

Highly Cited Works in Radiology:

The Top 100 Cited Articles in Radiologic Journals

Matthew Pagni, MD, Nickalus R. Khan, MD, Harris L. Cohen, MD, FACR, Asim F. Choudhri, MD

Rationale and Objectives: The number of citations a publication receives can be used to show its impact on a field of study. It may indicate the educational interest in a given population or underline a perceived or real educational gap. This article identifies and characterizes the 100 top cited publications in radiologic journals as of May 2013.

Materials and Methods: All clinical radiologic journals listed by Thomson Reuters Journal Citation Reports in 2011 were identified. A total of 46 journals were identified, and all articles published within these journals were analyzed for citation counts. The top 100 highly cited articles were recorded.

Results: The most frequently cited radiologic articles appeared in 9 of the 46 journals. These included 59 articles in *Radiology*, 17 in *Journal of Nuclear Medicine*, 9 in the *American Journal of Roentgenology*, 5 in the *British Journal of Radiology*, 4 in *Investigative Radiology*, 2 in *American Journal of Neuroradiology*, 2 in *European Radiology*, 2 in *Radiologic Clinics of North America*, 1 in the *Seminars in Nuclear Medicine*, and 1 in *Pediatric Radiology*. The citation values ranged from 422 to 7506 with a mean of 751. Publication dates ranged from 1967 to 2006 with the 5-year period between 1986 and 1990 accounting for the largest percentage of articles. The most frequently studied radiologic modality was magnetic resonance imaging (MRI; 28 articles), followed by vascular/interventional (19 articles) and nuclear medicine (13 articles). The central nervous system was the most frequently studied organ system (22 articles), followed by mixed organ systems (14 articles) and liver (12 articles).

Conclusions: The top cited articles in radiologic journals span a wide range of imaging modalities, subspecialties, and organ systems. Topics that occurred frequently in the top 100 cited articles included contrast and radiopharmaceutical characterization, MRI of motion, percutaneous radiofrequency ablation in the liver and percutaneous vertebroplasty. We present a methodology that uses citation analysis to identify and characterize these articles. Its use may aid radiologists, academic organization, and editorial staff in determining areas of imaging interest or perceived educational gap. It also highlights the importance of including classic articles in current imaging education.

Key Words: Bibliometrics; citation; citation analysis; impact factor; radiology; scientometrics; Scopus; Web of Science.

©AUR, 2014

The study of medicine in the 21st century brings with it a unique set of problems. There has been an exponential rise in biomedical information and resources at times making it difficult to find the information being sought and also making it difficult to detect the gaps and weaknesses in these repositories of knowledge. Methods for addressing the large amount of resources in an efficient, timely, and accurate manner are essential as we move into the future of evidence-based medicine.

The past decade has seen a series of studies which identify landmark articles in disciplines such as anesthesiology (1), critical care (2), occupational therapy (3), ophthalmology (4,5), orthopedics (6–8), otolaryngology (9), neurosurgery (10–13), pediatric

surgery (8), plastic surgery (14,15), and urology (16–18). These studies used citation counts as a surrogate for the impact of an article on its discipline. These highly cited articles have been made available as lists for reference so that individuals can easily review the articles considered most impactful.

In radiology there have been a paucity of such studies (19–21) concerning key article citation. The scope of these previous studies has been limited to single journals and specific periods. There has been only one recent study in radiology evaluating radiologic journals and identifying the most highly cited publications (22), which used one specific database and methodology.

The field of bibliometrics equips us with powerful tools to evaluate the literature formally and perform citation analysis. Since the early 1960s, the Institute of Scientific Information has been tracking citation counts. Currently, there are several databases such as Web of Science (WOS; Thomson Reuters, New York, NY), Scopus (Elsevier, Amsterdam, NL), and Google Scholar (Google Inc, Mountain View, CA), allowing individuals to perform analysis of citation counts. The purpose of this study was to present the 100 top cited articles in radiologic journals. These articles were also categorized based on several different components to provide individuals with a practical guide to analyzing the radiologic literature.

Acad Radiol 2014; ■:1–11

From the College of Medicine (M.P., N.R.K.) and Departments of Neurosurgery (N.R.K., A.F.C.) and Radiology (H.L.C., A.F.C.), University of Tennessee Health Science Center, Memphis, TN; Department of Radiology, Le Bonheur Children's Hospital, University of Tennessee Health Science Center, 848 Adams Ave - G216, Memphis, TN 38103 (H.L.C., A.F.C.); Departments of Pediatrics (H.L.C.), Obstetrics (H.L.C.), and Ophthalmology (A.F.C.), University of Tennessee Health Science Center, Memphis, TN. Received February 14, 2014; accepted March 10, 2014. **Address correspondence to:** A.F.C. e-mail: achoudhri@uthsc.edu

©AUR, 2014

<http://dx.doi.org/10.1016/j.acra.2014.03.011>

MATERIALS AND METHODS

Journal Citation Reports (JCR; Thomson Reuters, New York, NY) for the year 2011 was analyzed to identify journals for inclusion in this study, as this was the most recent year available at the time of bibliometric analysis (May 2013). Journals directly related to the practice of clinical radiology were included. Journals related to basic science, nonclinical aspects of radiologic imaging, and radiation oncology were excluded.

A “specific journal” search was performed using the term “radiology” in JCR for the year 2011. This search returned a list of 22 publications. From this list, *The International Journal of Computer Assisted Radiology, Oral Surgery Oral Medicine Oral Pathology Oral Radiology and Endontology*, and *Veterinary Radiology and Ultrasound* were not considered to be consistent with the focus of this study and therefore were excluded. Another search was performed using the “subject category” option in JCR for “Radiology, Nuclear Medicine, and Medical Imaging,” yielding 116 publications. Publications focusing on a single modality (eg, *Journal of Magnetic Resonance Imaging*) were excluded because these journals are often focused on nonclinical aspects of medical imaging and have a wider audience than what is commonly considered within the scope of clinical radiology.

The list of journals identified by JCR was then exported into a spreadsheet. All of the journals identified were compiled into a single search in WOS. This search, performed in May 2013, returned a list of all indexed articles published within each of these journals. The results were then analyzed to determine the 100 top cited articles. The articles were then individually cataloged in a database for further characterization.

Articles were characterized following a modified approach of the methods described by Lim et al. (23) in their recent large-scale retrospective bibliometric analysis of original articles published in two top radiologic journals. We abstracted information for 1) number of authors, 2) first author affiliation, 3) first author country, 4) type of research, 5) study design, 6) sample size, 7) radiologic modality, 8) radiologic subspecialty, 9) body system, and 10) topic. Nuclear medicine was removed from the miscellaneous subspecialty category and given its own category.

Statistics

All statistics were calculated using SPSS version 21 (IBM, Aramont, NY). Comparisons of citation counts between the 5-year chronologic groupings of articles were performed using analysis of variance. Significant values were considered to be $p < 0.05$.

RESULTS

Sources and Citations

Forty-six journals were identified and included in our analysis using the criteria outlined previously. The top 100 articles

were cited 751 ± 798 times (median 598; range 422–7506) and originated within 9 of the 46 journals (Table 1). Accounting for the time since publication, the top 100 cited articles had 34.6 ± 27.8 citation per year (median 28.3; range 9.6–242.1). The journal most represented was *Radiology*, which contained 59 of the articles, followed by *Journal of Nuclear Medicine* (17 articles) and *American Journal of Roentgenology* (9 articles). Table 2 shows the 100 top cited articles categorized by publication journals.

Author and Institutions

The number of authors within the 100 top cited articles in radiology ranged from 1 author to 21 authors. The mean number of authors was 5 ± 4 , with a median of 5 and mode of 1 ($n = 14$). The country of the first author was most frequently the United States ($n = 61$), followed by Germany ($n = 10$) and Italy ($n = 8$). Most articles were associated with a single institution ($n = 57$), followed by two institutions ($n = 19$) and three institutions ($n = 10$).

Publication Year

The list includes articles from 1967 to 2006, with most articles ($n = 25$) published in the 5-year period between 1986 and 1990. The single year with the most cited publications was 1996 ($n = 8$). When grouped in 5-year periods, there is a trend of increasing publications numbers up to the 1986–1990 interval at which point publication numbers begin to decline (Figure 1). The number of citations per year for articles differed between 5-year groupings ($p = 0.028$; Figure 2). The lowest annual citation average was for the three 1966–1970 articles that had 15.9 ± 7.2 citations per year. The lone article from the 2006–2010 group averaged 84.3 citations per year at the time of analysis.

Study Design, Type, and Statistical Analysis

There were 54 prospective studies and 46 retrospective studies. Fifty-two articles were classified as clinical research, 16 had components of both clinical and basic science, and 14 were basic research projects. The remaining 18 studies did not fit into any of these categories. The uncategorized studies included statistical methods such as receiver operating characteristic (ROC) studies ($n = 6$), review-style manuscripts ($n = 6$), and descriptions of new imaging modalities ($n = 2$). Statistical analysis was present in 34 studies and absent in 65 studies. Statistical analysis was not present in any of the 14 basic research studies but was present in 27 (52%) of the clinical research studies and 3 (19%) articles with both clinical and basic science components.

Radiologic Technique and Subspecialty

The most frequently studied radiologic technique was magnetic resonance imaging (MRI; $n = 31$) followed by

Download English Version:

<https://daneshyari.com/en/article/6242705>

Download Persian Version:

<https://daneshyari.com/article/6242705>

[Daneshyari.com](https://daneshyari.com)