

## Evidence-Based Periodontal Therapy- Revisited

### Correspondence

Amit Wadhawan  
Type B - 71/ Pocket 1, Phase III  
Kendriya Vihar - II, Sector 82  
NOIDA - 201304, U.P.  
Email: dramit21@gmail.com

### ABSTRACT

Clinical decisions in dentistry were previously based upon the experience of clinicians, like, "It works in my hands already, and has done so for many years, then just do the same." Therapies in this fashion were often unpredictable, since the clinician unaware of factors important for success and those contributing to failure. Our desire to keep up to date with new techniques, tests, materials, etc is often tinged with doubt about the claims of superiority of these new treatments or products. Evidence-based periodontology aims to facilitate an approach accelerating the introduction of the best research into patient care.

**Keywords:** Evidence, periodontal therapy, study design

### Amit Wadhawan

Reader  
Subharati Dental College &  
Hospital  
Meerut, Uttar Pardesh

### D.S. Mehta

Prof. & Head, Dept. of  
Periodontology and  
Implantology,  
Bapuji Dental College  
and Hospital,  
Davangere, Karnataka

### INTRODUCTION

With regard to dentistry, these are indeed the best of times. We have available materials and techniques that visionaries could only dream of 25 years ago. We can predictably replace missing teeth with implant-supported prosthesis, regenerate tissues lost to disease and trauma.

And, yet, as our profession hurdles ahead, these are also the worst of times. The new technologies are so enamoring that the collective common sense is lost. This is where the wisdom to use the many wonderful materials and technologies comes into play.

Evidence-based practice, according to Muir Gray is, "An approach to decision making in which the clinician uses the best available evidence, in consultation with the patient, to decide upon the option which suits the patient best [1]."

The best approach possible would be to show a combination of "clinical expertise with the best available external clinical evidence from systematic research."

### Why is evidence-based (EB) dentistry required?

The most valuable application of the evidence-based approach to the practice of dentistry is to encourage the dentist to look for and make sense of the evidence available in order to apply it to every day clinical problems. The intention of evidence-based dentistry is to enable high-quality clinically oriented and

relevant research, which provides better information for the clinician, improved treatment for the patient, and, as a result, an increased standing of the profession because only proven treatments will be offered.

The use of evidence-based dentistry may help reduce the variation in patient care and outcome that appears to be associated with four factors: the quality of science underlying clinical care, the quality of clinical decision making variations in the level of clinical skill, and the large and increasing volume of literature.

Using this approach, when evaluating clinical decisions, has the advantage that it structures the way clinical problems are considered. This has become increasingly important, as, in the last 50 years, there has been development of new clinical techniques and methods to use the materials. This raises the following questions: how is the average practitioner expected to remain current with these developments; do the materials and products work as claimed.

Unfortunately, good clinical research is slow to carry out, particularly the prospective randomized controlled trial, from which the best evidence is obtained. Space in journals is limited, so publishing waiting times existare prolonged. To overcome this, many companies publish pseudo-scientific papers in an attempt to provide some form of evidence to support their product

Patients are increasingly having a role in their own treatment and may no longer be simply content to take the first treatment offered. Patients now have access to the same sources of information as the dentist, but without the critical skills to appraise the evidence. Moreover the society has become more litigious, which demands that the current standards of practice remain at par with the best of clinical expertise. The use of evidence-based dentistry provides a solution to these problems for the dentist.

Thus evidence-based approach helps us to improve treatment and care for our patients.

### **What is evidence-based periodontology (BP)?**

*'Evidence-based periodontology is the application of evidence-based health care to periodontology.'*

Evidence-based periodontology is not simply systematic reviews of randomized controlled trials, although this can be an important aspect; it is an approach to patient care. The expectations that are sometimes laid on it can be inappropriate. It cannot provide answers if research data does not exist (other than using expert opinion) and it cannot substitute for highly developed clinical skills.

### **Terminologies used in Evidence-Based Approach [3].**

#### **a) Systematic review**

Review of a clearly formulated question that attempts to minimize bias using systematic and explicit methods to identify, select, critically appraise and summarize relevant research.

#### **b) Interpretation**

It is the process by which qualitative methods seek to identify subjective meaning of a phenomenon.

#### **Process**

Qualitative methods used to identify the social processes that underlie healthcare.

#### **Interaction**

Encounter between physician and patient helps in bringing together conflicting views of health and illness.

#### **Bias**

Bias is a systematic error. It leads to results which are consistently wrong in one/other direction. Bias leads to incorrect estimate of the effect of a risk factor/exposure.

#### **Confounding**

Describes the situation where an estimate of the

association between an exposure and the disease is mixed up with the real effect of another exposure on the same disease, the two exposures being the same.

#### **Confidence interval**

A method of statistical inference that allows statement to be made about the publication using data from the sample.

#### **Odds ratio**

Ratio of exposure among cases to exposure among controls.

#### **Chance**

Chance/sampling error plays a role in most studies of humans, since it is rarely, if ever possible, to include an entire population in an investigation. We, therefore, attempt to infer information about the population on the basis of information obtained from representative samples drawn from the population.

#### **Naturalism**

Qualitative methods seek to understand health and health-related behavior in its every day or 'natural' context.

### **The application of evidence-based methods**

#### **1st Step: Starting with a Clear Question**

The first step in the quest for answers to clinical questions (and often the first stumbling block) is the formulation of a clear and focused question – one that is relevant and will help you to carry out a quick and effective search.

Where do the questions come from? Important clinical questions arise from daily encounters with patients in the practice setting. These questions often relate to therapy, diagnosis, prognosis, or causation

This step consists of narrowing the questions by deciding which elements are the most important to answer with a "hit and run search." We can look for answers to the less important elements at your leisure, or more likely, when we really need them in the future.

Focusing the question involves using a framework to identify the patient or population; the problem or condition of interest; the exposure to a test, risk factor, or intervention; the comparison test or intervention; and the specific outcome. In our example, these elements form the question.

When defining each of the key elements of the question, it helps to be as specific as possible

## 2nd Step: Finding the Evidence

### *Four basic routes*

1. **Ask someone:** The most direct approach to finding the answer to a clinical question is to telephone a colleague and ask. This is still unimpressive as there remains, the specter of the blind leading the blind.
2. **Consulting a textbook:** Textbooks are only as current as their most recent reference, but they may suffer from the problem of experts not accepting the latest evidence.
3. **Finding relevant article in our own reprint file:** Personal reference files are unlikely to be large or cover a wide variety of problems encountered in everyday practice.
4. **Using bibliographical database such as Medline:** With the availability of easy access to worldwide literature, the vast resource of information can be applied to a clinician's patient problems.

### Examples of evidence-based group

1. Cochrane Oral Health Group (Cochrane Collaboration)
2. Centre for Evidence-Based Medicine, Univ. of Illinois at Chicago
3. Workshop on Evidence-Based Dentistry, Univ. of Illinois at Chicago
4. National Centre for Quality Assurance (NCQA)
5. Centre for Evidence-Based Dentistry, Oxford
6. Office of Evidence-Based Dentistry, Harvard School of Dentistry

## 3rd Step

### *Integration of the Evidence into Clinical Practice (The Pico Process): Evidence-Based Decision Making in Process*

The formality of using PICO to frame a question forces the questioner to focus on what the patient / client believes is the most important problem and the desired outcome.

The next steps are to integrate the evidence into clinical practice and evaluate one's own performance.

To offer patients the best treatment for their unique set of problems and preferences, the clinician must be

able to do the following:

1. Have accurate historical, physical, behavioral information about the patient. For example, it is necessary to perform a comprehensive periodontal, restorative, and occlusal examination on all patients. Every patient seen by the dentist deserves this level of treatment.
2. Find out about as many risk factors as possible and determine how they will modify treatment decisions and treatment response.
3. Have access to the best and latest information about the patient's problems and the treatment alternatives best suited to solve the problem.
4. Have a system for evaluating the evidence and a method for incorporating a new technique in the practice.
5. Having justification for choosing the end points of treatment and monitoring the patient's status. These include both the physical endpoints such as probing pocket depths, and patient-centered endpoints such as preferences.

Research evidence helps to decide which interventions are most effective. It should not replace our clinical findings from history and examination, but harness our clinical intuition from years of experience and help us recognize gaps and uncertainties in our knowledge.

The decision pathway starts with the recognition of the three essential elements: patient preferences, the evidence, and the clinician. Each of these factors are in turn influenced by a large number of antecedents. All of the information is used to make decisions that are (hopefully) the best for the patient. Good decisions increase the chances of good outcomes.

### The four important 'ES' in evidence-based practice

As evidence-based approach emphasizes on patients central to decision making, research design should focus on therapeutic effect based on clear understanding between effect, efficacy, effectiveness, efficiency as each of the 4 Es play an important role in generation interpretation and application of the evidence.

**Effect:** Observed association between interventions and outcomes.

**Efficacy:** Extent to which an intervention can produce a beneficial outcome under ideal circumstances.

**Effectiveness:** Extent to which an intervention produces a beneficial outcome under ordinary day to day circumstances.

**Efficiency:** Extent to which the balance between the input and the output of interventions represents values for the resources expended (time, effort, money).

### The Evidence-based approach as a good model for periodontics

The EB approach is a reasonable natural extension and refinement of the current approach. Clinicians view the EB approach as a major step forward in validating the treatment they provide.

Well-controlled randomised clinical trials (RCTs) have not been, and may never be, performed on many of the periodontal procedures which have provided benefit to countless patients. Of course, there is a strong scientific basis for these procedures and they are constantly being refined, improved, and evaluated.

The EB approach highly values clinical judgment and experience and places its greatest emphasis on the importance of the patient's personal preferences.

By following the basic evidence-based principles, payers and policymakers will be speaking the same language as clinicians and scientists, but there is also the danger of overusing the EB approach and applying guidelines too strictly.

### Diagnosis of periodontal disease

- PSR (CPITN sextant charting)
- Probing depths
- Bleeding on probing
- Bacterial testing

#### What evidence says?

Although advances are being made in many areas, current evidence shows that clinical signs of inflammation, clinical attachment level, probing depth, and radiographic imaging remain the principle

tools for making decisions regarding diagnosis and treatment of periodontal disease.

#### Future

- Evidence-based classification of periodontal diseases.
- Randomized clinical trials to determine if the use of new tests improves treatment outcomes.

### Evidence for the efficacy of non-surgical periodontal therapy

- Scaling and root planing.
- Chemical plaque control & gingival inflammation.
- Antibiotic therapy.
- Local delivery of anti microbials.

#### What evidence says?

- Systemic antibiotic therapy for management of adult periodontitis is not justified.
- Chemical plaque control agents (topical/irrigation) help control gingivitis but not periodontitis [4].
- Locally delivered antimicrobials may be useful on a short-term basis when combined with scaling and root planing [4].

### Surgical periodontal therapy

- Surgical pocket therapy (MWF, ARF, gingivectomy).
- Regenerative procedures (grafting).
- Guided tissue regeneration.
- Gingival augmentation / mucogingival surgery.
- Dental implants.

#### What evidence says?

- Surgical pocket therapy reduces pre-surgical probing depths for periods exceeding five years.
- Regeneration can be achieved in intrabony defects and mandibular Class II furcations [5,6].
- Exposed root-surfaces can be covered using soft-tissue grafts [7].
- Dental implants are successful and predictable [8].

**Table 1. Evidence of smoking on periodontal therapy**

THERAPY	EFFECT OF SMOKING
Mechanical Therapy	Decreased reduction in probing depth Decreased gain in attachment level Unclear evidence on response to therapy after quitting smoking
Surgical Periodontal Therapy	Decreased reduction in pocket depth post surgery Decreased gain in clinical attachment levels and decrease in bone fill post surgery Unclear evidence on impact of smoking on implant success
Maintenance therapy	Increase pocket depth during maintenance phase



**What are some barriers to implementation of EBP?**

1. Amount of evidence available.
2. Quality of evidence.
3. Dissemination of evidence.
4. Clinical practice based on authority rather than evidence.
5. Little knowledge of review publications.
6. Technical terms are poorly understood by most dentists.

tend to rely on. Definitely, knowledge handed down from the ages is useful but with the changing world scenario whatever we do needs to be substantiated or strongly based on evidence, with the advent of myriad ways of collecting evidence today .And it is apparent that clinicians and academicians shouldn't fall behind in justifying means. Because the age of 'END JUSTIFIES MEANS" seems to be fading fast.

**Advantages of EBP**

1. Improving the effective use of research evidence in clinical practice.
2. Using resources more effectively.
3. Relies on evidence rather than authority for clinical decision making.
4. Enables the practitioner to monitor and improve clinical performance.

**REFERENCES**

1. Gray JA. *Evidence-based dental health care*. Edinburgh; Churchill Livingstone, 97.
2. Suvan JE. Effectiveness of mechanical nonsurgical pocket therapy. *Periodontology* 2000; 37: 49-50.
3. Evidence-based approach. *Dent Clin North Am* 2002; 46: 54-62.
4. Jeffcoat MK, McGuire M, Newman MG. Evidence based periodontal treatment: highlights from the 1996 World Workshop in Periodontics. *J Am Dent*

**CONCLUSION**

When it comes to clinical expertise, there's a lot of age-old wisdom going around which the clinicians

**Table II. Has Evidence-based practice changed the world?**

OLD WORLD	NEW WORLD
Source of knowledge is expert opinion.	Source of knowledge is systematic review of evidence.
Research is marginal to practice.	Research and practice go together.
Analysis of research is haphazard.	Analysis of research is systemic.
Not important to gather new evidence from patient routinely.	Patients should be included in trials wherever possible.
Most medical care is assumed to be beneficial.	Widespread recognition of a fine balance between doing good and harm.
Most of what doctors need to know is in their heads.	Doctors use information tools constantly.
Only lip service is given to keeping up to date and learning new skills.	Essential to keep learning new skills.
Clinical performance is not systemically audited.	Clinical performance is regularly reviewed and managed.
Managers have little involvement in clinical progresses.	Managers are involved in clinical progresses.
Doctor-patient relationship is essentially master / pupil.	Patient partnership is the norm.
Patients do not have easy access to the knowledge base of doctors.	Patients have as much access to the evidence base of medicine as doctors.

Assoc 1997; 128: 713-23.

65.

5. Reynolds MA, Branch-Mays GL, Gunsolley JC. The efficacy of bone replacement grafts in the treatment of periodontal osseous defects: a

6. Trombelli I, Heitz-Mayfield LJ, Needleman I. A systematic review of graft materials and biological agents for periodontal intraosseous defects. *J Clin*

- Periodontol* 2002; 29: 117-35.
7. Clauser C, Nieri M, Franceschi D. Evidence-based mucogingival therapy, Part 22: Ordinary and individual patient data meta-analysis of surgical treatment of recession using complete root coverage as the outcome variable. *J Periodontol* 2003; 74: 741-56.
  8. Taylor TD, Weins J, Carr A. Evidence-based considerations for removable prosthodontic and dental implant occlusion: a literature review. *J Prosthet Dent* 2005; 94: 555-60.
  9. Labriola A, Needleman I, Moles DR. Systematic review of the effect of smoking on nonsurgical periodontal therapy. *Periodontology* 2000; 37: 124-37.