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Review Article

A century of citation classics in otolaryngology–head and neck surgery journals

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Abstract
The Science Citation Index (SCI) was introduced primarily as a method of information retrieval but has also been used an objective measure of the quality of an article. Citation classics have been described as papers that have been cited 100 times or more. The aim of this study was to identify the articles published during the 20th century in otolaryngology–head and neck surgery journals that have achieved classic citation status and to present an analysis of this data. Using a database provided by the Institute of Scientific Information (Philadelphia, PA), an assessment was performed of all articles cited 100 or more times in one of the 28 clinical otolaryngology–head and neck journals indexed by the annual Journal Citation Reports. The data were based on citation counts using the 1900 through 1999 Science Citation Index. Institutions located in 10 different countries produced 80 noteworthy articles. The most-cited paper achieved a citation score of 406 and there were 11 articles cited on more than 200 occasions. All of the articles were published in eight journals. The earliest identified publication was in 1933 and the most recent was published in 1993. Twenty authors were involved in two articles and four authors were associated with three classic citations. This paper confirms that analysing citation classics reveals a partial insight into advances and historical developments in the specialty during the last century.

Key words: Otolaryngology; Publication

Introduction

The Science Citation Index (SCI) was introduced primarily as a method of information retrieval such that a researcher can discover if a paper has been included as a reference in other publications.[1] This allows an author to assess supportive or argumentative discussion on a relevant topic and to produce a more accurate and impartial literature review. Citation analysis has also been used as an objective measure of the quality of an article in that the number of times that it has been cited or the citation score suggests a notable impact on the relevant scientific community.[2] Assessment of the citation rates of an article or author has also been suggested as a method of reviewing the historical developments in a medical or scientific area.[3] Citation classics have been described as an arbitrary number involving the top percentile of most-cited papers in a particular field and further refined in a smaller specialty to those that have been cited one hundred times or more.[4,5]

A recent article provided a commentary on the developments that occurred in otolaryngology–head and neck surgery (OHNS) during the last century by reviewing the papers published in *Laryngoscope* in 1900 and 1999.[6] The advances in the intervening years were described as a series of small steps involving many people but the evaluation was performed by looking at articles at either end of the century rather than by assessing publications during it. Medications and instruments used in diagnosis, treatment and rehabilitation were the principal categories of developments recognized. A further suggested achievement was information technology and it is one aspect of this progress that allows us to perform this study. A method of identifyng some of these small steps is to look at the articles in OHNS journals that attained citation classic status during the last century.

The aim of this study was to determine the publications in OHNS journals during the 20th century that were cited more than 100 times by

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TABLE I

OTOLARYNGOLOGY – HEAD AND NECK SURGERY JOURNALS THAT PUBLISHED ARTICLES IDENTIFIED AS CLASSIC CITATIONS AND THE RELEVANT NUMBER OF CLASSIC CITATIONS IDENTIFIED IN EACH JOURNAL

Journal	No. of citation classics
Laryngoscope	26
Archives of Otolaryngology Head and Neck Surgery	24
Annals of Otology, Rhinology and Laryngology	15
Otolaryngology Head and Neck Surgery	8
Head and Neck and Allied Specialties	3
Audiology	2
Clinical Otolaryngology	1
Acta Otolaryngologica	1

subsequent articles. The papers were assessed as to whether citation classics in OHNS journals mirror the small steps mentioned previously and an analysis of the identified articles is presented.

Materials and methods

The database from the 1994–98 editions of CD-ROM version of Journal Citation Reports (JCR) was obtained from the University of Liverpool library. A total of 29 Otolaryngology journals with impact factors were identified in the 1998 JCR CD-ROM.[7] The multidisciplinary journal *Dysphagia* was not included in the study as this was considered as primarily a gastroenterology publication. The 'Web of Science' database at http://wos.mimas.ac.uk was accessed on, or before, 17th March 2001 and the relevant journals were assessed individually for papers cited greater than 100 times from 1900 or the date of initial journal publication to the end of 1999. The data search took into consideration alterations in journal titles that had evolved during the study period. Articles that satisfied the criteria for inclusion were chronicled and were ranked in order of the number of citations received (citation score). The papers were assessed for the journal and year of publication and the country in which the research originated was recorded. The authors and number of authors of each article were tabulated and authors with more than two classic citations were noted. The subject of the paper was categorized as otology/lateral skull base, rhinology/anterior skull base, head and neck oncology, benign head and neck/laryngology and academic otolaryngology. Articles were further reviewed for paediatric otolaryngology-only content. Papers were classified as laboratory or clinical-based and the most frequent

TABLE II

THE DECADE OF PUBLICATION OF CLASSIC CITATIONS AND THE NUMBER OF ARTICLES PUBLISHED PER DECADE

Decade	No. of citation classics
1930–39	3
1950–59	2
1960–69	6
1970–69	23
1980–89	38
1990–99	8

TABLE III

COUNTRY OF ORIGIN AND ASSOCIATE NUMBER OF ARTICLES IDENTIFIED AS CITATION CLASSICS

USA	67
Sweden	3
Austria	2
UK	2
France	1
Canada	1
Netherlands	1
Switzerland	1
Germany	1
Japan	1

individual topics were noted. Each individual citation classic was examined by either reading an online abstract (Pubmed or Web of Science) or if the relevant information was not available by retrieval of the article using direct library access or via the interlibrary service of the British Medical Library.

Results

Eighty articles were identified as citation classics and the complete list in descending order of citations received is documented (Appendix). The most-cited paper received 408 citations and there were 10 papers that acquired more than 200 citations. The journals in which the articles were published are presented in Table I with the number of classics associated with each journal. There were no citation classics identified in 20 out of the 28 journals assessed. The earliest recorded article was published in 1933 and the most recent in 1993. The decade of publication with the relevant number of classics identified is demonstrated in Table II. The most papers published in any one year were 10 in 1985. The range of authors associated with articles was from one to 11 and 51 were either single or two-author papers. Twenty authors were involved in two classic articles and four authors, Brackmann DE, Guilleminault C, Schuknecht HB and Simmons FB, were associated with three classic citations. The country of origin of the papers may be seen in Table III. The category of relevant subspecialty is presented in Table IV. Eight articles were entirely related to paediatric otolaryngology. Fourteen (18 per cent) articles were considered to be laboratory-based and 10 of these were otology-related. The clinical articles included 24 concerning a clinico-pathological process and 22 were related to an operative procedure. Seven of the remaining papers were regarding an audiovestibular investigation and four involved a classification. The top-cited article was an editorial and there were two papers produced by Committees. The six most cited topics are presented in Table V.

TABLE IV

SUBSPECIALTY OF PAPER

Otology/lateral skull base surgery	39
Rhinology/anterior skull base surgery	14
Benign head and neck surgery/laryngology	14
Head and neck oncology	13
Academic otolaryngology	0

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TABLE V
TOPICS MOST FREQUENTLY ASSOCIATED WITH CITATION CLASSICS PRESENTED IN ORDER OF DECREASING FREQUENCY

BSER	8
FESS	7
Snoring	6
Metastatic neck disease	5
Facial nerve	4
BPPV	4

Discussion

An article that is cited has to be published and to be published it must be written and also satisfy a peer review process that is in itself an achievement.[8,9] It has been estimated that approximately 70 per cent of published articles are never cited and that 89 per cent of articles that are referenced are cited on fewer than 10 occasions.[9,10] Less than 0.5 per cent of cited articles are referenced 100 times or more.[9] Although citation frequency is considered a valid indicator in identifying classic works, it has been suggested that it is more a measure of utility rather than quality and is considered a surrogate measure of influence.[3,11,12]

It is possible that by not assessing all journals published in OHNS that we may have overlooked citation classics published in those journals but as JCR is a measure of citation it is our opinion that this is unlikely. A single classic was published in each of two leading European journals, *Clinical Otolaryngology* and *Acta Otolaryngologica* and there were no articles published in *The Journal of Laryngology & Otology*. The majority of publications (91 per cent) were identified in four leading US journals and 82.5 per cent of articles originated in an US institution, confirming the overwhelming influence of the USA on medical research. This US dominance should be considered in the context that US authors tend to cite US articles to such an extent that they help to inflate the citation rate of US science 30 per cent above the world average.[13] Furthermore, there is a tendency for European authors to publish in American journals ahead of home journals and thereby help to further inflate citation rates of US journals.[14] This trend runs the risk of relegating European journals to third-rate publications or terminating them completely if university or library funding to buy journals becomes coupled to citations scores and journal impact factors.[14]

Eighty-six per cent of the classic citations have been published since 1970 confirming the weighting towards the end of the century and the 1980s in particular.[12] This primacy is partly explained by the increase in published articles and number of journals and the universal use of information technology in formal searches of the literature. The majority (64 per cent) of classic citations were written by one or two authors. Some well-known figures are included in the list of authors but ironically many more did not feature which is consistent with similar previous studies in other medical specialties.[1] Otology and lateral skull base surgery predominated both the clinical and laboratory-based articles. The number of publications related to popular procedures and investigations indicate their influence on citation trends of other authors and as a consequence reinforce their elevated status in citation scores.

The number of articles identified as citation classics is comparable to other small specialties.[5,15] The time lag of seven years between publication and achieving classic citation status in this study is eight years shorter than that which has been calculated for anaesthesia.[2] The majority of papers identifying citation classics and, in some instances, all of the classics have originated in American research institutions. This has been noted in a self-congratultory manner in certain quarters.[16]

Online access to the Web of Science database is expensive and realistically is only accessible via an institutional registration. Other negative factors associated with citation analysis include a bias towards English language publications and US scientific literature, supporting the contention that US authors tend to cite US articles and English authors tend to quote English-language publications.[10] Textbooks are not included in the analysis and not all journals are incorporated into the database.[10] It is well-recognized that the reasons that articles are cited may not be entirely appropriate. Authors tend to cite themselves, and inaccurate papers may be cited for that very reason, but it is considered that these factors do not impact on papers with high numbers of citations.[1] In-house, secondary source, flattery or show-off citation have also been reported as methods of inflating citation rates.[10] As is in the case of classics identified in this study, the true intellectual milestones may be found in the reference list of the most cited papers.[17] Many important articles published during the past century have not attained classic status because the presented data were deemed incontrovertible and became absorbed into established knowledge. A relevant paper, therefore, did not obtain additional citations thereby undergoing 'obliteration by incorporation'.[3] This study has not included ENT articles published in non-OHNS journals as this would involve a major undertaking considering the number of publications available.

In conclusion, 80 articles published in OHNS journals during the 20th century have achieved citation classic status. Approximately 80–90 per cent of these papers originated in American institutions, were printed in one of four US journals and were published since 1970. The identification of classic citations reveals a limited insight into seminal advances in OHNS and has helped us to provide a scaffold for the developments in our specialty during the last century. It has established some of the short steps alluded to by Lucente and certainly did mirror some of the developments mentioned in his article. It also recognizes the legacy of a publication, and the evolution and impact of certain papers.[5]

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Appendix

The complete list of Citation Classics identified in otolaryngology – head and neck journals, tabulated and ranked in order of number of citations received (in square parentheses) and full reference.

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