

The relevance of endometrial polyps: a bibliometric study

Pietro Gambadauro · Rafael Torrejón

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Abstract The aim of this study was to explore and describe the status and trends of scientific literature on endometrial polyps. We have conducted a systematic search for publications related to endometrial polyps from 1982 to 2012 using Scopus. The original search was refined with the additional keywords: “infertility”, “bleeding”, and “cancer”. We have collected and analyzed quantitative data on number of publications, journals, language, and origin of each article. Descriptive statistics and charts were used to analyze data and provide information on publication trends. Out of a database of 12,125,345 articles published in the past 30 years, our systematic search retrieved 1,144 relevant publications. The amount of articles/year related to endometrial polyps has been significantly growing throughout the study period (1982–1996, 14 ± 11.988 ; 1997–2012, 58.38 ± 11.506 ; $p < 0.0001$). A similar positive trend is observed for relative number of yearly publications (% retrieved/indexed; 1982–1996, $0.0044 \% \pm 0.0035$; 1997–2012, $0.0127 \% \pm 0.0025$; $p < 0.0001$). The proportion of articles related to “infertility” and “bleeding” has been growing more than that of papers related to “cancer”. English is the dominant language (79 %), and the USA is the most prolific country (19 %), followed by Italy (8 %) and the UK (7,8 %). During the last 5 years, *Gynecological Surgery* has been the journal with the highest proportion of publications on endometrial polyps (2.11 % of all its articles). In conclusion, the publications related to endometrial polyps have increased steadily during the last 30 years, particularly those related to bleeding and infertility. Not all the journals publishing

regularly on “endometrial polyps” are indexed in Medline/Pubmed. Scholars interested in this field should consider comprehensive bibliographic search strategies.

Keywords Endometrial polyps · Hysteroscopy · Infertility · Abnormal uterine bleeding · Endometrial cancer · Bibliometrics

Background

Endometrial polyps are commonly described as sessile or pedunculated overgrowths of the endometrial layer. The clinical relevance of endometrial polyps is linked to abnormal uterine bleeding, infertility, and the risk of endometrial atypia and cancer [1–3]. Scientific advances during the last decades have contributed to the evidence-based establishment of reliable tools for diagnosis and treatment of endometrial polyps, such as transvaginal ultrasound and hysteroscopy [4, 5]. Nevertheless, the clinical relevance of endometrial polyps, particularly in asymptomatic and premenopausal women, is debated and expectancy has been advocated, keeping in mind that one out of four polyps can regress without treatment [6].

We have conducted this bibliometric study in order to explore, analyze, and describe the current status and past trends of scientific literature on endometrial polyps.

Methods

We have conducted a systematic, electronic search through scientific literature published between 1982 and 2012, with the aim to retrieve publications related to the topic of endometrial polyps. In order to achieve our goal, we searched the Scopus database (<http://www.scopus.com>) during autumn 2012 for the terms “endometrial polyps”, “endometrial polyp”, and “hysteroscopic polypectomy”. Our search strategy was based on the following query:

P. Gambadauro (✉)
Centre for Reproduction,
Department of Obstetrics and Gynaecology,
Uppsala University Hospital, 751 85 Uppsala, Sweden
e-mail: gambadauro@gmail.com

R. Torrejón
Department of Obstetrics and Gynaecology, “Puerta del Mar”
University Hospital, University of Cádiz, Cádiz, Spain

TITLE-ABS-KEY("endometrial polyps" OR "endometrial polyp" OR "hysteroscopic polypectomy") AND SUBJAREA(medi OR nurs OR heal) AND PUBYEAR > 1981 AND (EXCLUDE(SUBJAREA, "VETE"))

This original search was then refined with the additional keywords: "infertility", "bleeding", and "cancer". Data were extracted from the original and refined searches regarding number of retrieved publications, source journals, the language, and the geographical origin of each article. The number of retrieved articles per year was also normalized to the total number of articles indexed by Scopus. We divided the retrieved articles into two different periods (1982–1996 and 1997–2012) in order to allow for comparative analysis. For source journals analysis, we focused on the period 2007–2012, in order to provide recent data.

All data were initially stored on a custom-made, online electronic database, based on Google Drive spreadsheets (<http://drive.google.com>). This allowed simultaneous access to both authors [7].

Descriptive statistics and charts were used to analyze data and provide information on publication trends. Student's *t* test and Fisher's exact test were used where appropriate and differences were considered statistically significant with

Table 1 Summary of findings

	<i>N</i> of articles	Percent
Total	1,144	(0.009 ^a)
1982–1996	210	18.36
1997–2012	934	81.64
Language		
English	913	79
Other	231	21
Geographical distribution per country ^b		
United States	213	19.0
Italy	90	8.0
United Kingdom	88	7.8
Turkey	79	7.0
Spain	63	5.6
Others	589	52.6
Geographical distribution per continent ^b		
Europe	513	45.7
Asia	260	23.1
North America	236	21
South America	68	6
Africa	23	2
Oceania	22	1.9
Refined search		
"cancer"	431	37
"bleeding"	376	33
"infertility"	132	11.5

^aPercent of articles retrieved out of the total amount of articles (*n* 12,125,345) indexed by Scopus in the same period and subject areas

^bCalculated on 1,122 articles with retrievable information on source country

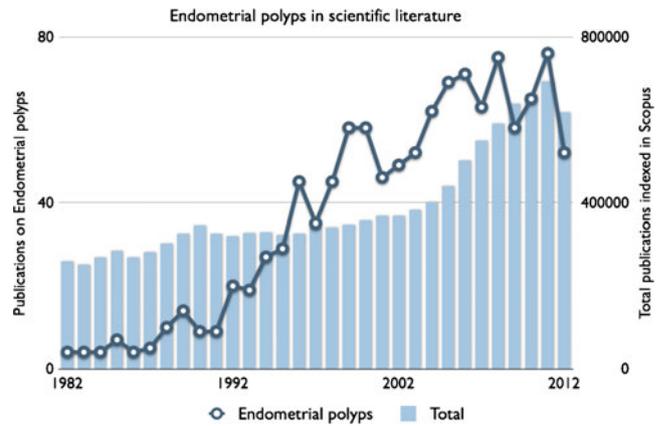


Fig. 1 Our systematic search (Autumn 2012, Scopus) shows a growing trend of publications retrieved with the keywords "endometrial polyps", "endometrial polyp", or "hysteroscopic polypectomy" throughout the last 30 years

a *p* value <0.05. The software Numbers '09 v2.2 (Apple Inc.) and SPSS v20 (IBM) for Mac OSX were respectively used for charts and statistical calculations. The global map on publications was generated on Google Drive.

Findings

Our systematic search retrieved 1,144 relevant publications out of a database of 12,125,345 articles published in the past 30 years in the subject area of interest. An overview of descriptive findings is given in Table 1.

Analysis of the yearly publication trends reveals how the absolute number of articles related to endometrial polyps has been growing since 1982 (Fig. 1). Significantly more articles per year have been published after 1997 (1982–1996, 14±11.988; 1997–2012, 58.38±11.506; *p*<0.0001). A similar statistically significant difference is found when normalizing the yearly amount of retrieved articles to the

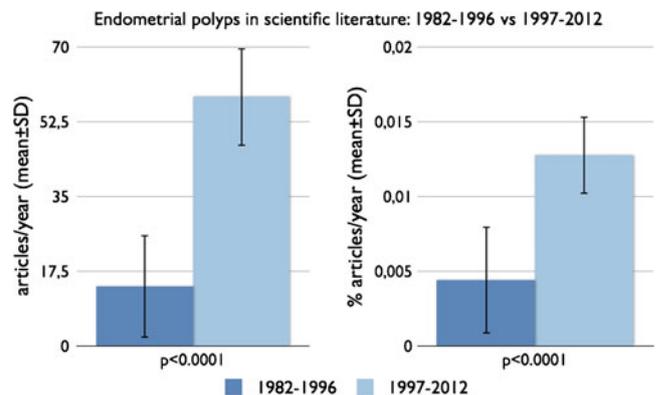


Fig. 2 This figure shows a significant increase of mean yearly publications related to endometrial polyps after 1997. The chart on the right shows the yearly publications normalized to the total amount of articles indexed in Scopus

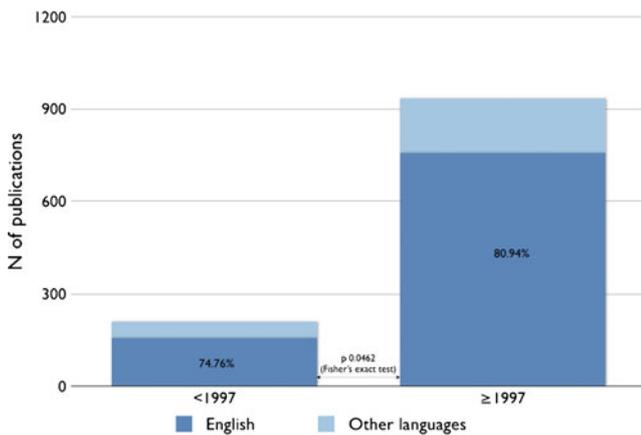


Fig. 3 English is the dominant language in this field of research

total of publications indexed by Scopus (1982–1996, $0.0044\% \pm 0.0035$; 1997–2012, $0.0127\% \pm 0.0025$; $p < 0.0001$; Fig. 2).

English was dominant over other languages (913/1,144 publications; 79 %). The proportion of publications in English has significantly increased from 74.76 % in the period 1982–1996, to 80.94 % in the period 1997–2012 (157/210 vs 756/934; $p = 0.046$; Fig. 3).

The USA is by far the most prolific country (19 %), followed by Italy (8 %) and the UK (7,8 %). While 65 countries contributed with at least one publication, nearly half of all the retrieved articles originated from the five top countries: US, Italy, UK, Turkey, and Spain (Table 1). The global geographic distribution is shown in Fig. 4.

After refining our original search query with three additional keywords, we observed that more articles were retrieved by the keywords “cancer” and “bleeding” (respectively 37 and

33 %) respect to “infertility” (11.5 %). A publication trend analysis shows how the proportion of articles related to “infertility” and “bleeding” has been growing more than that of papers related to “cancer” during the last 30 years (Fig. 5). Interestingly, the geographical distribution of publications is more even in the case of papers dealing with “infertility”, where Turkey, USA, UK, and Italy have got similar shares (respectively 17, 15, 10, and 10 %).

A total of 160 publishing sources have contributed articles included in this study. The journal mostly represented in our search results is *Obstetrics and Gynecology* with a total of 37 publications retrieved belonging to the period 1982–2012. When restricting our search to recent literature (from 2007), *Fertility and Sterility* was the journal with most publications retrieved (25/389; 6.4 %), followed by the *Journal of Minimally Invasive Gynecology* (18/389; 4.62 %) and the *European Journal of Gynaecological Oncology* (14/389; 3.59 %). After normalizing the number of retrieved publications to the total amount of articles indexed for each journal, *Gynecological Surgery* is the journal with the highest proportion of publications on endometrial polyps (2.11 % of all its articles; Table 2).

Discussion

We have conducted this study in order to explore the scientific relevance of endometrial polyps by means of a quantitative bibliometric analysis of scientific literature published from 1982 to 2012.

Our results show that both the absolute and relative number of publications related to endometrial polyps have increased steadily during the last 30 years, testifying growing interest in the

Fig. 4 Geographical distribution of publications related to endometrial polyps, by country, 1982–2012 (autumn 2012, Scopus)

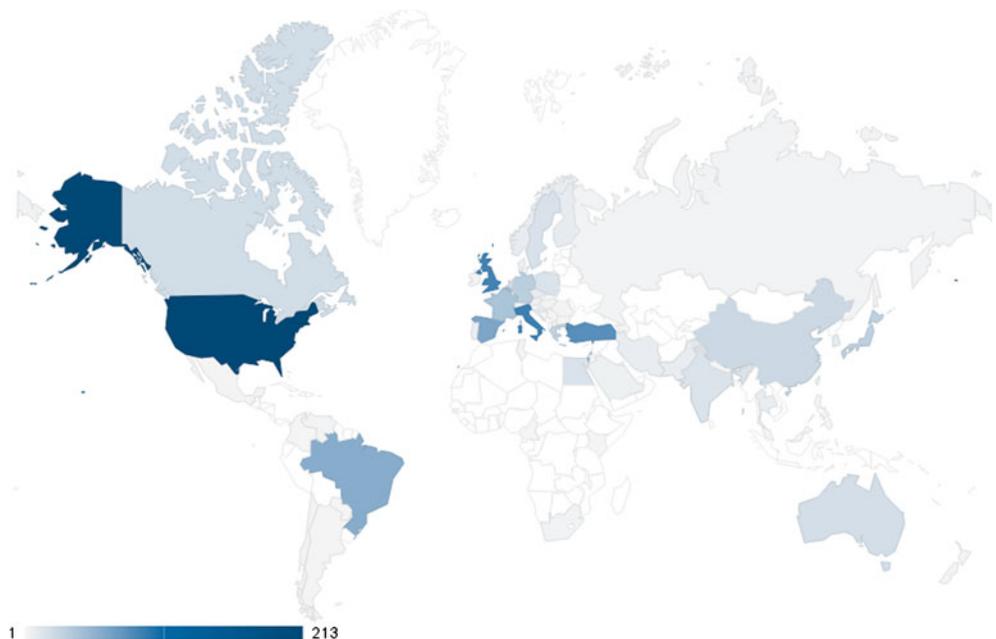
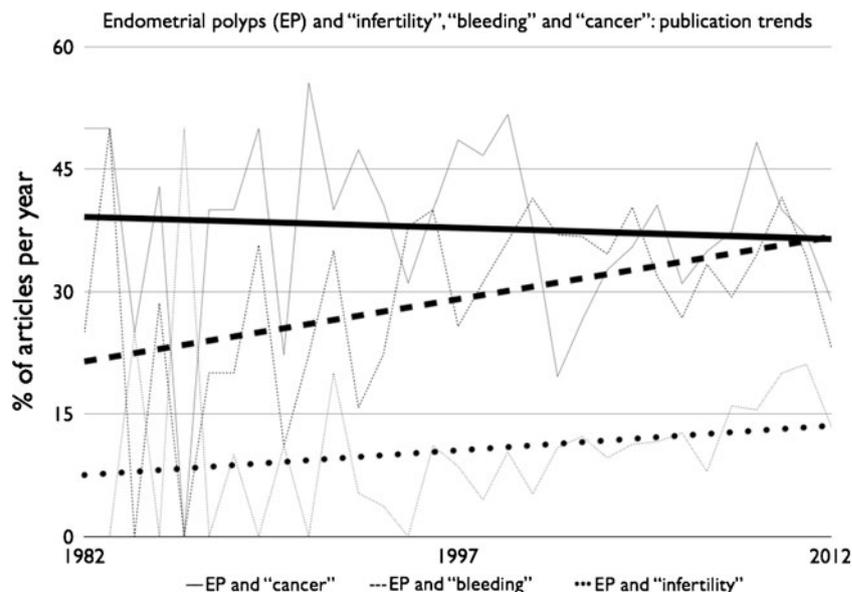


Fig. 5 We have refined our main Scopus search with the additional keywords “cancer”, “bleeding”, and “infertility”. This graph shows the publication trends per each one of those additional keyword (autumn 2012, Scopus)



subject. During the same period great progress has occurred concerning the development of minimally invasive methods for diagnosis and treatment of intrauterine pathology [8, 9]. We are now simply better than 30 years ago at looking inside the uterus and operating effectively, and with minimal invasiveness, conditions which in the past required a hysterectomy [10–12]. Endometrial polyps represent just one example of the different abnormalities of the uterine cavity frequently related to abnormal bleeding, infertility, or cancer risk [13]. We might speculate that the increase in the clinical use of minimally invasive methods for diagnosis and treatment [14] might have played a role in the increase of scientific interest on endometrial polyps, but this should be confirmed by other studies.

Another fact emerging from our study is the uneven linguistic and geographical distribution of publications in

the field of endometrial polyps. This is certainly not unexpected, but deserves a few comments.

English is the predominant language in this field of research, and its relevance has been increasing throughout the study period. This is in line with common knowledge and several other reports, and might only partially be justified by the fact that two of the five top countries in our study have English as official language (USA and UK). English is universally acknowledged as the *lingua franca* in science and the language of most medical literature. As a result, authors and researchers choose to submit the results of their research to journals published in English, since those usually have broader audience and better bibliometric indicators, such as the *impact factor* [15]. In spite of well-grounded criticism [16], the impact factor is still misused to evaluate a researcher’s performance, and publishing on high impact factor journals might be as important as publishing “good” research in order to disseminate your own work and get cited by colleagues [17].

We have also analyzed the geographical distribution of research reports in the field of endometrial polyps. While as many as 65 countries, spread throughout the five continents, have contributed to scientific literature on this topic, only few of them have originated the majority of all articles. A geographical bias in publication patterns has been previously reported in other fields of research [18–20]. Such circumstance might be related to local interests in this field, or socioeconomic factors such as population, investments in research, or gross domestic product (total and per capita). We cannot speculate on those hypotheses since they fall beyond the goals of this observational study.

Endometrial polyps are commonly associated with abnormal bleeding, infertility, and risk of endometrial atypia/cancer. The relevance of those associations is reflected in scientific

Table 2 The 12 top publishing journals in the field of “endometrial polyps” (2007–2012)

Journal	Retrieved	Indexed	Percent
Fertil Steril	25	5,716	0.44
J Minim Invasive Gynecol	18	1,080	1.67
Eur J Gynaecol Oncol	14	945	1.48
Arch Gynecol Obstet	13	2,445	0.53
Eur J Obstet Gynecol Reprod Biol	13	2,129	0.61
Gynecol Surgery	11	519	2.12
Menopause	10	1,275	0.78
Int J Gynec Pathol	10	569	1.76
Ultrasound Obstet Gynecol	8	1,657	0.48
Am J Obstet Gynecol	7	3,785	0.18
J Obstet Gynaecol	7	1,679	0.42
Reprod Biomed Online	7	1,576	0.44

literature, where more than 1/3 of articles is linked to the keywords “cancer” and “bleeding”. Moreover, the association with “bleeding” and “infertility” is acquiring relevance, as demonstrated by our trend analysis. Interestingly, the USA loses the predominance as source country in the specific subset of articles retrieved by the keyword “infertility”.

We would like to point out that several online tools exist to assist us in the search for scientific literature for bibliometrics. The most commonly used are PubMed (by the United States National Library of Medicine, NLM; <http://www.pubmed.com>), Web of Science (by Thomson Reuters; http://http://wokinfo.com/wok/products_tools/multidisciplinary/webofscience/) and, as in our case, Scopus (by Elsevier B.V.; <http://www.scopus.com>). The latter was a natural choice for us since we are familiar with its system of queries that, in our opinion, facilitates searching by keywords and result retrieval. Moreover, Scopus covers a wider journal range than the other databases [21]. For instance, by searching on PubMed we would have missed the publications of *Gynecological Surgery*, journal of the European Society for Gynecological Endoscopy, which is not currently indexed on MEDLINE. This would have compromised our analysis, since we found that *Gynecological Surgery* dedicates more of its editorial space than other journals to “endometrial polyps”. A logical consequence of this finding would be a strong recommendation for scholars conducting research on endometrial polyps to consider searching for references in more comprehensive databases than PubMed, as already recommended in other research fields [22].

Finally, our search strategy was meant to use only electronic queries, and its results are depending on the quality of indexing [23]. It seems reasonable to mention how hand-searching, possibly with the help of desktop search engines [24], might be the best complement of database searching in order to increase the accuracy of the results particularly when qualitative analysis is the goal.

Conclusions

The relevance of endometrial polyps as a scientific subject is growing, as shown by a positive trend in related publications during the last 30 years. This area of research is dominated by Europe, although the USA is the country publishing most articles.

Several journals contribute articles to endometrial-polyps-related research, some of them not covered by the most popular database, PubMed. Researchers in this field should adopt comprehensive search strategies in order to retrieve information also from journals not indexed by PubMed.

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manuscript and both author’s revised it critically for important intellectual content, and gave their final approval of the version to be published.

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References

- Lieng M, Istre O, Sandvik L, Qvigstad E (2009) Prevalence, 1-year regression rate, and clinical significance of asymptomatic endometrial polyps: cross-sectional study. *J Minim Invasive Gynecol* 16(4):465–471
- Affifi K, Anand S, Nallapeta S, Gelbaya TA (2010) Management of endometrial polyps in subfertile women: a systematic review. *Eur J Obstet Gynecol Reprod Biol* 151(2):117–121
- Lee SC, Kaunitz AM, Sanchez-Ramos L, Rhatigan RM (2010) The oncogenic potential of endometrial polyps: a systematic review and meta-analysis. *Obstet Gynecol* 116(5):1197–1205
- Salim S, Won H, Nesbitt-Hawes E, Campbell N, Abbott J (2011) Diagnosis and management of endometrial polyps: a critical review of the literature. *J Minim Invasive Gynecol* 18(5):569–581
- Sharma M, Taylor A, Magos A (2004) Management of endometrial polyps: a clinical review. *Rev Gynaecol Pract* 4(1):1–6
- American Association of Gynecologic Laparoscopists (2012) AAGL practice report: practice guidelines for the diagnosis and management of endometrial polyps. *J Minim Invasive Gynecol* 19(1):3–10
- Gambadauro P, Magos A (2008) Office 2.0: a web 2.0 tool for international collaborative research. *Lancet* 371(9627):1837–1838
- Kamel HS, Darwish AM, Mohamed SA (2000) Comparison of transvaginal ultrasonography and vaginal sonohysterography in the detection of endometrial polyps. *Acta Obstet Gynecol Scand* 79(1):60–64
- Di Spiezio SA, Taylor A, Tsirkas P, Mastrogamvrakis G, Sharma M, Magos A (2008) Hysteroscopy: a technique for all? Analysis of 5,000 outpatient hysteroscopies. *Fertil Steril* 89(2):438–443
- Sharma M, Taylor A, di Spiezio SA, Buck L, Mastrogamvrakis G, Kosmas I, Tsirkas P, Magos A (2005) Outpatient hysteroscopy: traditional versus the 'no-touch' technique. *BJOG* 112(7):963–967
- Gambadauro P, Magos A (2010) Pain control in hysteroscopy. Finesse, not local anaesthesia. *BMJ* 340:c2097
- Papalampros P, Gambadauro P, Papadopoulos N, Polyzos D, Chapman L, Magos A (2009) The mini-resectoscope: a new instrument for office hysteroscopic surgery. *Acta Obstet Gynecol Scand* 88:227–230
- Marbaix E, Brun JL (2004) Concise survey of endometrial pathologies detected at hysteroscopy. *Gynecol Surg* 1(3):151–157
- van Dijk LJEW, Breijer MC, Veersema S, Mol BWJ, Timmermans A (2012) Current practice in the removal of benign endometrial polyps: a Dutch survey. *Gynecol Surg* 9(2):163–168
- Lenhard MS, Johnson TR, Himsl I, Ditsch N, Rueckert S, Friese K, Untch M (2006) Obstetrical and gynecological writing and publishing in Europe. *Eur J Obstet Gynecol Reprod Biol* 129(2):119–123
- Gambadauro P, Torrejón R (2007) Impact factor and the quality of research: what is a rose defined by, its name or its scent? *Eur J Obstet Gynecol Reprod Biol* 134(2):269–270

17. Callaham M, Wears RL, Weber E (2002) Journal prestige, publication bias, and other characteristics associated with citation of published studies in peer-reviewed journals. *JAMA* 287(21):2847–2850
18. Tutarel O (2002) Geographical distribution of publications in the field of medical education. *BMC Med Educ* 2:3
19. Boulos MN (2005) On geography and medical journalology: a study of the geographical distribution of articles published in a leading medical informatics journal between 1999 and 2004. *Int J Health Geogr* 4(1):7
20. Yeung M, Bhandari M (2012) Uneven global distribution of randomized trials in hip fracture surgery. *Acta Orthop* 83(4):328–333
21. Falagas ME, Pitsouni EI, Malietzis GA, Pappas G (2008) Comparison of PubMed, Scopus, Web of Science, and Google Scholar: strengths and weaknesses. *FASEB J* 22(2):338–342
22. Suarez-Almazor ME, Belseck E, Homik J, Dorgan M, Ramos-Remus C (2000) Identifying clinical trials in the medical literature with electronic databases: MEDLINE alone is not enough. *Control Clin Trials* 21:476–487
23. Dickersin K, Scherer R, Lefebvre C (1994) Identifying relevant studies for systematic reviews. *BMJ* 309:1286–1291
24. Magos A, Gambadauro P (2005) Desktop search engines: a modern way to hand search in full text. *Lancet* 366(9481):203–204