

REVIEW

Evidence Based Dentistry

Rishabh Kapila¹, Suabsh BV², Sudhir R³, Saurabh Garg⁴

Senior Lecturer¹
Department of Oral Medicine and Radiology,
National Dental College, Dera Bassi, Punjab.

Senior Lecturer²
Department of Oral Medicine and Radiology,
D.A.P.M.R.V. Dental College, Bangalore, Karnataka.

Senior Lecturer³
Department of Pediatric and Preventive Dentistry,
D.A.P.M.R.V. Dental College, Bangalore, Karnataka.

Senior Lecturer⁴
Department of Conservative Dentistry,
Guru Nanak Dev Dental College, Sunam, Punjab.

Article Info

Received: January 13, 2011

Review Completed: February 14, 2011

Accepted: March 20, 2011

Available Online: July, 2011

© NAD, 2011 - All rights reserved

ABSTRACT:

We live in an age of information, innovation and change. Clinical decision making based on good quality evidence should lead to more effective and efficient treatments. Each practitioner has a role in assessing this information. This paper outlines this role, together with the advantages and problems of introducing evidence based approach to dentistry.

Key words: evidence, dentistry.

Introduction

Keeping current with advances in dentistry and being able to manage patients who have complex needs and demands is a challenge for practising dentists. Each day, we are inundated with information about new techniques, tests, procedures, materials or products. Our desire to keep up to date is often tinged with doubt about the claims of superiority of these new treatments or products. In addition, despite the increase in skills that comes with experience in clinical practice, there is evidence, at least in medicine, that expertise and effectiveness in some areas begin to deteriorate the moment physicians leave medical school.¹ This phenomenon has been called "the slippery slope of clinical competence."¹ In our profession, many dentists continue to use the same treatments and techniques learned in dental school, which represented the best practice at the time. The dilemma arises in deciding when something "new"

is better than our current clinical management strategy. Finding the time to acquire the knowledge to make these decisions often seems next to impossible.

The Role of Evidence-based Dentistry

Evidence Based Dentistry is a process that restructures the way in which we think about clinical problems. It is an approach to clinical problem solving that has evolved from a self-directed and problem based approach to learning rather than the more traditional didactic form. It is a process of making decisions based on known evidence.

The term "evidence-based dentistry" has been widely used in recent years, sometimes erroneously. It has been employed to justify a variety of practices, to promote new technologies and products, and to select evidence to support particular viewpoints. However, the very definition of evidence-based practice, "the conscientious, explicit and judicious use of current best evidence in making decisions about

Email for correspondence:
rishabh_kapila@rediffmail.com

the care of individual patients,"² suggests that the primary aim and the most valuable application of the evidence-based approach to the practice of dentistry is "to encourage the ordinary dental practitioner in primary dental care to look for and make sense of the evidence available in order to apply it to every day problems."³ To do this successfully, many practicing dentists need to acquire certain skills not previously taught in most undergraduate dental curricula.

The Processes of Evidence-Based Practice

It involves five basic phases^{4,5}: (Figure 1)

1. Asking evidence-based questions (framing an answerable question from a clinical problem).
2. Searching for the best evidence.
3. Reviewing and critically appraising the evidence.
4. Applying this information in a way to best help clinical practice.
5. Evaluation of performance of the technique, procedure, or material.

Searching For the Best Evidence

More than 600,000 articles are published each year in biomedical journals.⁶ Clinicians who want to stay abreast of significant changes in their areas of health care need help in dealing with this volume of literature. Using an evidence-based approach aids clinicians in selecting the relevant articles, and assists them to efficiently extract and apply the information.⁶ Computerised medical databases, such as Medline, have made it easier to distribute and access information.⁷ Literature searches as little as 15 years ago required going to the library, finding a copy of Index Medicus, searching topics 1 year at a time, hand-copying the appropriate references, and then going to the stack of bound journals to find the article. Now, from the home or office, a medical database can be accessed online, the literature searched, and the relevant abstracts and articles printed to be reviewed.

Where is the evidence found?

1. Medline
2. The Cochrane Collaboration
3. Other sources: The following are Internet data sites that are based on evidence-based practice or principles:

- The Centre for Evidence-Based Dentistry (www.ihs.ox.ac.uk/cebd/), an Oxford-based reference source for training in evidence-based techniques; it includes the Centre for Evidence-Based Medicine (<http://cebm.jr2.ox.ac.uk/>).
 - Bandolier (www.jr2.ox.ac.uk/bandolier/), a synthesis of bullet-point headings from primary health journals using evidence-based methods.
 - ScHaRR (www.shef.ac.uk/~scharr/ir/netting/). The University of Sheffield School of Health and Related Research provides this Internet resource for finding evidence.
 - DARE (www.agatha.york.ac.uk/welcome.htm). The University of York provides this database which consists of Abstracts of Reviews and Effectiveness.
 - New Zealand Evidence-Based Healthcare Bulletin (www.nzgg.org.nz/bulletin.cfm).
4. Other strategies⁶:
 - Professional journals
 - Books, audio and video tapes, and CDs.
 - Professional and university continuing education meetings.
 - Study clubs.

What is good evidence?

The gold standard for evidence is strong evidence from at least one published systematic review of multiple well-designed randomized controlled trials. However this is not the only evidence and a list of levels of evidence is shown (level one being the best).⁹

Level	Type of evidence	Strength of evidence
1a	Systematic review of randomized controlled trials (RCT)	
1b	Individual RCT	
2a	Systematic review (with homogeneity) of cohort studies	
2b	Individual cohort study	
2c	Outcome research; Ecological studies	
3a	Systematic review of case-control studies	
3b	Individual case-control study	
4	Case-series (and poor quality cohort and case-control studies)	
5	Expert opinion without explicit critical appraisal, or based on physiology, bench research, or first principles	

Action on Evidence

Following appraisal of the evidence there are four courses of action. We can act on it, discard it, or store it, but we should be aware that new evidence is always emerging so we need to continually update it.



Advantages

1. It improves the effective use of research evidence in clinical practice.
2. It uses the resources more effectively.
3. It relies on evidence rather than authority for clinical decision making.
4. Monitor and develop clinical performance.

Problems with Evidence-Based Dentistry

As a generalisation, if dentists have been taught a particular procedure or technique, and it apparently gets a satisfactory result, they will tend to continue to use it. In terms of a scientific approach though, that is not acceptable because it is anecdotally-based evidence.^{10, 11} The ideal study is the randomised-controlled trial that controls for all possible variables that might alter or affect a given result.⁸ The size of the experimental and control groups must be sufficiently large for the conclusions to be reliable. Studies where the sample size is too small risk an erroneous conclusion.

Other problems exist with finding the most recent evidence: randomised clinical trials are expensive and difficult to run, and publication waiting times are compounded by Medline being 6-8 months behind many journal publication dates.¹² In addition, few clinical situations in dentistry are life threatening, so the impetus to perform rigorous clinical research to compare efficacy of dental therapies may not seem as important as in medical therapies.¹³

Conclusions

Dentists are expected by patients, colleagues, and Government to keep abreast of new techniques and developments. But continuing professional

development is just a part of practising evidence-based dentistry. Evidence based dentistry is the use of current best evidence in making decisions about the care of individual patients. Providing evidence-based dentistry makes practitioners question and think about what they are doing. Information needs to be assessed, and its validity determined. Practising evidence based dentistry does require that time is spent searching and assessing the literature, and questioning what is read and told. The benefits of evidence-based practice are that treatment decisions are easier to justify, especially when there is a complaint or a dento-legal issue, and the personal satisfaction that patients are being offered the best treatment.

References

1. Sackett D, Haynes R, Guyatt G, Tugwell P. Clinical epidemiology: a basic science for clinical medicine. 2nd ed. Boston: Little, Brown and Company; 1991.
2. Sackett DL, Rosenberg WM, Gray JA, Haynes RB, Richardson WS. Evidence based medicine: what it is and what isn't. *BMJ* 1996; **312**(7023):71-2.
3. Richards D, Lawrence A. Evidence based dentistry. *Br Dent J* 1995; **179**(7):270-3.
4. Lawrence A (Editorial) Welcome to evidence-based dentistry. *Evidence-Based Dentistry* 1998; **1**: 2-3.
5. Carr AB and McGivney GP. Users' guides to the dental literature: how to get started. *Journal of Prosthetic Dentistry* 2000; **83**: 13-20.
6. Dodson TB. Evidence-based medicine: its role in the modern practice and teaching of dentistry. *Oral Surgery Oral Medicine Oral Pathology Oral Radiology and Endodontics* 1997; **83**: 192-197.
7. Greenhalgh T. How to read a paper. The Medline database. *British Medical Journal* 1997; **315**: 180-183.
8. Sackett DL, Rosenberg WM, Gray JA, Haynes RB, and Richardson WS. Evidence based medicine: what it is and what it isn't. *British Medical Journal* 1996; **312**: 71-72.
9. Sutherland SE. Evidence Based Dentistry: Research Design and Levels of Evidence. *J CanDentAssoc* 2001; **67**: 375-378.
10. Hancocks S. Anecdotally evidence based. *British Dental Journal* 2001; **191**: 532.
11. Robbins JW. Evidence-based dentistry: what is it, and what does it have to do with practice? Anecdote vs. data - a case for evidence-based decision making. *Quintessence International* 1998; **29**: 796-799.
12. Anderson JD. Need for evidence-based practice in prosthodontics. *Journal of Prosthetic Dentistry* **83**:58-65, 2000.
13. Jacob RF and Carr AB. Hierarchy of research design used to categorize the "strength of evidence" in answering clinical dental questions. *Journal of Prosthetic Dentistry* **83**: 2000; 137-152.