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Obstetrical and gynecological writing and publishing in Europe

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1. Introduction

Many European countries including Germany [1], France and Italy have a strong tradition of scientific and especially medical publishing. Nowadays, the United States of America (USA) and the United Kingdom (UK) are recognized as the main sources of scientific production [2,3]. The aim of this study was to analyze this development by assessing the number and quality of scientific articles published by authors from the European Union (EU) and Germany in the past 25 years. We put a focus on the field of obstetrics and gynecology and investigated the impact of their research in comparison to that produced elsewhere.

A scientist's activity is measured by his output of papers. The value of publications is commonly rated by the rank of the journals in the Journal Citation Report (JCR), which is published every year by the Institute for Scientific Information (ISI). This database covers scientific research publications from nearly 6000 journals and ranks the journals by the impact factor (IF). The impact factor is calculated by dividing the number of current citations to articles published in the two previous years by the total number of articles published in the 2 previous years (definition by ISI Web of Knowledge) [4]. As this factor is an easily available means to quantify the value of scientific work, it is widely and increasingly used in the academic and industrial world [5], although many shortcomings and biases are known [6–8]. The ISI Web of Knowledge contains information not only on the frequency of citations expressed by the IF, but also on the authors' and publishers' origin and the language of the individual articles. We used this database

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to further investigate the impact, origin and language of current obstetrical and gynecological scientific literature.

2. Materials and methods

We analyzed papers published since 1980 with a focus on the field of obstetrics and gynecology. We reviewed the data in 5-year steps from 1980 until 1999 followed by a yearly analysis from 1999 to 2003.

The ISI Subject Category and the year to be analyzed were selected as filter on the internet search engine of the ISI database covering the Science Citation Index Expanded (sci-expanded)—1945-present and Sciences Citation Index (SCI)—1995-present. We took all listed publications into account. Besides evaluating Germany, we separately analyzed the data of the whole European Union and the United States of America. We summed the 15 official member states (i.e. Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, The Netherlands, Portugal, Spain, Sweden and the United Kingdom) plus Norway as the European Economic Area (EEA) in 2003. For reasons of comparison we added papers from Scotland, England, Wales and Northern Ireland to the United Kingdom. The country of origin of the article was identified by the country listed in the corresponding author's address. We were aware that this is a simplification for a paper's origin, but having such a great number of publications we accepted the possible mismatch or loss of publications due to unknown origin. For the analysis of the journals themselves, we used the database in the Journal Citation Reports showing a journal's impact factor.

First, we assessed the total number of journals covered by the JCR 2003 and graded all journals by IF. Then, we studied the origin of the top journals by impact factor and separately assessed the origin of top medical journals.

Then, we focused on the field of obstetrics and gynecology, evaluating the total number of publications 1980–2003. We assessed the distribution of IF and country of origin for these journals. Additionally, we analyzed the origin of the articles and the development of the IF of the top 20 journals in the last 5 years. Also, we investigated the authors' origin for the top five journals in the last 5 years by searching the SCI for the name of the country in the corresponding author's address. Then, we determined the general distribution of authors in the field of obstetrics and gynecology 1980–2003 the same way. Finally, we assessed the publishing language in this field 1980–2003.

3. Results

In the year 2003, there are total number of 5907 journals listed in the Journal Citation Report. Grading by IF shows 2739 journals with an IF > 1 (46%) and 86 journals with an IF > 10 (2%) in 2003. Among the top 20 of all journals by

IF, there are 14 from the USA and 6 from the UK with the positions 1–3 held by US journals. None of the journals with an IF > 10 was German and in the IF ranking of the year 2003 the highest German journal was 'Angewandte Chemie' (position 108, IF 8.247), second 'Advances in Polymer Science' (position 156, IF 6.955) and third 'Reviews of Physiology' (position 181, IF 6.333).

Among the top 20 journals in the field of general and internal medicine by IF, we find 10 journals from the US, 8 from the UK, one from Canada and one from Finland. The top five journals in this group show IFs > 10 with the New England Journal of Medicine as the leading journal (IF 34.833). Among the top 100 journals in this group, there are 3 with German publishers: position 54 (Deutsche Medizinische Wochenschrift, IF 0.678) position 70 (Medizinische Klinik, IF 0.466) and position 90 (Internist 0.072).

As we focused on gynecological writing and publishing, we further analyzed the ISI Category 'obstetrics and gynecology'. In 2003, there are altogether 53 journals listed in this JCR category with 3201 publications mentioned in the SCI-expanded and SSCI. From 1980 to 2003, the total number of publications in this subgroup increased enormously from 559 to more than five times as much. Even though the growth was not as rapid during the last years, we still find a steady increase by 6% from 1999 to 2003 (Fig. 1).

Fig. 2 gives an overview of all journals in the field of obstetrics and gynecology in 2003 by IF and country. None of these journals had an IF greater than 10, but 30 journals show an IF greater than 1. Looking at the top 20 in this subgroup, we count 12 journals from the US, 8 from Europe (7 from the UK and one from The Netherlands) (Table 1). There are three journals from German publishers indexed, all with IFs less than 1: position 41 (J Perinat Med, IF 0.790) position 45 (Geburtshilfe und Frauenheilkunde IF 0.726) and position 53 (Gynaekologe, IF 0.166).

To assess who actually publishes in the 2003 top five journals in the JCR field category obstetrics and gynecology, we analyzed the authors' origin in these journals between 1999 and 2003 (Fig. 3). There is an obvious increase of US American authors from 31 to 54% in these journals, while the contribution of European authors to the top-IF journals

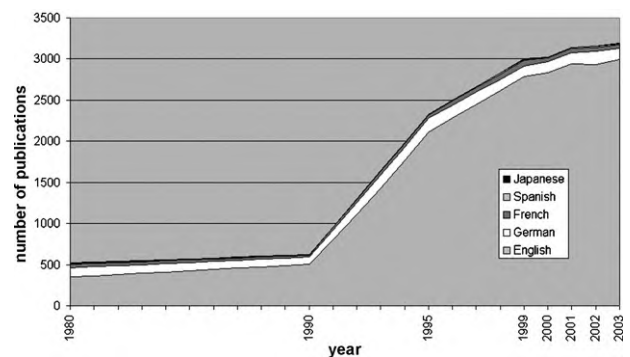


Fig. 1. Total number of publications listed in the field of obstetrics and gynecology 1980–2003, subdivided into publication languages.

Table 1
Top 20 journals by IF in the ISI category of obstetrics and gynecology in the year 2003

Rank	Abbreviated journal title	IF 1999	IF 2000	IF 2001	IF 2002	IF 2003	Publisher's country
1	Hum Reprod Update	2.297	2.887	2.969	3.710	3.731	UK
2	Fertil Steril	2.955	2.854	2.960	3.202	3.483	US
3	Menopause	1.529	2.273	3.505	3.217	3.319	US
4	Hum Reprod	3.003	2.997	2.987	3.253	3.125	UK
5	Obstet Gynecol	2.112	2.091	2.196	2.482	2.957	US
6	Placenta	2.101	2.587	2.521	2.359	2.706	UK
7	Am J Obstet Gynecol	2.401	2.519	2.871	2.556	2.518	US
8	Gynecol Oncol	1.868	1.972	2.200	2.115	2.341	US
9	J Soc Gynecol Invest	2.040	2.184	2.830	2.440	2.291	US
10	Int J Gynecol Pathol	1.760	1.508	1.454	1.848	2.159	US
11	Maturitas	1.119	1.402	1.640	2.068	2.045	The Netherlands
12	Bjog-Int J Obstet Gyn	2.657	2.349	2.321	1.864	1.991	UK
13	Ultrasound Obst Gyn	2.196	1.725	1.862	1.806	1.973	UK
14	Int Urogynecol J Pel	n/a	n/a	n/a	1.415	1.911	UK
15	Obstet Gynecol Surv	n/a	n/a	n/a	1.573	1.773	US
16	Birth-Iss Perinat C	0.915	1.250	0.917	1.424	1.709	US
17	Paediatr Perinat Ep	0.860	1.265	1.205	1.725	1.673	UK
18	Curr Opin Obstet Gyn	0.922	1.387	1.108	1.403	1.594	US
19	Semin Reprod Med	n/a	n/a	0.205	1.329	1.575	US
20	Contraception	1.916	1.704	1.758	1.443	1.571	US

UK: United Kingdom; US: United States.

decreased from 51 to 24% in the same time period, and contributions from other countries including South Korea, Japan, Canada and Brazil constantly constituted less than five percent.

Looking at the German journals in the field of obstetrics and gynecology, another trend can be observed: the IFs of the three listed journals drop to lower values, most significantly the *Geburtsh. Frauenheilk.* from 0.726 to 0.174 between 1999 and 2003 and the *J Perinat Med* (IF 0.790 in 2003), while the IF of the *Gynaekologe* remained constantly low (0.166).

The number of journals in the ISI category of obstetrics and gynecology by US publishers has risen over the last years (year 1980–2003: 26–35%). Therefore, we investigated whether this is accompanied by a change in the scientific activity, measured by the number of publications from this country. Counting the 15 European countries together, there

are more publications by European than by US-American authors (40% versus 35%) in 2003, even though only six European countries are represented (Fig. 4). In the year 1980, we found about 26% of all publications in the category of obstetrics and gynecology by US-authors, followed by 15% from German authors and 8% by British ones. Until 1995, we see an increasing share of publications by US authors to about 39%, while the number of German articles decreased to 8% and the British contribution remained around 8% (Fig. 4). Over the last 10 years, we see hardly any changes in this relation.

Another aspect we were interested to investigate is the change in the scientific publication language. Over the last 25 years, we see a growing importance of the English language as the scientific language (Fig. 5). While in 1980, 60% of all publications in the field of obstetrics and gynecology were written in English, we now have a rate of

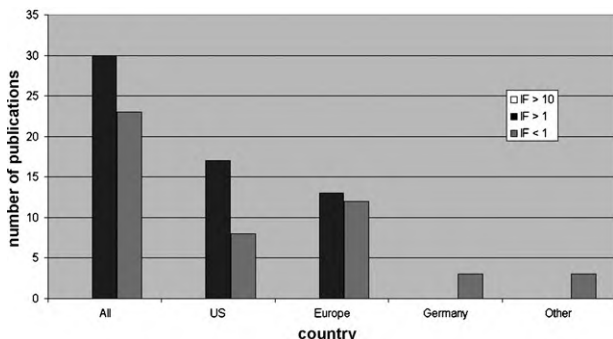


Fig. 2. Overview of all journals in the field of obstetrics and gynecology by IF and publisher's country in 2003 (the three journals from outside the US and Europe summed under 'other' are from Australia, Canada and Switzerland).

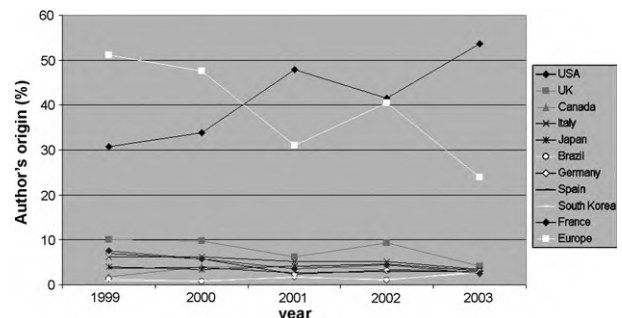


Fig. 3. Authors' origin of the top five journals by IF 2003 in the ISI category of obstetrics and gynecology 1999–2003 (the Europe curve contains the publications from all countries of the European Union, including those with separate curves).

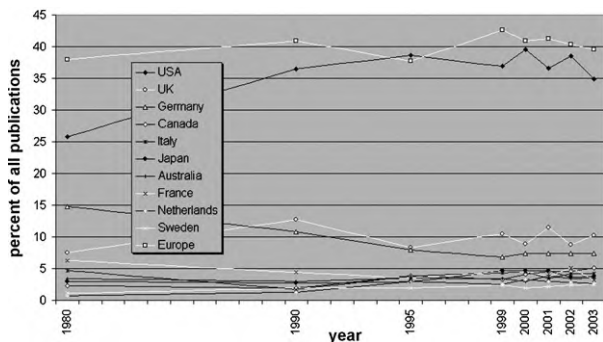


Fig. 4. Percentage of publications in the field of obstetrics and gynecology 1999–2003 by author's origin (the Europe curve contains the publications from all countries of the European Union, including those with separate curves).

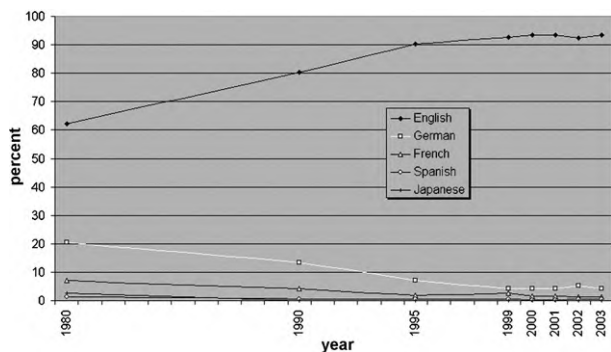


Fig. 5. Development of the publication language in the field of obstetrics and gynecology in the last 25 years.

more than 93% in 2003. German remains the second most important language by rank, but the percentage of publications in this language is less than 5%. Comparing to the data of 1980, the German language has the greatest decline as scientific language dropping from 20 to 4% of publications between 1980 and 2000.

4. Discussion

Our results indicate that the contribution of American and European authors to gynecological scientific output is in comparable dimensions, at least regarding the number of publications with 40% European versus 35% US-American contributions in 2003. However, US authors dominate the top IF journals with 53% of all articles from American and 24% from European authors. A higher average quality of American papers can be assumed to be the main reason for this different distribution. Ugolini and Mela [9] have also observed this difference and attributed it to higher research funding in the US. Garcia-Garcia et al. [10] observed an increase of Spanish scientific production from 1986 to 2002, which is in agreement with our observation that the total number of publications grew to about three to four-fold in

the analyzed period, while the share of publications from Europe and from Spain remained nearly constant. However, the observed mean IF of 2.2 for publications from Spain is certainly higher than European average, although we did not analyze this specific issue.

As there currently is no better available instrument to rate the quality of an article other than the impact factor, we used this means being aware of its limitations [5]. Whether the impact factor of a journal is equal to its scientific worth and scientific quality can only be assumed [11]. Other studies like analyses from Spain [10], the United Kingdom [12,13] or Australia [14] are also based on the Science Citation Index. Obviously, the citation analysis is not representative for the quality of a non-English article, because the much smaller population able to read this article will also result in a lower frequency of citations, regardless of the quality and significance of the article [15]. Also, the inclusion of journals in the Index Medicus is not only influenced by the quality of the journal and its contents but also by the availability of adequate English-language abstracts, and the indexation should have a dramatic influence on the citation frequency.

English is establishing its role as the most important scientific language, thus displacing other languages, mainly German [16], French and Spanish. While authors from non-English speaking countries including Germany, Italy, Japan, France, The Netherlands and Sweden (Fig. 4) do contribute a considerable share to gynecological literature, they obviously increasingly publish in English language journals (Fig. 5), and nowadays only about five percent of the gynecological articles covered by the JCR are written in other languages. Obvious reasons and advantages are the ease of international communication and the rapid development of the internet with online publication of journals and immediate availability of results to readers throughout the world as well as online databases that have become a collective source of knowledge. A downside of this development is that while international scientific communication is improved, local communication in the lingual area between scientific centers and smaller hospitals and private practices is hindered. The most significant scientific output of a country's research centers is submitted to international journals in English language and is not published in non-English national journals, which means that these journals further loose importance and, more importantly, that the immediate and more or less exclusive availability of the information to the researchers from the country is exchanged with an international broad audience.

However, this development may as well to a large part be self-made by the system we use to assess the quality of publications and to decide which journal to submit our work to. In university systems and industrial companies of many countries the impact factor is the unit in which the quality and importance of a publication is measured. Although the frequency of citations to an article obviously is not a very objective representation of its quality and although this is often mentioned, there is just no other unit available that would allow to compare different publications as easily.

However, regarding non-English publications, the impact factor may validly represent international impact but fails to assess the importance for national scientific communication and communication to practicing doctors. Universities of non-English speaking countries may therefore try to find other means to assess the quality of publications because the impact factor cannot be assumed to validly assess the impact of non-English journals, at least it widely disregards the local impact. However, with the increasing importance and availability of journals in English and fast international communication via the internet, the dimension and importance of local communication is likely to dwindle, thus making an assessment and comparison to international impact dispensable.

5. Study limitations

A drawback of our study concerning the assessment of publications in the field of obstetrics and gynecology is the heterogeneous definition of this field: in German speaking countries this field includes large areas such as gynecological oncology (chemotherapy, antibody therapy, etc.) or breast surgery which are assigned to oncology or surgery in other countries. Another limitation of the study is that it takes only journals into account which are recognized by the ISI. However, this topic just reflects the lack of representation of smaller, especially non-English journals, by the citation analysis as discussed above.

Another limitation are difficulties to identify the origin of the author from the corresponding address, even though most entries of the JCR list the author's country. However, the error caused by this mis-assignment should be small.

6. Conclusion

In the field of obstetrics and gynecology, European authors produce a quantitatively similar output as American authors. German journals in this field achieve only comparably low impact factors, but this may not appro-

priately indicate their quality and especially their local impact. The English language has widely displaced other languages including German as a scientific language, which contributes to a further loss of importance of non-English journals.

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