The Trend of Quality of Publications in Endodontic Surgery: A 10-year Systematic Survey of the Literature

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Abstract

Objectives: The aims of the present systematic literature analysis were to evaluate, over a 10-year period, the trend of the proportion of RCT, SR, MA published on endodontic surgery, and to investigate if the impact factor (IF) of the main endodontic Journals correlates with the proportion of RCT, SR, MA they publish.
Methods: An electronic search of the RCT, SR and MA published on the topic "endodontic surgery" from 2001 to 2010 was performed on Medline and Cochrane CENTRAL database using specific search terms combined with Boolean operators. Endodontic Journals impact factor was retrieved by the Thomson Scientific database. The proportion of each study type over the total number of articles on endodontic surgery published per year was estimated. The correlation between the number of high-evidence level studies published on the main endodontic Journals and the IF of such Journals per year was estimated.
Results: From a total of 900 articles published in 2001–2010 on endodontic surgery, there were 114 studies of high evidence level. A significant increase of the proportion of either RCT, SR and MA over the years was found. A modest to unclear correlation was found between the Journal IF and the number of high-evidence articles published.
Conclusions: There is a positive trend over the years among researchers in performing studies of good quality in endodontic surgery. The impact factor of endodontic Journals is not consistently influenced by publication of high-evidence level articles.

Keywords: Endodontics, Evidence-based dentistry, Journal impact factor.

INTRODUCTION

The development of new techniques, instrumentation and biomaterials used in endodontic surgery has made possible the extension of its clinical indications. However, with the increase of health care costs, there has been a paradigm shift in health care toward evidence-based research.

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Many manufacturers and corporations tend to use effective marketing rather than peer-reviewed studies to promote their technological and biological advances.[1] This trend can create a confusing picture for the endodontic surgeon, who has the responsibility for recommending the most appropriate surgical approach using a conscious critical analysis based on accurate diagnostic path. When a clinician discusses treatment planning with a patient, it is necessary to provide the patient with information related to the efficacy and long-term outcome of the various treatment options. These data are needed for informed decisions.[1]

Ranking the available evidence into different levels and grades of recommendation was first described by Fletcher & Sackett more than 25 years ago to give an idea of the quality of the evidence on the basis of the level of bias and flaws of the various types of study design adopted in the biomedical research.[2] In general the level of evidence of a study is considered as inversely related to its level of bias. The latter can be defined as any uncontrolled trait of the experimental design that may affect the outcome, therefore producing a distorted result, which may not reflect the true effect of a given treatment.[3,4]

Sackett et al defined evidence-based medicine, also termed evidence-based practice (EBP), as "the conscientious, explicit and judicious use of current best evidence about the care of individual patients' integrated with clinical expertise and patient values to optimize outcomes and quality of life."[5]

In the hierarchy of study designs used in clinical research, randomized controlled trials (RCT), prospective controlled trials (CT) and meta-analyses (MA) or systematic reviews (SR) (dealing with RCTs or controlled clinical trials) are considered to provide the highest level of evidence.[6–8] Conversely, uncontrolled studies like case series and case reports, as well as retrospective studies are associated with a lower level of evidence. In other words, the latter types of investigation, due to the features of the study design such as the choice of the patients, the allocation of treatments, the absence of blinding procedures and many other methodological aspects that may somehow affect the outcomes, are considered to have a higher level of bias as compared to randomized controlled studies.[9] RCTs are specifically designed to minimize the experimental bias in any steps of the study procedures, so as to provide the most reliable possible outcomes.[10]

Since the volume of published information is steadily increasing in the field of endodontics (as well as in many other fields of medical sciences) it is extremely important to assess the level of evidence of the publications, in order to discern which information should be relied upon to formulate an evidence-based treatment plan and provide the patients with the most accurate, up-to date and trustworthy information.

The most accredited tool for evaluating the weight of evidence in addition to the type of study design is the journal impact factor (IF), which indicates the average frequency of citation to any indexed journal.[11,12] The higher the number of citations received by a Journal, the higher the impact of the Journal in the scientific community, which is considered as related to the importance and the reliability of the information provided by the articles published. Since the latter are normally chosen based upon a rigorous selection process it is believed that the best quality journals have a manuscript review process able to select the best quality information to be published and that, consequently, they have a high probability of receiving a high number of citations.

Though the use of IF as an index of quality of the journals is still a matter of debate among scientists, in the absence of an alternative reliable index, the IF is currently adopted as a marker of the value of published scientific information. Similarly, scientists and clinicians able to have their studies published on a high-IF journal are considered as valuable researchers, independent of the number of citations that their specific articles will receive.

The purpose of this study was to examine, in the field of endodontic surgery (ES), the relationship between quality of research in terms of levels of evidence and IF of main journals dealing with endodontic surgery, in an attempt to understanding the pattern of citation and the pattern of publication of high-evidence level studies on this topic over the last 10 years.

In particular, the main hypothesis was that journals with higher IF tend to publish more frequently studies of high level of evidence as compared to journals with lower IF in which the proportion of high evidence level studies published tends to be lower. Another hypothesis was that the proportion of RCTs and meta-analysis/systematic reviews among the total number of articles published in the field of endodontic surgery tends to increase in the last 10 years, due to the spreading of the concept of evidence-based dentistry.

MATERIALS AND METHODS

An electronic search was performed on Pubmed, on the Cochrane Central Register of Controlled Trials (CENTRAL) and on the Thomson Scientific database, which includes the Journal of Citation Reports containing the IF of indexed and impacted journals.

The search was limited to 10 years between 2001 and 2010. The keywords used were: apical surgery, apicectomy, apicoectomy, endodontic surgery, periapical surgery, periradicular surgery, root-end management, surgical endodontics, surgical retreatment, alone or combined among them. No restriction was placed regarding the language. Technical studies and editorials were excluded. The reference lists of meta-analysis (MA) and systematic reviews (SR) were checked. A hand-search