Türk Fizyoterapi ve Rehabilitasyon Dergisi

2016 27(2)72-80

Arzu RAZAK ÖZDİNÇLER, PT, PhD, Prof.[1]
Burcu ERSÖZ HÜSEYİNSİNOĞLU, PT, PhD, Assist. Prof.[1]
Ayşe ZENGİN ALPÖZGEN, PT, PhD, Assist. Prof.[1]
Ela TARAKCI, PT, PhD, Assoc. Prof.[1]

Geliş Tarihi: 27.04.2015 (Received)
Kabul Tarihi: 08.04.2016 (Accepted)

İletişim (Correspondence):

Burcu Ersoz Huseyinsinoglu, PT, PhD, Assist. Prof.
Demirkapı Cad. Karabal Sok. Bakırkoy Ruh Ve Sinir Hastalıkları Hastanesi Bahçe İçi 34740
Bakırköy/Istanbul/Turkey
Phone/Fax: 0212 414 15 00 / 0212 414 15 15
Cell: 0542 727 43 16
E-mail: burcu.ersoz@istanbul.edu.tr

1 İstanbul University, Faculty of Health Science, Department of Physiotherapy and Rehabilitation, Istanbul, TURKEY

STROKE RESEARCH PRODUCTIVITY BETWEEN THE YEARS OF 2009-2013 IN TURKEY: A BIBLIOMETRIC ANALYSIS

RESEARCH ARTICLE

ABSTRACT

Purpose: Stroke becomes increasingly important disease which threatens public health in Turkey as in all over the world. Our objective with this study was to examine the trends of literature about stroke among journals published in Turkey over the past five years.

Methods: This bibliometric analysis of stroke related articles included 102 journals indexed in ULAKBIM Turkish Medical Database between 2009 and 2013. Journals were held preliminary elimination by issues and 807 volumes of 52 journals within the General Medical Journals were examined one by one. Turkish Journal of Neurology, Turkish Journal of Cerebrovascular Disease, Turkish Neurosurgery, Journal of Neurological Sciences-Turkish, Turkish Journal of Physiotherapy and Rehabilitation and Turkish Journal of Physical Medicine and Rehabilitation were examined as site-specific journals and total volume was 98 in these journals. Studies were analyzed by type of study, issue and department.

Results: While 52 journals have a total of 807 volumes and 10146 articles, only 66 studies (28 original articles, 11 reviews, 17 case reports) were found related to the stroke within the General Medical Journals. While site-specific journals have 92 volumes and 1714 articles, the number of stroke related researches was 98.

Discussion: Although there are some studies related to the stroke in Turkey, it has been seen that the number of these studies is not enough when its public and health related importance is considered. It has been thought that the factors which cause these results are needed further investigation to increase the number of qualified researches in our country.

Key Words: Stroke; publications; research; Turkey.

TÜRKİYE'DE 2009-2013 YILLARI ARASINDA İNME ARAŞTIRMA ÜRETKENLİĞİ: BİBLİYOMETRİK ANALİZ

ARAŞTIRMA MAKALESİ

ÖZ

Amaç: İnme tüm dünyada olduğu gibi Türkiye'de de halk sağlığını tehdit eden bir sorun olması nedeniyle önemi giderek artan bir hastalıktır. Çalışmamızın amacı Türkiye'de son beş yılda yayınlanan dergilerde inme ile ilgili literatür eğiliminin gözden geçirilmesidir.

Yöntemler: İnme ile ilişkili araştırmaların bibliyometrik analizinin yapıldığı bu çalışma kapsamında 2009-2013 yılları arasında ULAKBIM Türk Tıp Dizini 'ne giren 102 dergi tarandı. Bu kapsamda Genel Tıp Dergileri içeriğindeki 52 dergide 807 cilt tek tek gözden geçirildi. Ayrıca alana özgü dergiler kapsamında Türk Nöroloji Dergisi, Türk Serebrovasküler Hastalıklar Dergisi, Türk Nöroşirurji Dergisi, Journal of Neurological Science (Turkish), Türk Fizyoterapi ve Rehabilitasyon Dergisi ve Türkiye Fiziksel Tıp ve Rehabilitasyon Dergisi'nde toplam 98 cilt tarandı. İnme ile ilgili tüm araştırmaların araştırma tipi, konusu ve yürütüldüğü bölüm bazında analizleri yapıldı.

Sonuçlar: Taranan 52 dergide toplam 807 cilt ve 10146 makale bulunmaktaydı. Bunlar arasında Genel Tıp Dergileri içerisinde inme ile ilişkili sadece 66 araştırma (28 orijinal makale, 11 derleme, 17 olgu sunumu) vardı. Alana özgü dergilerde ise 92 cilt tarandı; 1714 çalışmadan sadece 98'i inme ile ilişkiliydi.

Tartışma: Türkiye'de inme konulu araştırmalar yapılıyor olsa da konunun toplumsal ve sağlık alanındaki önemi düşünüldüğünde çalışma sayısının yeterli olmadığı görüldü. Ülkemizde inme konusunda nitelikli çalışma sayısının arttırılması için bu sonuca neden olan faktörlerin daha detaylı incelenmesi gerektiği düşünüldü.

Anahtar Kelimeler: İnme; yayınlar; araştırma; Türkiye.

INTRODUCTION

The average life expectancy at birth reached 76 years for females and 71 years for males in the world (1). As the population ages in the world, stroke becomes increasingly important in terms of public health throughout the world and Turkey. It is the second leading cause of death in the world after cardiovascular diseases. Stroke, having the rate of %15 in all deaths, is the second leading cause of death in Turkey and ranks third among causes of disability and loss of work (2, 3). With an aging population, a rising is expected in the number and burden especially in developing countries since 1980s (4, 5). Burden of stroke is also impeding for United States although it has recently declined from the third to the fourth leading cause of death in this developed country. Therefore, researches which are related to prevent and manage with stroke have been come into prominence than ever. Unlike the situation, there is an inverse relationship between the growth of stroke-related research productivity and stroke mortality (6).

Regarding to the epidemiology and risk factors of stroke in Turkey, the most comprehensive data can be found in "Turkey Burden of Disease Study" which was conducted between the years of 2002-2004 by Ministry of Health and The Hıfzısıhha Health Institute. The rates of death due to stroke around the country were 15.5% in men, and 15.7% in women (7).

Stroke is a versatile disease on which many different health professionals, such as doctors, physiotherapists, occupational therapists, nurses deal with it. The professionals need to update their current knowledge and follow the developments through publications. ULAKBIM Turkish Medical Database, which is open to users in the web since 1996, covers research articles in Turkish and other languages, in the field of Health Sciences (Medicine, Dentistry, Pharmaceutics, Nursing etc.), in journals published in Turkey. The database aims at providing rapid and efficient access to national literature in health sciences for researchers working in the field (8).

The objective of this bibliometric study is to examine and analyze the stroke-related researches which were published in journals listed in ULAKBIM Turkish Medical Database between 2009-2013.

METHODS

In this bibliometric study, the issues of 102 journals, indexed in the ULAKBIM Turkish Medical Index (ULAKBIM National Databases) between the years of 2009 and 2013, were scanned.

Table 1. General medical journals in the Turkish Medical Database

Journals

1. Journal of Adnan Menderes University Medical Faculty
2. Journal of Ankara Medical School
3. The Anatolian Journal of Clinical Investigation
4. The Eurasian Journal of Medicine
5. Medical Journal of Bakırköy
6. Journal of Bezm-i Alem Valide Sultan Vakıf Gureba Training and Research Hospital
7. Cerrahpaşa Journal of Medicine
8. Cumhuriyet Medical Journal
9. Çukurova Medical Journal
10. Journal of Experimental and Clinical Medicine = University of Ondokuz Mayis Journal of Medicine
11. Dicle Medical Journal
12. Journal of Dokuz Eylül University Medical School
13. Düzce Medical Journal
14. Ege Journal of Medicine
15. Erciyes Medical Journal
16. Fırat Tıp Medical Journal
17. Fırat University Medical Journal of Health Science
18. Gazi Medical Journal
19. Gaziantep Medical Journal
20. Journal of General Medicine (Konya Medical Journal)
21. Medical Journal of Göztepe
22. Gulhane Medical Journal
23. The Medical Bulletin of Haseki
24. Journal of İnönü Üniversity Medical Faculty
25. Journal of İstanbul Faculty of Medicine
26. İzmir Atatürk Training Hospital Medical Journal
27. The Journal of Kartal Training and Research Hospital
28. The Journal of Clinical Psychiatry
29. The Journal of Clinical Medicine Family Practice
30. Kocatepe Medical Journal
31. Marmara Medical Journal
32. Archives of Neuropsychiatry
33. Osmangazi Journal of Medicine
34. PTT Hospital Medical Journal
35. Pamukkale Medical Journal
36. Medical Journal of Selçuk
37. Journal of Continuing Medical Education
38. The Medical Bulletin of Şişli Etfal Hospital
39. Respiratory Disease
40. The Journal of Medical Investigations
41. Balkan Medical Journal
42. Turkish Journal of Medical Sciences
43. Turkish Journal of Geriatrics
44. The Journal of Psychiaty
45. TAF Preventive Medicine Bulletin
46. Turkish Thoracic Journal
47. The Turkish Respiratory Journal
48. Journal of Uludağ University Medical Faculty
49. Van Medical Journal
50. The New Journal of Medicine
51. The Medical Bulletin of Zeynep Kamil
52. Türkiye Klinikleri
    a. Journal of Neurology
    b. Journal of Physical Medicine Rehabilitation Special Topics
    c. Journal of Neurology Special Topics
    d. Journal of Neurosurgery Special Topics
    e. Journal of Medical Science

Table 2. Site-specific journals in the Turkish Medical Database

Journals
1. Turkish Journal of Neurology
2. Turkish Journal of Cerebrovascular Disease
3. Turkish Neurosurgery
4. Journal of Neurological Sciences (Turkish)
5. Turkish Journal of Physiotherapy and Rehabilitation
6. Turkish Journal of Physical Medicine and Rehabilitation

A general review of 102 journals appearing in the Turkish Medical Index took place, and 62 journals, which were relevant to the general medicine and our study, were determined. Among those journals there were 5 journals related to "Türkiye Klinikleri" and 6 site-specific journals (Table 1 and Table 2). All issues of those journals in 2009, 2010, 2011 2012 and 2013 were scanned. The titles of all articles appearing in these issues and their abstracts were searched in digital environment, including the words of stroke (ischemic stroke, acute stroke, acute ischemic stroke, hemorrhagic stroke, cryptogenic stroke), hemiplegia, cerebrovascular disease, stroke (ischemic stroke), cerebral ischemia, infarct (cerebral infarct, cerebral cortical infarct), intracerebral hemorrhage and lacunar syndrome in their titles, abstracts or keywords. The names of general medicine journals and journals related to our study were shown in Table 1 and Table 2.

Journal of Bezm-i Alem Valide Sultan Vakif Gureba Training and Research Hospital, Medical Bulletin of Haseki, Journal of Inonu University Medical Faculty, Journal of Clinical Medicine Family Practice and Osmangazi Journal of Medicine were excluded from the scope of the research since they weren't accessible in digital environment, despite appearing in the Turkish Medical Index. PTT Hospital Medical Journal and Izmir Ataturk Training Hospital Medical Journal were excluded from the scope of the research, since they didn't have any publications after the years of 2002 and 2006, respectively. Since the only accessible post-2007 issue of Cukurova Medical Journal, was their first issue pertaining to the year 2011 (volume 11), it was removed from the research. The publications of Cerrahpasa Journal of Medicine following their first 2010 issue (Volume 41-1), weren't accessible.

Three of the authors (BEH, ARÖ, and AZA), scanned the titles and abstracts of all publications between the years of 2009 and 2013 in digital environment, independently from each other. All authors came together and decided whether the publications were relevant to stroke, and fulfilled the inclusion criteria. All original articles, case reports and reviews published in Turkish or in English were included into the study. Abstracts, poster representations and studies on animals were excluded from the scope of the research (Figure 1). "SPSS for Windows" version 20.0 was used for data entry and descriptive statistical processes. Their frequencies and percentage distributions were observed for the descriptive statistics of the data.

RESULTS

Within the Turkish Medical Database, 51 journals which can be relevant to general medicine, 5 journals pertaining to "Türkiye Klinikleri" and 6 site-specific journals, only in 30 journals stroke-related studies were appeared. The scanned volumes, the number of papers and publications associated with stroke were shown in Table 3.

We searched the distribution of publications over the years and found that 22.7% (48 articles) was published in 2009, 16.1% (34 articles) was published in 2010, 16.5% (35 articles) was published in 2011, 18.5% (40 articles) was published in 2012 and 25.5% (54 articles) was published in 2013 (Figure 2). Upon the examination of the distribution of publications over the years, we realized that in

Table 3. The scanned volume, the number of papers and publications in journals.

	Volume	**Publications**	**Stroke Related (%)**	**Articles (n)**
Site-specific journals	106	1829	% 5.35	98
General Medical Journals	807	10146	% 0.65	66
"Türkiye Klinikleri" Journals	94	2054	% 2.28	47
			-	-
TOTAL (N)	**1007**	**14029**	**% 1.5**	**211**

Table 4. Distribution of publications in general medical, site-specific and "Türkiye Klinikleri" Journals.

	Stroke Related	Original Article (n)	Review (n)	Case Report (n)	Other* (n)
Site-specific journals	98	58	9	24	7
General Medical Journals	66	28	11	17	2
"Türkiye Klinikleri" Journals	47	20	22	7	6
TOTAL (N)	**211**	**106**	**42**	**48**	**15**

* Other: literature review, translation, educational post, medical news, short report

general medical journals and site-specific journals there was a decrease in the number of publications until 2011 and an increase in 2012 and 2013. The number of publications in journals of "Türkiye Klinikleri" in 2009 (14 articles) decreased in 2010 (5 articles), increased again in 2011 (12 articles), but decreased again in 2012 and 2013 (8 articles in each year) (Figure 3). It was found that in 2011, 11 of them took part in "special issue" volume 2011; 4(3), in 2012 8 of them took part in "special issue" volume 2012; 5(2) and in 2013 one of them took in part in "special issue" volume 2013; 6(1).

Regarding to the contribution of the total annual number of publications associated with stroke it was found that in site-specific journals 46%, in general medical journals 25%, in journals of "Türkiye Klinikleri" in 2009 29%, in site-specific journals 56%, in general medical journals 29%, in journals of "Türkiye Klinikleri" in 2010 15%, in site-specific journals 43%, in general medical journals 23%, in journals of "Türkiye Klinikleri" in 2011 34%, in site-specific journals 40%, in general medical journals 40%, and in journals of "Türkiye Klinikleri" in 2012 20% of the studies were published. In 2013

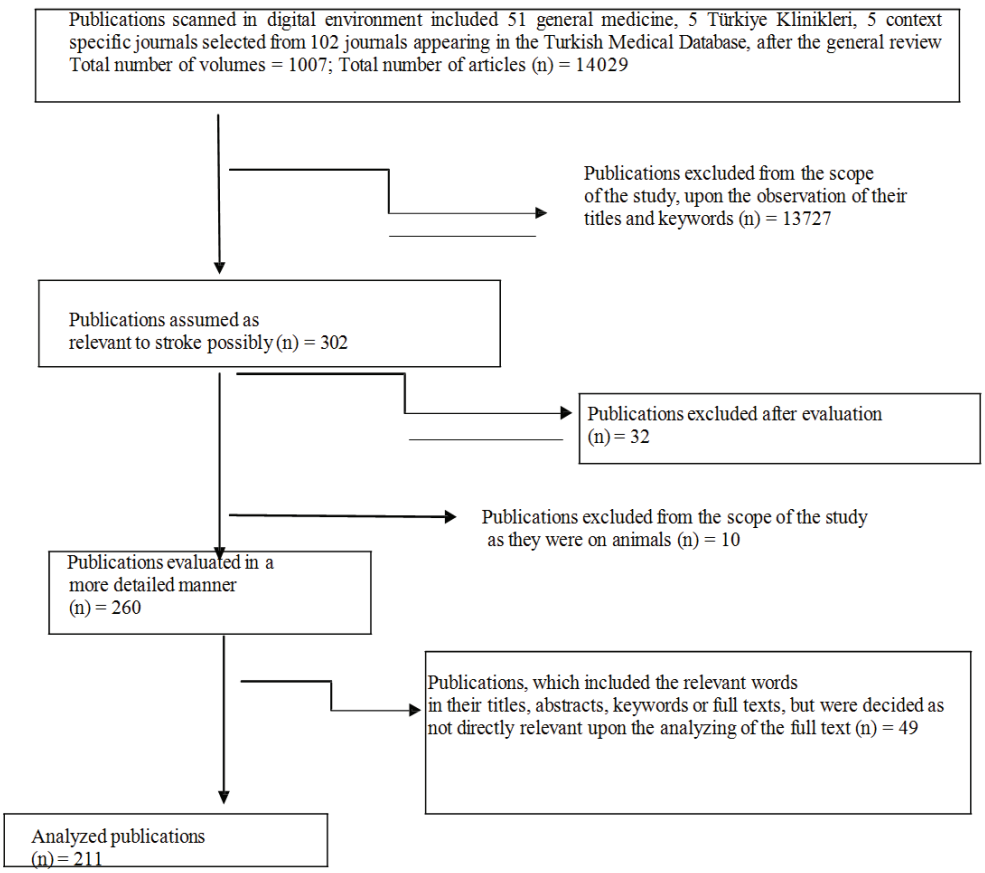

Figure 1. Study flow chart.

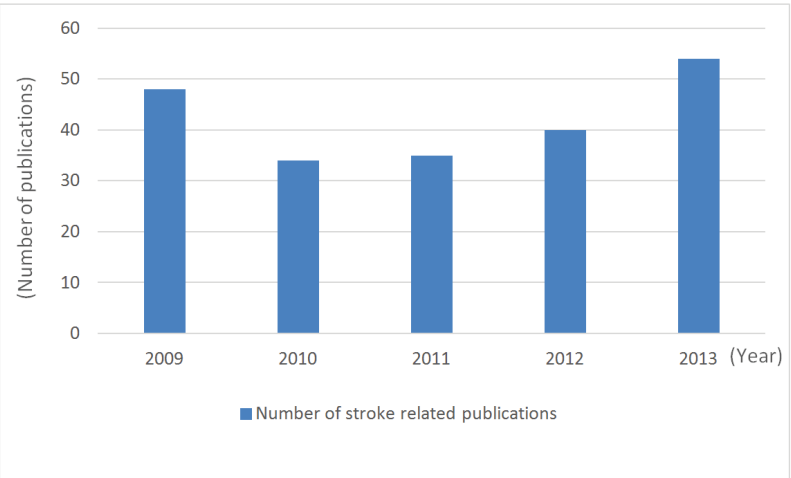

Figure 2. Distribution of stroke related publication over years.

the contribution of the total annual number of publications associated with stroke in site-specific journals, in general medical journals and in journals of "Türkiye Klinikleri" was 49%, 37% and 14% respectively.

Publication types were analyzed and 51% of the original articles, 23% of case reports, 20% of reviews were found in them. In addition, there were also other types of sources (8%) as literature review, translations, educational posts, medical news and short reports for publication. Table 4 shows the distribution of publications in journals.

It was found that 53% (22 articles) of total 42 reviews was published in "special issue" volumes 2009; 2(3), 2011; 4(3), 2012; 5(2) and 2013; 6(1) in journal of "Türkiye Klinikleri" Neurology Special Topics. All articles published in this special issue volumes were reviews. Within the journals, distribution of publication types were analyzed and it was found that more than half of the publications (60%) of site-specific journals were original articles; and a considerable part (26%) of the general medical journals, was case reports. However, only 25% of site-specific journals were case reports.

Publications were evaluated according to the distribution of issues and stroke etiology was found the most popular (14%) issue. This was followed by treatment (12%), stroke complications (11%), pharmaceutical studies (10%), radiology (10%), diagnosis (9%), rehabilitation (9%), prevention (8%), blood supply (8%), evaluation (4%), nursing (3%) and epidemiology (2%) issues. Within the journals, distribution of issues was analyzed and in site-specific journals, issue distribution was found as etiology (20%), complications (15%), assessment (12%)

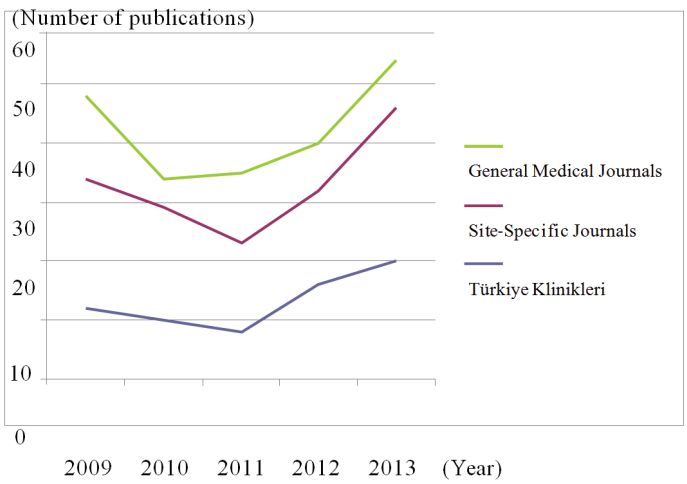

Figure 3. Distribution of stroke related publications according to journals over years

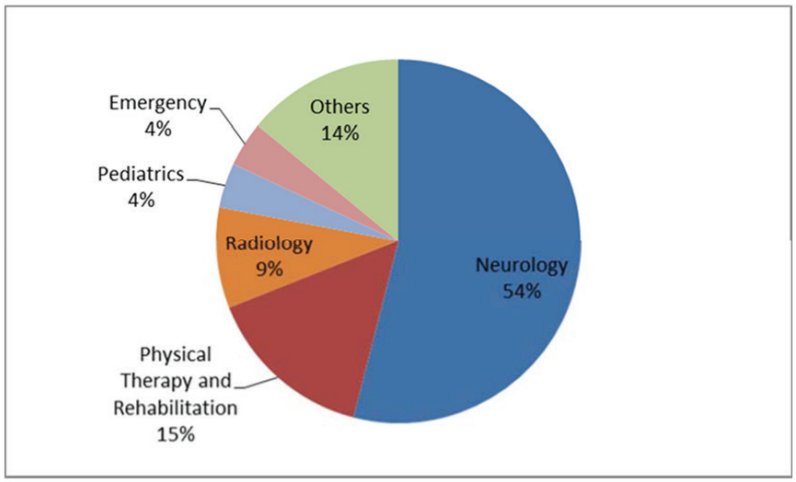

Figure 4. Distribution of publications according to departments (%)

and rehabilitation (12%); in general medical journals, issue distribution was formed by the most of studies as evaluation (19%) and diagnostic (19%), followed by treatment (13%) and etiology (11%). No rehabilitation study was found within general medical journals. Issues of the studies in "Türkiye Klinikleri" journals were treatment (24%), radiology (18%) and etiology (13%).

A considerable part of the publications (54%) was from neurology departments followed by physical medicine and rehabilitation (15%), radiology (9%), pediatrics (4%), emergency (4%) clinics. Also, in other clinics (14%) (Neurosurgery, psychiatry, cardiology, internal medicine, pulmonary disease, biophysics, biochemistry, statistics, nursing, radiation oncology and dentistry) stroke-related studies were found (Figure 4).

7% (14 articles) of 211 stroke studies published in Turkey was from abroad (US, UK, France, Spain, Switzerland, Nigeria, Iran and Iraq), and 93% (197 articles) of them was from Turkey. 25% of the Turkey originated publications (48 articles) was a multi-center study, 75% (149 articles) was found to be single-center study.

25% (36 articles) of single-center studies (148 articles) was from Istanbul, 24% (35 articles) was from Ankara, and 16% (23 articles) was from Izmir, while the remaining 35% (91 articles) was sent from several cities in Turkey.

A total of 30 journals including stroke related publications, 7 of them (23%) were indexed in Science Citation Index/Science Citation Index-Expanded (SCI/SCI-E), (2 site-specific journals, 4 general medical journals, and 1 "Türkiye Klinikleri" journal). The remaining 23 journals (77%) were indexed in Scopus Embase, Index Copernicus, Ebsco, including Turkish Citation Index and other indexes were determined. 24.20% (38 articles) of stroke related publications (157 articles) were published in journals indexed in SCI/SCI-E. 58% of them (22 articles) was published in site-specific journals, 32% of them (12 articles) was published in general medical journals and 10% of them (4 articles) was published in "Türkiye Klinikleri" journals.

83% of publication of the studies was found in Turkish language and 17% was found in English. Turkish and English publication percentage in "Türkiye Klinikleri" journals was 92% to 8%, while in general medical and in site-specific journals it was 78% to 22% and 82% to 18%, respectively.

DISCUSSION

Stroke is the second leading cause of death in Turkey, according for 15% of total deaths (7). There is an inverse relationship between the growth of stroke-related research productivity and stroke mortality in Turkey. When we analyzed stroke articles among 2009-2013 with this bibliometric study, although there was an increase in publication about stroke in Turkish medical journals in 2012 and 2013, we qualified it as inadequate. Chow et al. reported retrospective bibliometric analysis of all stroke articles published between 1996-2008 and indexed in MEDLINE. Total articles numbered as 32309 including 8795 (27.2%) articles in Unit-

ed States, 2757 (8.5%) articles in Japan and 2629 (8.1%) articles in United Kingdom. Articles followed an exponential growth pattern in years (9).

Stroke care is a multidisciplinary team work. As m any organizations start out from the fact that stroke patients' outcomes will be better with a well-organized care, they have been trying to standardize stroke treatment and care (10). It is directly related to neurology, neurosurgery, physical medicine and rehabilitation, radiology, physiotherapy, occupational therapy, speech therapy and nursing disciplines (11, 12). For that reason, we expected very high productivity in stroke-related articles from many different clinics in Turkey. Unfortunately the distribution of the researches is not in that way, most of them are from certain clinics: 54% is from neurology and 15% is from physical medicine and rehabilitation and it is followed by radiology, pediatric and emergency departments. Chow et al. reported that leading contributors at all researches were neurology with 27.7%, internal medicine with 6.3%, physical medicine and rehabilitation with 5.8%, diagnostic radiology with 4.4% and neurological surgery with 3.9%. The largest proportional growth was seen in physical medicine and rehabilitation.

In Taiwan study results, five top categories with a great majority of articles were clinical neurology, neurosciences, rehabilitation, peripheral vascular diseases and cardiovascular systems. The results are similar in our study but while 51.9% of the publications are from the other clinics in the world and only 14% of the publications are from other clinics in Turkey (9).

European Stroke Initiative (EUSI) recommendations identify the increasing recognition of stroke as an emergency. These recommendations compiled with reference to published evidence and expert opinion; draw together the current best practices concerning care for people with stroke from onset to the longer term. This includes recommendations about early access to services, multidisciplinary stroke unit care, rehabilitation, secondary prevention, and long term medical and social services. These recommendations have the average of being international, and include both short term and long term care provisions (13).

There are total 211 studies on stroke between 2009-2013 in Turkey. Lack of publication in specific journals is remarkable in Turkey. Most of the studies were in "special issue" volumes. The distribution of studies regarding to the years are 48 studies in 2009, 34 studies in 2010, 35 studies in 2011, 40 studies in 2012 and 54 studies in 2013. There is an inconsistency in stroke-related studies in Turkey; on the contrary the trend is increasing in the world. Accelerating trends in acute stroke controlled trials include growth in number, sample size and quality (14). Stroke-related scientific research in Taiwan has increased significantly between 1991- 2005. Compared to the worldwide trend, the number of publication increased by 97% from 3193 to 6293 articles, while that in Taiwan increased by 250% from 26 to 91 articles during same period (15). Although a remarkable increase was seen in stroke-related researches in Turkey in 2012 and 2013, the rate was very low compared with the world.

When we compare the subjects of the studies in Turkey and in the world, the differences are prominent. Over the last decade mortality from stroke has decreased. Despite this, stroke has remained the leading cause of disability, resulting in a greater demand for stroke rehabilitation research. This need reflected itself with a rise in studies within stroke rehabilitation (16, 17). Chow et al. were also evident in their analysis (9). But in Turkey the studies are mostly about etiology and evaluation (14%), treatment techniques (12%) and complications (9%).

Rehabilitation studies are not popular; they are only 9% of all studies. The rehabilitation programs, started at the same time with medical treatment during the acute phase of stroke, shortened the length of hospital stay, and are known to accelerate functional recovery (18, 19). This caused us to think that there were not any rehabilitation works which required long term monitoring in Turkey, or that such publications were not sent to the journals in Turkey for publication. Within scope of a study carried out in Brazil in 2009, publications related to the nursing care in the event of paralysis were reviewed and 223 publications were found. Concerning to the articles published in the languages of English, Spanish or Portuguese which were accessed

in electronic format, it was stated that number of research articles carried out with cases over the age of 18 was only 12, and 11 of them were published after the year of 2000 (20).

In our country, studies of broad participation are required in the fields related to rehabilitation, risk factors, prevention and epidemiology of paralysis. It is challenging that journals in our country include studies on this field, of which 23% are case presentations and 20% are reviews. Rate of studies which are published as clinic researches is only about 51%. As the number of clinic studies is few, it caused us to think that it could be associated with the fact that scientific researchers could not find sufficient fund.

Mentioning about the difficulties of finding financial support for the studies on stroke, according to the special report of Johnston in 2008, important case studies have been carried out with regard to stroke in the last 30 years. Most of the studies deal with prevention of the disease (21). However, clinic result studies receive less fund support, as conclusion it is relative and takes long time. That's why quality and specific studies on stroke are inadequate.

Following our journals review including the years 2009-2013, it was understood that only 7 of 30 journals that contain stroke publications are indexed to Science Citation Index (SCI)/Science Citation Index Expanded (SCI-E). While scarcity of publications on stroke in Turkey, which is a really important matter, is discussed, it should be also considered important that reason for sending these publications to journals published in Turkey could be associated with indexes which journals are listed in. As making publication on journals covered by SCI and SCI-E is a prerequisite for academic promotion and assignment, we believe that it has effect on the preference of academicians to send publications to journals listed in Turkish Medical Database.

The most important limitation of this study is that publications are only searched from journals within Turkish Medicine Index and that it only covers the years of 2009-2013 due to the difficulties related to the search. The second limitation could be that we searched about stroke related words only in titles, abstracts or keywords of researches to find out the related articles. It was why we did in this way was to be able to detect the directly stroke related researches as stroke could be referred indirectly in any part of the examined manuscript.

Despite these limitations, this study is very important as it is the first study which reviewed all of the publications that were published between 2009-2013 in the journals of Turkey, and which was carried out on stroke for purpose of revealing the deficiencies in the field.

As a conclusion, ageing of the population indicates that importance of stroke will increase for public health. Stroke is the second cause of death in the world, following cardiovascular diseases. On the other hand, it is the primary reason of disability and labor loss. Concerning the stroke which is important both for our country and the world, it is possible to say that publications are needed, which include various issues and long-term monitoring of patients, which are multi-centered and which shed light to the professionals working in this field in Turkey.

REFERENCES

1. World Health Organization. World Health Statistics [homepage on the Internet]. Switzerland:WHO;c2014.Availablefrom:http://apps.who.int/iris/bitstream/10665/112738/1/9789240692671_eng.pdf.
2. Feign VL. Stroke epidemiology in the developing world. Lancet. 2005;365(9478):2160-1.
3. Öztürk Ş. Epidemiology of Cerebrovascular Diseases and Risk Factors-Perspectives of The World and Turkey. Turk J Geriatr. 2009;13(1):51-8.
4. Feigin VL, Lawes CM, Bennett DA, Barker-Collo SL, Parag V. Worldwide stroke incidence and early case fatality reported in 56 population-based studies: a systematic review. Lancet Neurol. 2009;8(4):355-69.
5. Hashmi M, Khan M, Wasay M. Growing burden of stroke in Pakistan: a review of progress and limitation. Int J Stroke. 2013;8(7):575-81.
6. Towfighi A, Saver JL. Stroke declines from third to fourth leading cause of death in the United States: Historical perspective and challenges ahead. Stroke. 2011;42(8):2351-5.
7. Ünüvar N, Mollahaliloğlu S, Yardım N. Turkey Burden of Disease Study 2004. Ankara: Aydoğdu Ofset Matbaacılık, 2006; p. 2-12.
8. Tabanlıoğlu S, Soyuyüce Aydın E. Tübitak Ulakbim Ulusal Atıf Veri Tabanı. In: Yılmaz O, editor. Sağlık Bilimlerinde Süreli Yayıncılık. Ankara: Aves Yayıncılık, 2011; p. 41-4.
9. Chow DS, Hauptman JS, Wong TT, Gonzalez NR, Martin NA, Lignelli AA, et al. Changes in stroke research productivity: A global perspective. Surg Neurol Int. 2012;3:27.
10. Stroke Unit Trialists' Collaboration. Organised inpatient (stroke unit) care for stroke. Cochrane Database Syst Rev. 2013;11:9:CD000197.
11. Intercollegiate Stroke Working Party. National clinical guideline for stroke. 4th ed. London: Royal College of Physicians; 2012.

12. Fens M, Vluggen T, van Haastregt JC, Verbunt JA, Beusmans GH, van Heugten CM. Multidisciplinary care for stroke patients living in the community: a systematic review. J Rehabil Med. 2013;45(4):321-30.
13. McKevitt C, Redfern J, Mold F, Wolfe C. Qualitative studies of stroke: a systematic review. Stroke. 2004;35(6):1499-505.
14. Kidwell CS, Liebeskind DS, Starkman S, Saver JL. Trends in acute ischemic stroke trials through the 20th century. Stroke. 2001;32(6):1349-59.
15. Chuang KY, Huang YL, Ho YS. A bibliometric and citation analysis of stroke-related research in Taiwan. Scientometrics. 2007;72(2):201-12.
16. Whitall J. Stroke rehabilitation research: time to answer more specific questions? Neurorehabil Neural Repair. 2004;18(1):3-8.
17. Pollock A, Baer G, Campbell P, Choo PL, Forster A, Morris J, et al. Physical rehabilitation approaches for the recovery of function and mobility following stroke. Cochrane Database of Syst Rev. 2014;(4):CD001920.
18. Balcı B, Ertekin E, Kara B, Yaka E. The Effects of Inpatient Rehabilitation Program in Acute Stroke Patients. J Neurol Sci Turk. 2011;28(2):142-54.
19. Fearon P, Langhorne P. Early Supported Discharge Trialists. Services for reducing duration of hospital care for acute stroke patients. Cochrane Database Syst Rev. 2012; (9):CD000443.
20. Cavalcante TF, Moreira RP, Guedes NG, Araujo TL, Lopes MVO, Damasceno MMC, et al. Nursing interventions for stroke patients: an integrative literature review. Rev Esc Enferm USP. 2011;45(6):1486-90.
21. Johnston SC. The 2008 William M. Feinberg lecture: prioritizing stroke research. Stroke. 2008;39(12):3431-6.