa Medical Faculty 10	Hacettepe University 5	Intercontinental Hospital 9	Trakya University 23
	Istanbul Education and Research H 9	Ankara Numune T&R Hospital 5	Trakya University 9	Baltalimani Bone Dis. T&R H 22
	Other 114	Other 101	Other 183	Other 470
Department of the first author	Orthopaedics and Traumatology 250	Orthopaedics and Traumatology 139	Orthopaedics and Traumatology 170	Orthopaedics and Traumatology 559
	Neurosurgery 21	Neurosurgery 40	Neurosurgery 89	Neurosurgery 150
	Other 7	Other 20	Other 18	Other 45
Type of the article	Retrospective clinical article 175	Review 66	Retrospective clinical article 146	Retrospective clinical article 367
	Case report/series 32	Case report/series 48	Case report/series 68	Case report/series 148
	Review 26	Retrospective clinical article 46	Review 46	Review 138
	Prospective clinical article 17	Prospective clinical article 12	Experimental 9	Prospective clinical article 35
	Experimental 11	Experimental 11	Prospective clinical article 6	Experimental 31
	Expert opinion 2	Expert opinion N/A	Expert opinion N/A	Biography/chronology 23
	Meta-analysis 1	Meta-analysis 1	Statistical 1	Meta-analysis 2
	Biography/chronology 11	Biography/chronology 11	Biography/chronology 1	Expert opinion 2
Subject of the article	**Spinal Deformity 89**	**Spinal Trauma 44**	**Degenerative spine 75**	Spinal Deformity 181
	Spinal Trauma 81	Spinal Deformity 31	Spinal Deformity 61	**Spinal Trauma 174**
	Degenerative spine 30	Degenerative spine 25	Spinal Trauma 49	Degenerative spine 130
	General spine surgery topics 29	Spine infection 23	General spine surgery topics 43	General spine surgery topics 80
	Spine tumor 26	Spine tumor 22	Spine tumor 23	Spine tumor 71
	Spine infection 22	General spine surgery topics 18	Spine infection 20	Spine infection 65
	Other 1	Other 36	Other 6	Other 53

DISCUSSION:

There has not been significant publication growth in JTSS since 1990. First, the total number of publications has not increased. In direct contradiction, the number of the published papers reduced between the years 1998 and 2005 as only 2 issues were published per year in this period. The mean number of articles per issue was only 5,8. JTSS started with quarterly issues in 1990, was published in 2 issues between the years 1998 and 2005, and went on again with quarterly issues after 2005 till now.

Ankara (214 articles, 28,3 %), Istanbul (197 articles, 26,1 %) and Izmir (108 articles, 14,3 %) have been to found to be the 3 leading cities in publishing in JTSS. This is not surprising since these 3 cities are the most developed cities of the country as well as they are the pioneering cities not only in spinal surgery but also in the medical education and improvement in Turkey. However, the increased share of Istanbul from the first period of 1990-1996 (52 articles, 18,7 %) to the second period of 1997-2008 (21 articles, 10,5 %) to the last period of 2009-2016 (124 articles, 44,7 %) is noteworthy. We think that this is due to superior numbers of institutions and spine surgeons in the mentioned city. Also the decline of the number of the articles from Izmir is observed. Izmir was the second most publishing city with the number of 51 (18,3 %) articles in the first period 1990-1996. However, Izmir was not one of the top 5 cities in the last period of 2009-2016.

We have found that vast majority of the articles were published from 3 geographical regions as Marmara (32 %, n=242), Central Anatolia (20,8 %, n=157) and Aegean (19 %, n=144) regions. There were very few articles from the Blacksea, Southeastern Anatolia and Eastern Anatolia regions with the rates of 1,8 % (n=14), 1,7 % (n=13) and 1,4 % (n=11) respectively. We think that this difference in the number of publications from the Turkish geographical regions is due to the disparity between these regions concerning the number of institutions with the opportunities provided to perform spine surgery and the number of the researcher's eager to carry out scientific research as well as the relative discrepancy among the regions regarding population. It is possible to evaluate the articles from abroad as a separate geographical region.

There was the most number of articles from abroad in JTSS in the first period of 1990-1996, with 36 (12,9 %) out of 278 articles. In the second period of 1997-2008, there were 18 (9%) articles from abroad out of 199. In this period a foreign institution, Osaka University from Japan, was among the top 8 institutions. In the last period there were 11 (3,9 %) articles out of 277. In total there were 65 (8,6%) articles from abroad. There is a gradual decrease of the number of articles submitted from abroad. We think that this is due to the fact that JTSS is not indexed in well-known indexes as well as it is not present in PubMed database which is the most popular database worldwide in the scientific research in medical sciences. PubMed was released in 1996 by the United States National Library of Medicine and is used since then. The decreasing interest of foreign institutions may be due to fact that JTSS is not indexed on PubMed.

In JTSS, several institutions are the most impactful. Dokuz Eylul University was the most prolific institution in JTSS. As we do not have yearly data for each institution, it is not possible to determine whether Dokuz Eylul University has maintained a steady rate of publication or produced more within recent years. However, it is observed that the number of the articles has gradually decreased. With 51 articles, the institution was the most contributing institution between the years 1990-1996, the second most contributing between 1997-2008, whereas Dokuz Eylul University was not among the top 8 institutions in the last evaluated period of 2009-2016. Ankara University is another such example. Although the institution was the second most contributing institution in the first period of 1990-1996 and with 37 articles the third most contributing overall, it has been out of the top 8 most contributing institutions in both the second (1997-2008) and the second (2009-2016) periods. Baltalimani Bone Diseases Training and Research Hospital is an emerging institution to publish papers in JTSS. Although this institution had no paper published in JTSS before the year 2009, it was the most contributing institution with 22 articles in the period 2009-2016.

The department of the first author was also evaluated in the study. Orthopaedic surgeons were the most contributing author is all 3 periods. However there was a gradual decrease of the rate of orthopaedic surgeons in the 3 evaluated periods, with the percentages of 89,9 % (n=250), 69,8 % (n=139) and 61,3 % (n=170) respectively. The percentage of orthopedic surgeons as the first authors in the total number of articles was found as 74,1 % (559). Neurosurgeons were the first author in 7,5 % (n=21) of the articles published between 1990-1996, in 20,1 % (n=40) of the articles published between 1997-2008 and in 32,1 % (n=89) of articles published between 2009-2016. The overall percentage of neurosurgeons was 19,8 % (n=150) as the first author in all published papers. The increasing interest of the neurosurgeons to JTSS is obvious.

The bibliometric assessment of the studies published in JTSS showed that the most published designs were retrospective clinical studies, case reports/series and literature reviews, with only 2 meta-analysis study. There was a predominance of retrospective clinical articles (48,9 %) and case reports (19,6 %). Although, retrospective designs are easier to perform they are with many limitations. Case report is the most basic descriptive study. It is generally used in the initial evaluation of little known problems, with characteristics that are not well understood. Its main advantages are low cost and ease

of performance, but its scope is limited because there is no control mechanism to attest to its efficiency, and because of the subjectivity involved in the appreciation of facts.

It is also prominent that the number of the case reports increase from 11,5 % (n=32) in 1990-1996 period to 24,1 % (n=48) in 1997-2008 period and at last to 24,5 % (n=68) in 2008-2016 period. The total percentage of reviews were found as 18,3 %. There were only 2 meta-analyses and no study of systematic review was found. Systematic reviews are strict reviews of specific clinical issues that summarize the original research, and meta-analysis, which consists on the combination of study findings, providing precise and concise estimates on a given topic [3]. There was a striking increase in the rate of reviews when compared in the overall number. There were only 26 reviews with a rate of 9,3 % in the period 1990-1996 whereas this rate increased to 33,1 % with 66 out of 199 articles in the period 1997-2008. This result demonstrates a decrease in the scientific value of the articles published as topical nonsystematic reviews are lower level evidence as compared to empirical studies, and a trend of this nature is encouraging for a profession with explicit interest in evidence-based practice [24]. However, topical reviews, of which expert opinion and commentary are a part, are still of interest to JTSS readers.

A percentage of 12,7 % was found for articles of prospective, randomized and controlled clinical trials. There is a noteworthy decrease of the numbers of prospective, randomized and controlled studies from the percentages of 6,1 % in the first period (1990-1996) to 6 % in the second period (1997-2008) and to 2,1 % in the last period (2009-2016). This result may be interpreted as the value of research published in JTSS is declining. However, from another view, although randomized controlled trials are heralded as the highest standard for intervention research, it is unclear whether increasing the number or percentage of randomized controlled trials is ideal or realistic [13].

More randomized controlled trials published within a journal with limited space yields a smaller proportion of other types of articles that may also impact other clinical practice such as diagnostic or prognostic studies. Also, there is a recent emphasis that both subjects enrolled and treatment effects reported in randomized controlled trials may not be representative of routine clinical practice, so different standards may have to be explored for guidance of intervention research [10]. However, these data do not reflect that papers with prospective, randomized and controlled design are not necessary to improve the quality of articles published in JTSS, in accordance with the level of hierarchy of evidence-based spine surgery.

In the analysis of the areas of interest, there was a predominance of some topics in the journal evaluated by the present study, with spinal deformity being the most researched area, representing 24 % (181 articles) of the articles. The second most researched topic was spinal trauma with a total share of 23 % (174 articles). Other areas that were found to be widely covered in the present research were related to degenerative spine with a rate of 17,2 % (130 articles) and general spine surgery topics with a rate of 10,6 % (80 articles). It is found out that the number of the degenerative spine articles increased significantly in the last period (2008-2016). This may be attributed to the aging population and probable increase of the number of surgeries related with degenerative disorders of the spine, in Turkey. In the current study, it is observed that spine tumors and spinal infections which are 2 essential sub-branch of spine surgery are underestimated with total rates of 9,4 % (71 articles) and 8,6 % (65 articles) respectively. This may be given to 2 facts; one is the rarity of spine tumors and the other is recently improved health care services in Turkey which may effect on eradication of some spinal infections such as spinal tuberculosis.

There are several implications for Turkish spine surgery research, based on the results from this study. First, prospective, randomized and controlled studies are considered the gold standard study design. Given the trend for lack of growth in these types of publications in JTSS, there may be a need to encourage the submission and publication of high-quality randomized controlled trials. One recent study demonstrated that Turkey was one of the most productive countries in the field of spine surgery with a total number of 116 articles and worldwide ranking of 13rd place [5]. This shows that Turkey is in a good rank in spine surgery research. The decreasing number of papers with higher level of evidence in JTSS maybe a sign that researcher from Turkey prefer publishing in international journals rather than national journals. We think that the reason behind this fact is academicals concerns of the researchers in Turkey where the main scale of scientific productivity is measured within the number of papers published especially in the journals indexed in Science Citation Index and Science Citation Index- Expanded or the number of citations. It is obvious that an article indexed in PubMed database would be more accessible worldwide than the other indexes. Therefore, we think that JTSS being indexed in PubMed may increase popularity among the researchers and may have the opportunity to publish papers of higher quality.

The present study showed the trends in nationwide research on spine surgery in Turkey and draws a picture of the knowledge produced. Thus, some areas of interest where little research has been done were identified, indicating that more research is needed on these topics, such as spine tumors and spine infections. Also, it has become clear that scientific studies are not being conducted under very strict conditions and should be improved to ensure that the knowledge produced on spine surgery be based on evidence. While the optimal proportion of publication types for a given journal is unknown, we suggest continued need to increase efforts for the submission and

publication of a greater proportion of randomized controlled trials and articles focused on diagnosis.

It was concluded that most articles refer to studies with low potential to establish scientific evidence, indicating a need for conducting spine surgery research based on better quality methodology. Moreover, it was found that the assessed literature reflected the trends observed in the clinical practice of spine surgery in Turkey. It further identified areas of interest where little research has been done, indicating a need for more research on these topics. Furthermore, the present study identified a disparity between the cities and the geographical regions in Turkey, concerning project development and scientific production, reflecting the lack of governmental incentive and support to scientific and technological advancement in Turkey. These analyses provide a unique opportunity to discuss content and trends within JTSS. In addition, these analyses provide data that may be useful to those involved with JTSS's future mission and vision. It is essential to increase the impact factor of JTSS and make it better known in order to improve Turkish spine surgery research and practice. For this reason, we think Turkish spine surgeons supporting JTSS with scientifically qualified studies with higher levels of evidence will help achieving this goal. Moreover, we think that JTSS should be indexed in well-known data bases such as PubMed to achieve the goal of publications with higher scientific value.

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