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Original Research

Analysis of the 50 Most Cited Articles on Dabigatran: A Bibliometric Study

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ABSTRACT

Objective: Atrial fibrillation (AF) is the most common cardiac arrhythmia in adults. Anticoagulation significantly reduces stroke and related mortality in AF patients. This study conducted a bibliometric analysis of the top 50 most-cited articles in the literature on dabigatran, the first new-generation oral anticoagulant.

Methods: We searched the Web of Science for articles with dabigatran in the title. The top 50 most cited articles (T50) were selected. Characteristics of the articles (such as author, source, institution, country, scientific category, number of citations, citation density, and citations per article) were analyzed.

Results: T50 had a total of 33,301 citations. The average number of citations per article was 666. The United States of America (USA) was the most prolific country in T50, with 36 papers and 26,043 citations. Wallentin Lars from Uppsala University was the most prolific author, with 14 articles and 13,532 citations. *Circulation* was the most prolific journal, with 11 articles.

Conclusions: We analyzed the classic publications on dabigatran, the first new-generation oral anticoagulant. The most prolific country was the USA, author was Wallentin, and journal was *Circulation*. Researchers and clinicians can easily access influential publications by reviewing our study.

Keywords: Bibliometrics, dabigatran, Web of Science, citation, stroke.

INTRODUCTION

Atrial fibrillation (AF) is a supraventricular tachyarrhythmia characterized by irregular atrial activation. It is the most common cardiac rhythm disorder in the adult population and occurs more frequently with increasing age. It is easily detected by non-invasive methods. AF is an important cause of morbidity and mortality due to the increased risk of systemic embolism and stroke [1,2]. AF increases the risk of ischemic stroke by 3 to 5 times and is estimated to be responsible for 15% of all strokes worldwide [3]. Stroke in AF patients has been associated with longer hospitalization, greater disability, larger infarct volume, higher mortality in the first 30 days, and less discharge [4].

Anticoagulant therapy significantly reduces stroke and related mortality in AF patients [5]. Oral anticoagulation was the only option with vitamin K antagonists (warfarin) until recently. The risk of intracranial hemorrhage is 7-10-fold higher in warfarin-treated patients (INR 2.5-4.5), and mortality is around 60% [6]. While warfarin has been the primary anticoagulant drug for preventing systemic embolism and stroke in AF, new-generation

oral anticoagulants (NOAC) have recently entered clinical use. NOACs are preferable to warfarin because of their more rapid onset and cessation of action, fewer drug or food interactions, and no need for frequent laboratory monitoring at fixed doses [7]. The Randomized Evaluation of Long-term Anticoagulation Therapy (RELY) trial found that NOACs prevented stroke in patients with AF. Dabigatran was the first NOAC to receive clinical approval for this indication [8]. Dabigatran etexilate is an oral prodrug. It is converted by a serum esterase into dabigatran, a reversible direct thrombin inhibitor. [9].

Bibliometrics is an interdisciplinary method based on quantitative analysis of scientific literature using mathematical and statistical tools [10]. Assessing the research trends and impact of published literature in a particular field can provide valuable data to researchers planning a new research topic. It may be difficult to focus on a specific topic and find effective publications within many published journals and articles. Bibliometric analysis is a useful tool to overcome these problems because it provides a cross-sectional view of existing studies on the topic of interest [11]. Bibliometrics also describes the impact factor (IF) of journals in which manuscripts appear; IF analyzes the impact of a manuscript on the scientific community based on the number of manuscripts that cite it [12]. A review of frequently cited articles can provide information about the dominant areas of a discipline and indicate trends and growth in specific fields [13].

In this study, we aimed to comprehensively analyze the current state of the subject through a bibliometric analysis of the 50 most cited articles on dabigatran.

MATERIALS AND METHODS

Articles with "dabigatran" in the title were searched in Web of Science (WoS). Editorials, book chapters, and abstracts were excluded. Only original articles and reviews were analyzed. We excluded publications that were not in the Science Citation Index-Expanded (SCI-E) category according to WoS indexing and those written in languages other than English.

Articles were ranked by prioritizing the highest number of citations. The first 50 articles in the ranking were selected (T50). The characteristics of the publications (such as country, institution, author, source, scientific category, number of citations, number of citations per article, and citation density) were analyzed. Full text of each publication in the list were independently screened by two authors (EA, SY). In case of disagreement, the opinion of the senior author (EA) was used. Many publications that included the name of the drug in the abstract or full text were irrelevant to the study; thus, the study was limited to publications that included the name of the drug in the title. The results of the analysis were presented as quantitative and descriptive data. No statistical significance test was used.

The analysis occurred between August 08-10, 2023. This and similar studies are exempt from ethical approval because the data used are publicly available and no human or animal data are used [11]. The authors of this study are not affiliated with the company or organization to which the drug subject of the study is affiliated. The data obtained from the WoS database was uploaded to VOSviewer software. Web mapping showing the interaction and density of publications was made with VOSviewer software. VOSviewer is free software for bibliometric analysis, available at https://www.vosviewer.com [14].

Main Points;

- The most cited publications on dabigatran have fluctuated over the years. The number of citations of the most cited studies varies between 251 and 7907, and thus all of them can be considered as "classics" in their field.
- USA was the most productive country in the top 50 most cited articles.
- The citation explosion on dabigatran was driven by the study clinical trial that paved the way for its approval for clinical use.

RESULTS

A total of 3,397 publications were found in the WoS database for publications with the term "dabigatran" in the title. After excluding publications whose language was not English and indexed outside the SCI-E category according to WoS indexing, 3,038 publications were obtained. Including only original articles and reviews, 1,370 publications remained. Among these publications, the 50 most cited articles were selected and analyzed.

The number of publications and citations in T50 by year is shown in Figure 1. Publications and citations within T50 fluctuated according to year. The most publications were published in 2011 (n=10). The highest number of citations in a year was 3,426 in 2013.

The H index for T50 was 50. The publications had a combined total of 33,301 citations. The average number of citations per article was 666. 'Dabigatran versus Warfarin in Patients with Atrial Fibrillation' was the most cited paper (total citations: 7,907) and had the highest average annual citation rate (annual citations: 527). Data for T50 are presented in Table 1.

Data on the five most influential countries in the T50 are shown in Table 2. The United States of America (USA) was the most productive country, with 36 articles, 723 citations on average per article, 26,043 combined citations, and an annual citation average of 1,371. The network map showing the interaction between these countries is shown in Figure 2.

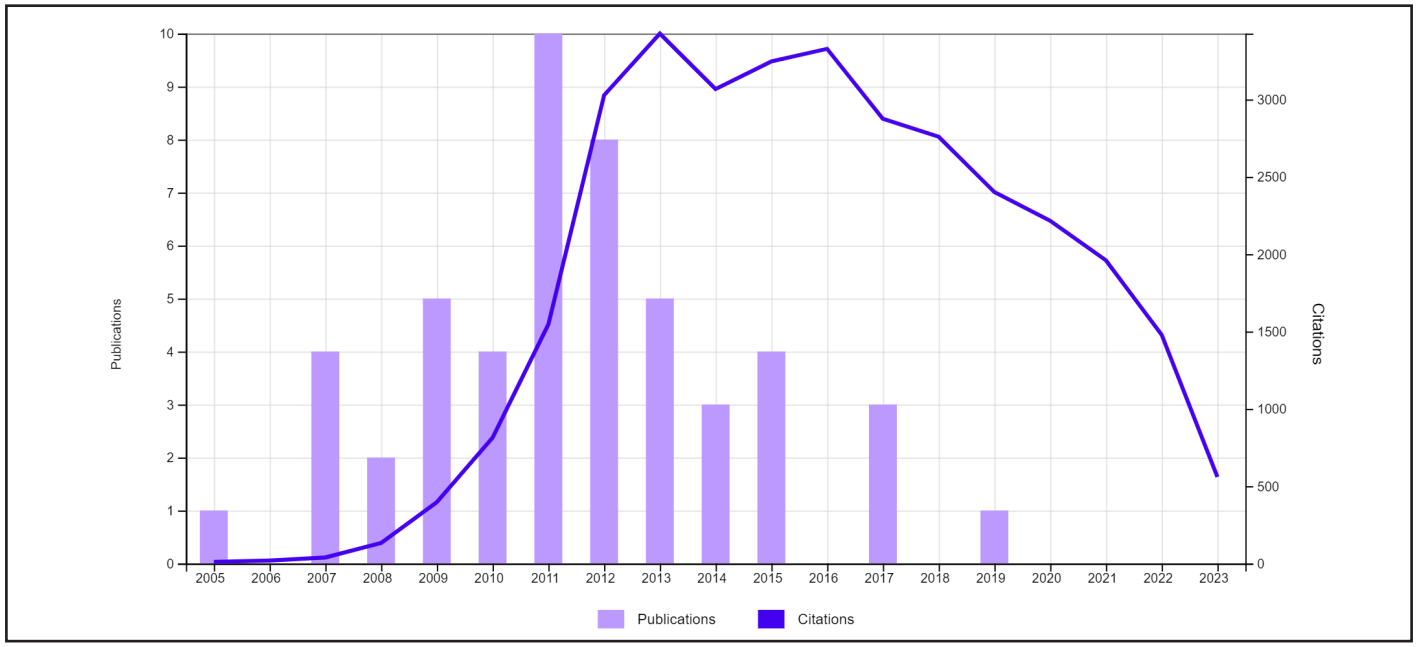

Figure 1. Graph of the number of publications and citations over years

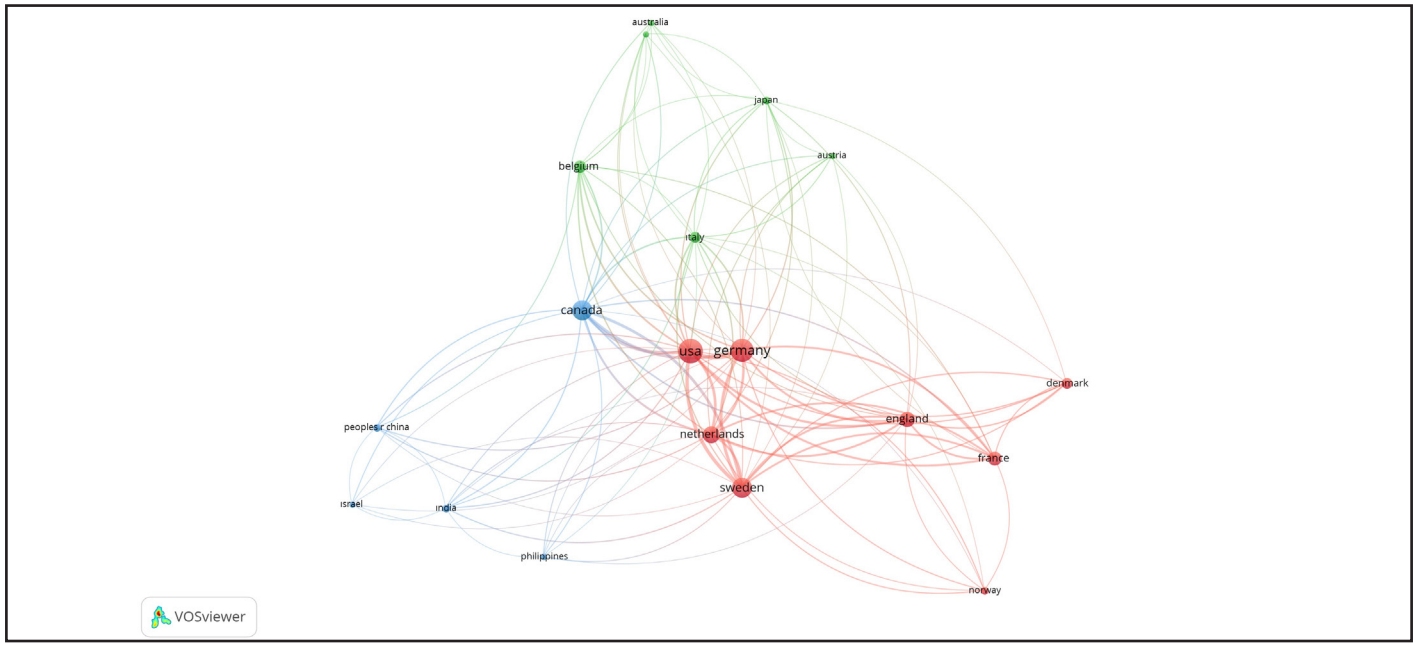

Figure 2. Network visualization map of country co-authorship

Table 1. Data for T50

	Article Title	Journal	Publication Year	DOI	Total Citations	Average per Year
1	Dabigatran versus Warfarin in Patients with Atrial Fibrillation.	NEW ENGLAND JOURNAL OF MEDICINE	2009	10.1056/NEJMoa0905561	7907	527,13
2	Dabigatran versus Warfarin in the Treatment of Acute Venous Thromboembolism.	NEW ENGLAND JOURNAL OF MEDICINE	2009	10.1056/NEJMoa0906598	1841	122,73
3	Dabigatran etexilate - a novel, reversible, oral direct thrombin inhibitor: Interpretation of coagulation assays and reversal of anticoagulant activity	THROMBOSIS AND HAEMOSTASIS	2010	10.1160/TH09-11-0758	1082	77,29
4	Reversal of Rivaroxaban and Dabigatran by Prothrombin Complex Concentrate A Randomized, Placebo-Controlled, Crossover Study in Healthy Subjects	CIRCULATION	2011	10.1161/CIRCULATIONAHA.111.029017	1071	82,38
5	Dabigatran versus Warfarin in Patients with Mechanical Heart Valves	NEW ENGLAND JOURNAL OF MEDICINE	2013	10.1056/NEJMoa1300615	924	84
6	Idarucizumab for Dabigatran Reversal	NEW ENGLAND JOURNAL OF MEDICINE	2015	10.1056/NEJMoa1502000	898	99,78
7	Dual Antithrombotic Therapy with Dabigatran after PCI in Atrial Fibrillation	NEW ENGLAND JOURNAL OF MEDICINE	2017	10.1056/NEJMoa1708454	863	123,29
8	Dabigatran etexilate versus enoxaparin for prevention of venous thromboembolism after total hip replacement: a randomised, double-blind, non-inferiority trial	LANCET	2007	10.1016/S0140-6736(07)61445-7	862	50,71
9	Risk of Bleeding With 2 Doses of Dabigatran Compared With Warfarin in Older and Younger Patients With Atrial Fibrillation An Analysis of the Randomized Evaluation of Long-Term Anticoagulant Therapy (RE-LY) Trial	CIRCULATION	2011	10.1161/CIRCULATIONAHA.110.004747	859	66,08
10	Efficacy and safety of dabigatran compared with warfarin at different levels of international normalised ratio control for stroke prevention in atrial fibrillation: an analysis of the RE-LY trial	LANCET	2010	10.1016/S0140-6736(10)61194-4	786	56,14
11	Oral dabigatran etexilate vs. subcutaneous enoxaparin for the prevention of venous thromboembolism after total knee replacement: the RE-MODEL randomized trial	JOURNAL OF THROMBOSIS AND HAEMOSTASIS	2007	10.1111/j.1538-7836.2007.02748.x	760	44,71
12	The pharmacokinetics, pharmacodynamics and tolerability of dabigatran etexilate, a new oral direct thrombin inhibitor, in healthy male subjects	BRITISH JOURNAL OF CLINICAL PHARMACOLOGY	2007	10.1111/j.1365-2125.2007.02899.x	716	42,12

13	Extended Use of Dabigatran, Warfarin, or Placebo in Venous Thromboembolism	NEW ENGLAND JOURNAL OF MEDICINE	2013	10.1056/NEJMoa1113697	709	64,45
14	Treatment of Acute Venous Thromboembolism With Dabigatran or Warfarin and Pooled Analysis	CIRCULATION	2014	10.1161/CIRCULATIONAHA.113.004450	651	65,1
15	The Effect of Dabigatran Plasma Concentrations and Patient Characteristics on the Frequency of Ischemic Stroke and Major Bleeding in Atrial Fibrillation Patients The RE-LY Trial (Randomized Evaluation of Long-Term Anticoagulation Therapy)	JOURNAL OF THE AMERICAN COLLEGE OF CARDIOLOGY	2014	10.1016/j.jacc.2013.07.104	645	64,5
16	Clinical pharmacokinetics and pharmacodynamics of the oral direct thrombin inhibitor dabigatran etexilate	CLINICAL PHARMACOKINETICS	2008	10.2165/00003088-200847050-00001	645	40,31
17	Idarucizumab for Dabigatran Reversal - Full Cohort Analysis	NEW ENGLAND JOURNAL OF MEDICINE	2017	10.1056/NEJMoa1707278	615	87,86
18	Influence of Renal Impairment on the Pharmacokinetics and Pharmacodynamics of Oral Dabigatran Etexilate An Open-Label, Parallel-Group, Single-Centre Study	CLINICAL PHARMACOKINETICS	2010	10.2165/11318170-000000000-00000	572	40,86
19	The metabolism and disposition of the oral direct thrombin inhibitor, dabigatran, in humans	DRUG METABOLISM AND DISPOSITION	2008	10.1124/dmd.107.019083	546	34,13
20	Cardiovascular, Bleeding, and Mortality Risks in Elderly Medicare Patients Treated With Dabigatran or Warfarin for Nonvalvular Atrial Fibrillation	CIRCULATION	2015	10.1161/CIRCULATIONAHA.114.012061	526	58,44
21	Oral Thrombin Inhibitor Dabigatran Etexilate vs North American Enoxaparin Regimen for Prevention of Venous Thromboembolism After Knee Arthroplasty Surgery	JOURNAL OF ARTHROPLASTY	2009	10.1016/j.arth.2008.01.132	487	32,47
22	A specific antidote for dabigatran: functional and structural characterization	BLOOD	2013	10.1182/blood-2012-11-468207	448	40,73
23	Periprocedural Bleeding and Thromboembolic Events With Dabigatran Compared With Warfarin Results From the Randomized Evaluation of Long-Term Anticoagulation Therapy (RE-LY) Randomized Trial	CIRCULATION	2012	10.1161/CIRCULATIONAHA.111.090464	424	35,33
24	Dabigatran vs. placebo in patients with acute coronary syndromes on dual antiplatelet therapy: a randomized, double-blind, phase II trial	EUROPEAN HEART JOURNAL	2011	10.1093/eurheartj/ehr113	416	32
25	Effect of non-specific reversal agents on anticoagulant activity of dabigatran and rivaroxaban	THROMBOSIS AND HAEMOSTASIS	2012	10.1160/TH12-03-0179	415	34,58

26	Dabigatran Versus Warfarin in Patients With Atrial Fibrillation An Analysis of Patients Undergoing Cardioversion	CIRCULATION	2011	10.1161/CIRCULATIONAHA.110.977546	414	31,85
27	Dabigatran for Prevention of Stroke after Embolic Stroke of Undetermined Source	NEW ENGLAND JOURNAL OF MEDICINE	2019	10.1056/NEJMoa1813959	402	80,4
28	Concomitant Use of Antiplatelet Therapy with Dabigatran or Warfarin in the Randomized Evaluation of Long-Term Anticoagulation Therapy (RE-LY) Trial	CIRCULATION	2013	10.1161/CIRCULATIONAHA.112.115386	373	33,91
29	Dabigatran with or without concomitant Aspirin compared with Warfarin alone in patients with nonvalvular atrial fibrillation (PETRO study)	AMERICAN JOURNAL OF CARDIOLOGY	2007	10.1016/j.amjcard.2007.06.034	366	21,53
30	Efficacy and Safety of Dabigatran Etexilate and Warfarin in Real-World Patients With Atrial Fibrillation A Prospective Nationwide Cohort Study	JOURNAL OF THE AMERICAN COLLEGE OF CARDIOLOGY	2013	10.1016/j.jacc.2013.03.020	353	32,09
31	Dabigatran Association With Higher Risk of Acute Coronary Events Meta-analysis of Noninferiority Randomized Controlled Trials	ARCHIVES OF INTERNAL MEDICINE	2012	10.1001/archinternmed.2011.1666	343	28,58
32	A new oral direct thrombin inhibitor, dabigatran etexilate, compared with enoxaparin for prevention of thromboembolic events following total hip or knee replacement: the BISTRO II randomized trial	JOURNAL OF THROMBOSIS AND HAEMOSTASIS	2005	10.1111/j.1538-7836.2004.01100.x	332	17,47
33	Cost-Effectiveness of Dabigatran Compared With Warfarin for Stroke Prevention in Atrial Fibrillation	ANNALS OF INTERNAL MEDICINE	2011	10.7326/0003-4819-154-1-201101040-00289	327	25,15
34	Intracranial Hemorrhage in Atrial Fibrillation Patients During Anticoagulation With Warfarin or Dabigatran The RE-LY Trial	STROKE	2012	10.1161/STROKEAHA.112.650614	326	27,17
35	Dabigatran compared with warfarin in patients with atrial fibrillation and previous transient ischaemic attack or stroke: a subgroup analysis of the RE-LY trial	LANCET NEUROLOGY	2010	10.1016/S1474-4422(10)70274-X	321	22,93
36	Meta-Analysis of Efficacy and Safety of New Oral Anticoagulants (Dabigatran, Rivaroxaban, Apixaban) Versus Warfarin in Patients With Atrial Fibrillation	AMERICAN JOURNAL OF CARDIOLOGY	2012	10.1016/j.amjcard.2012.03.049	319	26,58
37	Efficacy and Safety of Dabigatran Compared With Warfarin in Relation to Baseline Renal Function in Patients With Atrial Fibrillation A RE-LY (Randomized Evaluation of Long-term Anticoagulation Therapy) Trial Analysis	CIRCULATION	2014	10.1161/CIRCULATIONAHA.113.003628	306	30,6

38	Oral dabigatran versus enoxaparin for thromboprophylaxis after primary total hip arthroplasty (RE-NOVATE II) A randomised, double-blind, non-inferiority trial	THROMBOSIS AND HAEMOSTASIS	2011	10.1160/TH10-10-0679	303	23,31
39	Myocardial Ischemic Events in Patients With Atrial Fibrillation Treated With Dabigatran or Warfarin in the RE-LY (Randomized Evaluation of Long-Term Anticoagulation Therapy) Trial	CIRCULATION	2012	10.1161/CIRCULATIONAHA.111.055970	290	24,17
40	Impact of dabigatran on a large panel of routine or specific coagulation assays Laboratory recommendations for monitoring of dabigatran etexilate	THROMBOSIS AND HAEMOSTASIS	2012	10.1160/TH11-11-0804	280	23,33
41	Hemostatic Therapy in Experimental Intracerebral Hemorrhage Associated With the Direct Thrombin Inhibitor Dabigatran	STROKE	2011	10.1161/STROKEAHA.111.624650	269	20,69
42	Uninterrupted Dabigatran versus Warfarin for Ablation in Atrial Fibrillation	NEW ENGLAND JOURNAL OF MEDICINE	2017	10.1056/NEJMoa1701005	266	38
43	Net clinical benefit of new oral anticoagulants (dabigatran, rivaroxaban, apixaban) versus no treatment in a 'real world' atrial fibrillation population: A modelling analysis based on a nationwide cohort study	THROMBOSIS AND HAEMOSTASIS	2012	10.1160/TH11-11-0784	264	22
44	Rationale and design of RE-LY: Randomized evaluation of long-term anticoagulant therapy, warfarin, compared with dabigatran	AMERICAN HEART JOURNAL	2009	10.1016/j.ahj.2009.02.005	263	17,53
45	Pharmacology, Pharmacokinetics, and Pharmacodynamics of Dabigatran Etexilate, an Oral Direct Thrombin Inhibitor	CLINICAL AND APPLIED THROMBOSIS-HEMOSTASIS	2009	10.1177/1076029609343004	256	17,07
46	Comparative risk of gastrointestinal bleeding with dabigatran, rivaroxaban, and warfarin: population based cohort study	BMJ-BRITISH MEDICAL JOURNAL	2015	10.1136/bmj.h1857	254	28,22
47	Cost-Effectiveness of Dabigatran for Stroke Prophylaxis in Atrial Fibrillation	CIRCULATION	2011	10.1161/CIRCULATIONAHA.110.985655	253	19,46
48	Dabigatran Etexilate A New Oral Thrombin Inhibitor	CIRCULATION	2011	10.1161/CIRCULATIONAHA.110.004424	252	19,38
49	Safety, tolerability, and efficacy of idarucizumab for the reversal of the anticoagulant effect of dabigatran in healthy male volunteers: a randomised, placebo-controlled, double-blind phase 1 trial	LANCET	2015	10.1016/S0140-6736(15)60732-2	251	27,89
50	Population pharmacokinetic analysis of the oral thrombin inhibitor dabigatran etexilate in patients with non-valvular atrial fibrillation from the RE-LY trial	JOURNAL OF THROMBOSIS AND HAEMOSTASIS	2011	10.1111/j.1538-7836.2011.04498.x	251	19,31

Table 2. List of top 5 countries by publication frequency in T50

	Country	Frequency
1	USA	36
2	GERMANY	32
3	CANADA	23
4	SWEDEN	23
5	NETHERLANDS	16

Data for the five most influential institutions are shown in Table 3. In T50, Boehringer Ingelheim was the most influential institution, with 37 articles, 761 citations per article, 28,157 citations, and an annual citation average of 1,482. The network map showing the interaction between these organizations is shown in Figure 3.

Table 3. List of top 5 institutions by publication frequency in T50

	Institution	Country	Frequency
1	BOEHRINGER INGELHEIM	GERMANY	37
2	MCMASTER UNIVERSITY	CANADA	19
3	UPPSALA UNIVERSITY	SWEEDEN	16
4	POPULATION HEALTH RESEARCH INSTITUTE	CANADA	13
5	LANKENAU MEDICAL CENTER	USA	11

The data of the five most influential authors are shown in Table 4. Wallentin Lars from Uppsala University was the most influential author in T50, with 14 articles, 967 citations per article, 13,532 citations, and an average of 846 citations per year. The visualized density map of the authors is shown in Figure 4.

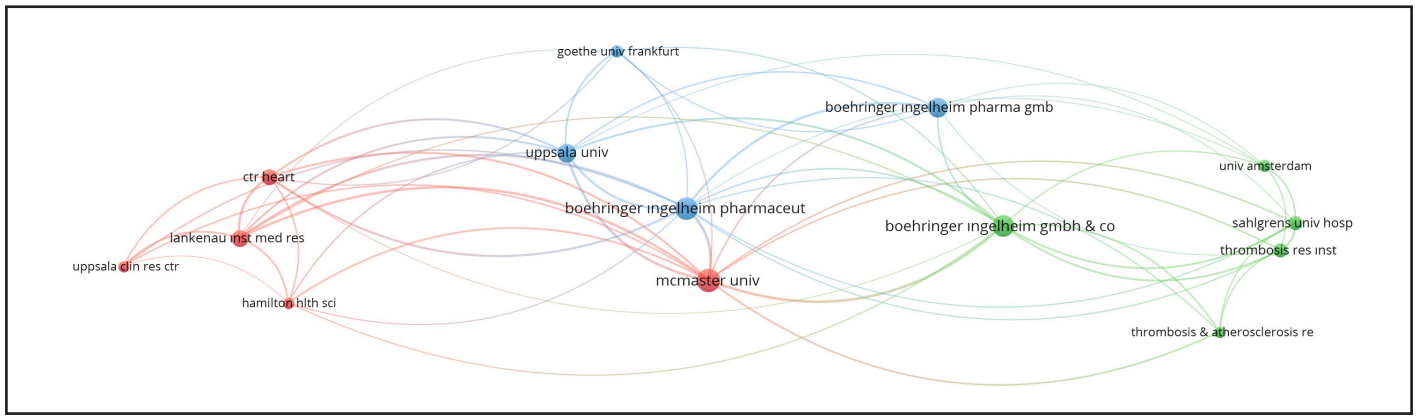

Figure 3. Network visualization map of institution co-authorship

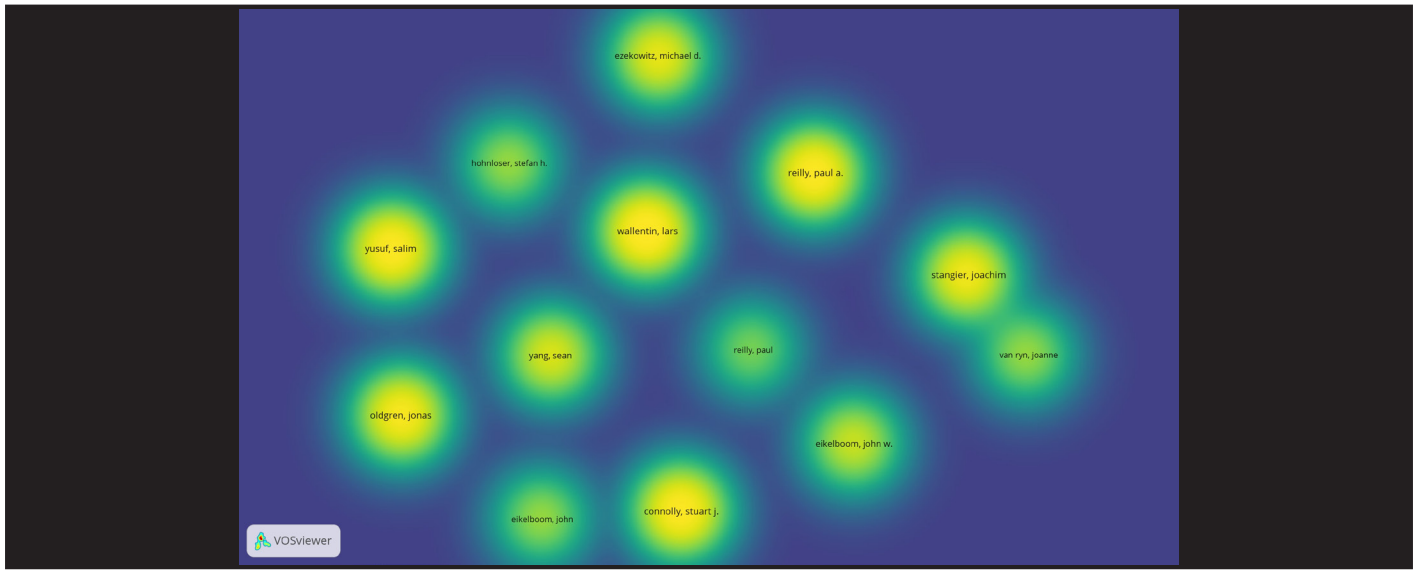

Figure 4. Density visualization map of bibliographic coupling of the authors

Table 4. Data on the top 5 authors with the most publications in T50

Author	Institution	Country	Publications (n)
Wallentin Lars	Uppsala University	SWEDEN	14
Connolly Stuart	McMaster University	CANADA	13
Reilly Paul	Boehringer Ingelheim	USA	13
Salim Yusuf	McMaster University	CANADA	13
Oldgren Jonas	Uppsala University	SWEDEN	11

Table 5. List of top 5 journals by publication frequency in T50

	Journal Name	Frequency
1	CIRCULATION	11
2	NEW ENGLAND JOURNAL OF MEDICINE	9
3	THROMBOSIS AND HAEMOSTASIS	5
4	JOURNAL OF THROMBOSIS AND HAEMOSTASIS	3
5	LANCET	3

Data for the five most productive journals are shown in Table 5. T50 was published in a total of 20 journals. The *Circulation* journal was the most prolific, with a total of 11 articles. It was followed by the *New England Journal of Medicine* (9 articles) and *Thrombosis and Haemostasis* (5 articles). The visualized density map of the journals is shown in Figure 5.

When articles were classified according to T50 WoS categories, the "Peripheral Vascular Disease" category ranked first with 22 articles. This category was followed by "Cardiac Cardiovascular Systems" with 17 articles and "Medicine General Internal" with 15 articles. There were only three articles in the "Clinical Neurology" category.

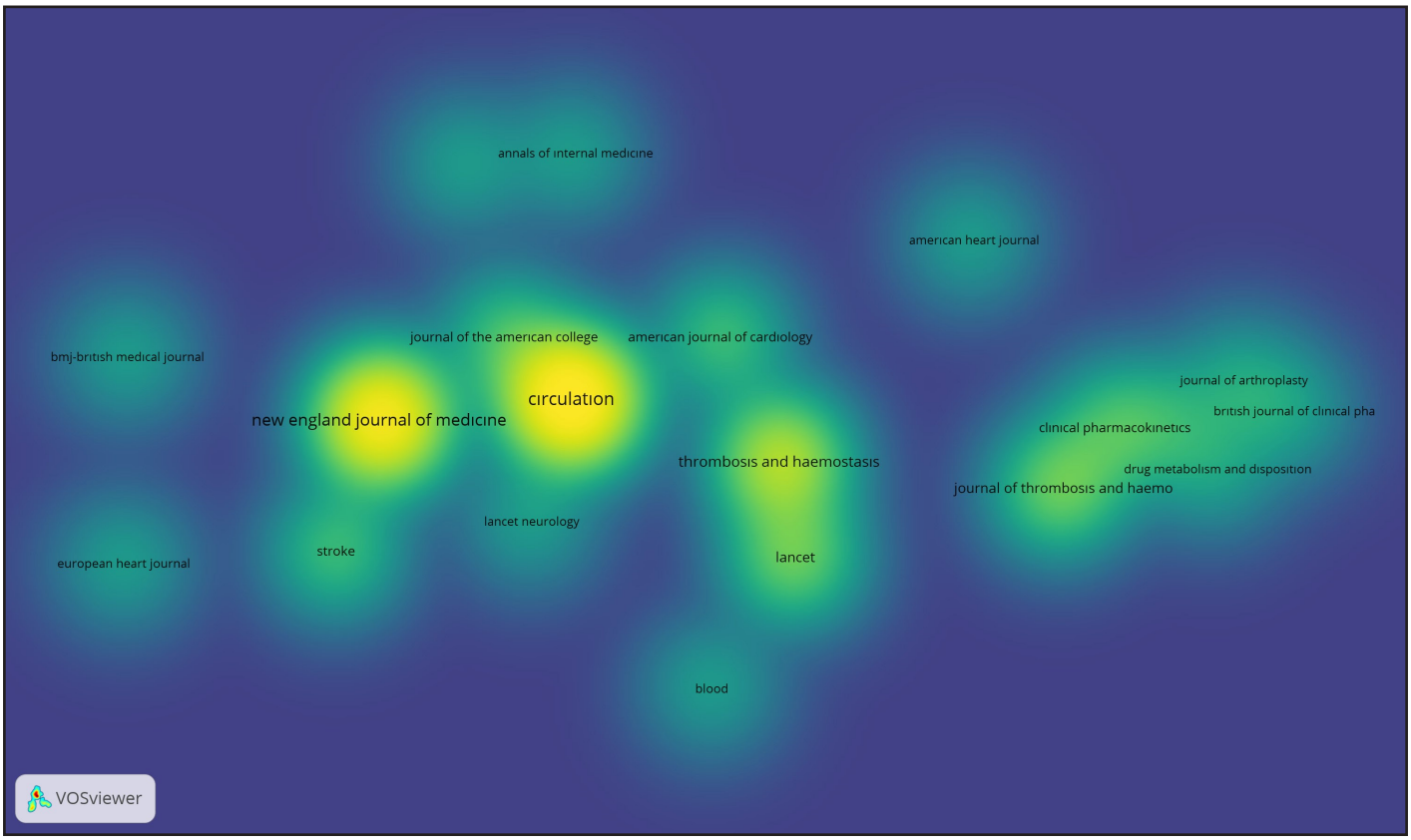

Figure 5. Density visualization map of bibliographic coupling of the journals

DISCUSSION

Science, which has developed with the contribution of countless scientists from ancient times to the present day, has reached a wide audience with the contribution of scientific publications in recent centuries. Bibliometric analysis is one of the quantitative methods that can be used to assess the number and quality of publications in a given scientific field through mathematical and statistical methods [15,16]. Although bibliometric studies are

often criticized for their limited analysis and methodology, they are valuable in reflecting developments and trends in a particular field. In particular, bibliometric analysis of the most cited articles can provide researchers and clinicians with important information about landmark articles [17]. In this way, we think that we will contribute to the literature by analyzing the most cited articles about dabigatran. There is no bibliometric study on dabigatran in the literature.

The number of citations of a study is a relatively reasonable indicator of its quality. The number of citations may vary according to year of publication, frequency of publication of the journal, and the IF of the journal in which the study was published. When a published article is cited 100 times or more, it is considered "classic" in the field of research in which it appears [18]. The number of citations for the top 50 studies ranged from 251 to 7907. Therefore, all of them could be considered "classics" in the field.

As in many previous bibliometric studies, Among T50 articles, the USA ranked first in terms of effectiveness. The USA is the most productive country in bibliometric analyses, from multiple sclerosis and stroke to neurocritical intensive care [11]. The huge financial opportunity of the American scientific community is a major contributor to this. In addition, US authors who have established themselves in the wider scientific community prefer journals in their own country when publishing and citing an article. Besides, the fact that the density of academic institutions and population in the USA is higher than in other countries can be considered as a factor here. After the USA, European countries such as Germany, Sweden, and the Netherlands followed. Participation in the T50 from Asia and Australia was rare. There were no papers from Africa in the T50. There are geographical disparities in scientific production on the subject. There is a need to allocate a global budget for health service financing in countries with socioeconomic inadequacies and to develop scientific cooperation with institutions, journals, and authors in these regions.

The article "Dabigatran versus Warfarin in Patients with Atrial Fibrillation" topped the citation list with 7,909 citations. The study was published in the *New England Journal of Medicine* and paved the way for dabigatran to be approved for clinical use [8]. Therefore, it was not surprising that the explosion of citations for dabigatran came from this study. Following this pilot study, 2011 was the year with the highest number of annual dabigatran publications, while 2013 was the year with the highest number of annual citations.

When T50 articles were classified according to WoS categories, the ''Peripheral Vascular Disease,'' ''Cardiac Cardiovascular Systems,'' and ''Medicine General Internal'' categories were in the top three. Only three articles were in the "Clinical Neurology" category. Although AF is a clinical entity that primarily concerns cardiology, it is a rhythm disorder that every neurologist should recognize. Ischemic stroke prophylaxis in patients with AF is as much a neurologist's concern as a cardiologist's. Thus, it is surprising that there are so few publications in the neurological sciences category among the T50 articles. This may be due to the social security options neurologists face in prescribing and reporting dabigatran, as in Turkey. Solving this problem may increase the number of publications in the neurological sciences category.

Limitation

This study has some limitations. First, the inclusion of only English language original research and reviews from a single database and indexing category may have excluded some publications. Second, the WoS database is constantly updated with new publications. A study conducted at a different time may have different results. Third, the idea that the number of citations a publication receives indicates its quality is controversial. Finally, the citation analysis can bring some biases to mind. Factors such as the language of an article, the year of publication, the IF of the journal, and whether it is open access or not can directly affect the number of citations.

CONCLUSION

This study analyzed the 50 most-cited articles on dabigatran. It highlighted the current status of dabigatran in the literature with information on the most cited publications, the countries involved, and the researchers and institutions involved. The most prolific country was the USA, author was Wallentin, and journal was *Circulation*. This data may help researchers and clinicians access classical publications efficiently and easily.

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Ethical Approval: Not required.

Author Contributions: Conception: EA- Design: SY- Supervision: EA, SY - Fundings: SY -Materials: EA - Data Collection and/or Processing: SY - Analysis and/or Interpretation: EA - Literature: SY - Review: ES - Writing: SY - Critical Review: EA

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