

Editorial Scientific Studies Point the Way: A Wise Therapist Chooses the Path

Substantial emphasis is currently being placed on using available scientific evidence for clinical decision-making. A recent insightful editorial¹ points out some of the pitfalls that can accompany reliance on only evidence-based data. Articles are also published pointing out that statistical significance does not necessarily indicate clinical significance.² As valuable as such articles are, they explore only part of the problem. Clinicians still seem to differ frequently and harshly on how to treat periodontal disease, published studies notwithstanding. In an attempt to clarify the basis of recommended evidence-based therapeutic solutions, a review of how such conclusions are reached may be useful.

Research Methodologies

Reporting average differences in periodontal comparative therapy studies, as many do, is suitable for measuring general population results and trends, if the sample sizes are large enough to self-sort out variables between test and control groups. But for practical reasons (such studies require some 1,000 subjects or more, much time, and major funding), there are few such studies related to periodontics. Even if such studies did exist, they still would not tell us how a particular patient will respond. The alternative has been prospective, randomized, tightly controlled studies, which are, by practical necessity, typically of a much smaller sample size. The problem here is that results from studies with tightly controlled variables, while regarded as the gold standard, are in fact not necessarily suitable for extrapolation to a given individual in

the general population either. Those results strictly apply—and even then, typically only on average—to patients who meet all the inclusion and exclusion criteria. This represents just a fraction of the population seeking periodontal care. While descriptive statistical studies can be valuable, they are subject to the same problems of using mostly averages in relatively small sample sizes, and commonly with uncontrolled variables. Some studies may report percentages and odds or risk ratios; such data can be helpful, but it still does not allow for the numerous variables in a given patient. Neither can meta-analyses adequately address these problems.

Additionally, many studies are of a short duration relative to the long-term chronicity of periodontitis. The ubiquitous use of surrogate indices (eg, pocket depth, attachment loss, bone levels) raises questions as to their accuracy in predicting ultimate prognosis. There is also a dearth of evidence regarding how patients perceive the outcomes of non-surgical or surgical therapy. In all these studies, careful note should be taken, *inter alia*, of study design, selection criteria, sample sizes, time, data ranges and standard deviations.

Probably the greatest value of most of our therapy studies is to show us what is biologically possible, perhaps even probable in certain circumstances, and so incorporate those results into our thinking. However, average group data does not necessarily apply to any individual, no matter how strong the statistical significance in a given study. Variations in age, systemic health, diet, medications, habits, finances, psychology, esthetics, planned restorative dentistry, past surgery, oral anatomy, lesion anatomy and severity,

doi: 10.11607/prd.2018.5.e

among other factors, are important patient variables that all play a part in deciding on the most suitable treatment for each unique patient. No study can account for all these variables in a given individual.

In addition, experienced clinicians would generally agree that, for a given amount of bone loss, single-rooted teeth seem to have a different prognosis from posterior teeth with furcation involvement, and given different therapies, may behave differently. Anatomically different lesions may also respond differently to different therapies,³ and so on. A mouth with essentially a full complement of natural teeth can often be treated more conservatively, but the whole situation changes when extensive restorative dentistry is planned, especially if subgingival margins are unavoidable. Unfortunately, comparative treatment studies don't really address these important variables, and yet these are significant added stresses to maintaining a healthy periodontium.

Following on this, we don't usually cure periodontal disease—we more typically control it, as the predisposition remains. To do so effectively, it is important to maximize home and professional maintenance efficacy, especially with extensive restorative dentistry. This goal is most readily obtained with minimal pocket depths and supragingival crown margins whenever possible. Aside

from needed clinical crown lengthening, the main rationale for osseous surgery is to obtain the maximum and most predictable pocket reduction⁴ and thus ease and efficiency of maintenance (plaque removal).⁵ It is not a cure per se. While regeneration is the preferred goal, in many situations this goal is still unpredictable or unsuitable. There is therefore at this time a place and a need in our armamentarium for all the popular modes of therapy. A good periodontist thus needs not only scientific knowledge and keen clinical judgment, but also skill in a wide range of therapies.

Scientific studies should certainly influence but should not blindly dictate the way we look at problems. Current absence of proof is not proof of absence! There is so much we still do not know; only hubris would permit conviction that we have the truth at any point in time. "Facts" change. It is still up to therapists to use their judgment in choosing the appropriate treatment for a given patient (or even quadrant or lesion), based on our scientific knowledge and experience, as well as on our unique patient's variables. Expert opinion and experience are not rivals to well-controlled studies, but partners. Conclusions from evidence-based studies are certainly important considerations but may present problems such as study design, funding sources, or therapy

directions based on averages. We should not blindly base therapeutic decisions on published averages or rules—rules are substitutes for thinking. Scientific studies point the way, but a wise therapist chooses the path.

Acknowledgments

The author would like to thank Dr Georgios Kotsakis, Ms Sophia Nguyen, and Ms Meghan Guillen, University of Washington, Seattle, Washington, USA, for their editorial assistance.

Herbert Selipsky, DDS, HDD, MSD
Seattle, Washington, USA

References

1. Nevins M. Editorial: Limitations of evidence-based dentistry. *Int J Periodontics Restorative Dent* 2017;37:779.
2. Chambrone L, Armitage GC. Commentary: Statistical significance versus clinical relevance in periodontal research: Implications for clinical practice. *J Periodontol* 2016;87:613–616.
3. Prichard JF. The etiology, diagnosis and treatment of the intrabony defect. *J Periodontol* 1967;38:455–465.
4. Kaldahl WB, Kalkwarf KL, Patil KD, Dyer JK, Bates RE Jr. Evaluation of four modalities of periodontal therapy: Mean probing depth, probing attachment level and recession changes. *J Periodontol* 1988;59:783–793.
5. Waerhaug J. Healing of the dento-epithelial junction following subgingival plaque control. II: As observed on extracted teeth. *J Periodontol* 1978;49:119–134.