

Letter to the Editor

Scientific Impact and Clinical Impact

The Editorial in the Journal of Adhesive Dentistry 2009; 11:3, "Research for Research's Sake?", touches on some often overlooked effects of research. It is true, as pointed out in the Editorial, that the importance of bringing funds to the organization involved has become increasingly important in these difficult economic times, perhaps to the extent that it overshadows the dual aim of dental research, ie, to unveil new knowledge and improve the prevention and treatment of dental diseases. The "indirect cost" part of the research budget is added to the actual cost to conduct the research. It amounts to anything from 25% up to doubling the budget, depending on defined criteria and agreements between the research institutions and the sponsors. It is therefore understandable that the importance of "indirect cost" is emphasized by administrators, but the additional funding for the running of institutions sometimes becomes overwhelming.

Administrators recognize researchers largely based on the number of publications, as do reviewers for promotions. These trends tend to favor a high number of publications that can be produced from a particular project by fragmenting the data into small components. Many of us have sinned in this context, some more than others, and it must be agreed that there is an inflation of publications in the dental literature. The "scientific impact factor" of the journals where the results are published also enters into the assessment, but the clinical impact of the research has been difficult to evaluate, probably because it requires long-term clinical data.

The "scientific impact factor" is a relatively new element in the assessment of academic performance. It records the frequency of citations in scientific journals and it reflects the rate of citations year by year since the publication of a paper. It applies to journals and it defines their scientific impact. It does not apply to individuals per se, but an author's average citation per year, for a selected period, or during an academic career is regarded as a measure of impact. It is used for promotion and it reflects the status of a researcher.

Dental journals do not generally have high scientific impact factors. Like many medical journals, they focus on clinical outcomes rather than scientific impact. There is no conflict between scientific impact and clinical impact – they are just different. Published dental research should also be assessed on the basis of the impact they have on dental practice.

The clinical impact is an outcome measure that represents an important aspect of dental and medical research and it relates to the impact the publication may have on clinical practice. The Editor-in-Chief points to the clinic as "the roots of dental science", and the first step in dental research should be to go to the clinic to identify problems that are relevant to the health of our patients. As a dentist, it is easy to agree with this first step in the process of designing research projects, but where does it leave the basic scientist? He/she is an important component in dental research, and in some countries, eg, in the USA, they carry out most of the research.

Dentistry in a global context has a dual responsibility in its research enterprise. The first and foremost aims of dental research must be to prevent dental diseases and continuously improve the treatment provided to patients. The approach in this context must be to identify issues faced by clinicians and patients in practice and provide data to enhance the preventive efforts and the treatment provided. This responsibility rests primarily on practicing dentists and the dental academic community.

The second responsibility of dental research deals with basic scientific research. Dentistry as a branch of academia, like all branches of medical and biological sciences, has the responsibility to assist in gaining new knowledge through basic scientific research. Basic scientific research in dentistry will naturally focus on the dental and oral tissues, but basic scientific research has no limitations per se. Dental education does not provide the basis for conducting basic scientific research. Dentists involved in research therefore either seek additional training or collaborate with basic scientists.

The dual responsibility of applied and basic scientific research in dentistry should be recognized and acknowledged. It is a challenging situation that calls for coordination of efforts, both by dentists and basic scientists. A successful combination of the two provides the ideal situation for conducting dental research.

The need for a "clinical impact factor" is pressing. Ideally, this factor should be combined with the "scientific impact factor", but the many variables in clinical dental research make it unlikely that they will have the same scientific potentials as, for example, a laboratory study. In vitro studies are relatively easy to design with adequate controls, and require less administration than clinical studies. They can be scientifically sound and statistically sig-

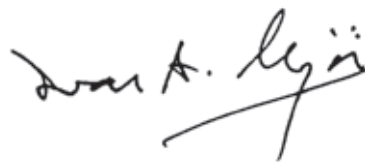
nificant, but from a clinical practice point of view, they are generally useless.

“Practice-based dental research” has long been in effect as a formal entity in some countries. It is a diverse and ill-defined area of research, covering continuing dental education, testing of materials, and controlled clinical trials. Practice-based dental research has recently become well funded in the USA. This initiative may lead the way to a new era in dental research, an era where the clinical outcome becomes the essential component, rather than the extrapolation of in vitro data by merely referring to potentials for clinical practice. If the clinical outcome can be combined with scientific impact, all the better, but it is likely that it will take time to reach a stage when a “clinical impact factor” will be combined with the present “scientific impact factor”. The efforts so far are hampered by administrative problems and the lack of delimitation and definition of “practice-based research”, but the outlook for outcomes that will benefit dental practice is bright.

Practice-based research requires the establishment of research networks of clinicians. Their importance in medical research has been outlined in a statement in the medical literature:¹ “Practice-based research networks are research laboratories as essential to advancing the scientific understanding of medical care as bench laboratories to advancing knowledge in the basic sciences”. By replacing the word “medical” with “dental” in this statement, it becomes equally applicable to dental research, maybe even more so because of the technical proficiency required for optimal dental practice compared to most medical practices.

The development of a clinical impact factor would benefit dental practice and ultimately the public. Dental research needs to get started on the development of such a factor for dental research to optimize the prevention and treatment of dental diseases.

Sincerely yours,



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REFERENCE

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