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### **Evidence based dentistry: An overview**

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#### **Abstract**

Evidence based dentistry is a logical, common-sense, patient-oriented approach that is not different from the regular treatment except that it takes into consideration the uniqueness of each patient and finding the right treatment for him by studying the available authentic literature available with similar case scenario. Dentists have an obligation to provide the most effective treatment available and use the best methods of disease prevention and diagnosis while taking financial cost and their expertise in consideration. To make clinical decisions, dentists rely on a wealth of resources including own clinical experience, textbooks, journal articles and previous educational experience. To practice modern dentistry and to educate upcoming dental care professionals, evidence-based dentistry forms an important asset. It is important for dentists to be able to keep up with developments in diagnosis, prevention and treatment of oral disease, as well as newly discovered causes of diseases, especially in regards to patient safety. Correct appraisal of the available literature for a particular clinical situation if properly inculcated in our practice can make huge difference in our approach. This article is a review regarding the approach towards evidence based dentistry and using it for better results.

**Keywords:** Dentistry, evidence-based dentistry, evidence-based practice, evidence source, oral health

#### **Introduction**

Confidence Dentistry has constantly evolved at an astonishing rate in almost all aspects, be it new techniques, methods, or consumer and practitioner friendly products hitting the market. Dentists need to make clinical decisions based on limited scientific evidence. In clinical practice, a clinician must weigh a myriad of evidences every day.

The goal of evidence-based dentistry is to help practitioners provide their patients with optimal care. This is achieved by integrating sound research evidence with personal clinical expertise and patient values to determine the best course of treatment. Often the doubt in mind of the practitioner remains whether the new innovations are better than our present clinical approach. EBD requires the integration of the best available evidence with clinical expertise and patient preferences, and thus it informs but does not replace the clinical judgment<sup>[1]</sup>.

David Sackett laid the foundation of evidence-based practice by defining it as "integrating individual clinical expertise with the best available external clinical evidence from systemic research"<sup>[2]</sup>. Evidence-based health care recognizes the complex environment in which clinical decisions are made and the importance of particular patient's circumstances, beliefs, attitudes, and values are kept in mind. It is a practical approach to solve clinical problems faced by dentists in their everyday practice. It involves tracking down the best available evidence, assessing its validity and utilizing the rules of evidence to grade the evidence according to its strength as said by Sackett.

Dental knowledge base has evolved through three phases and currently may be entering the fourth phase<sup>[2]</sup>.

The first phase was the age of expertise. Here, knowledge was accumulated through experience, which was nothing more than uncontrolled observation. The knowledge and skills underlying all of this early activity was strictly experiential; practitioners learned by doing the procedure

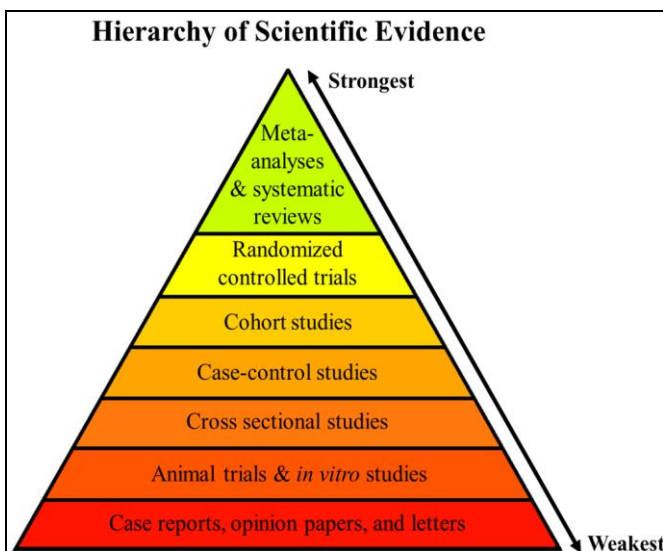
The second phase was the age of professionalization. This involved keeping track of information and stress was given on the way it was gathered. Cases of individual experience formed the most common form of knowledge. Some of these experimental reports were based on careful, yet uncontrolled observation involving considerable number of patients over a time period.

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The third phase, that is age of science is based on the fact that synthesis of knowledge evolved from simple statements of “fact” based on an expert’s experience and opinion to identification and consideration of the available information in the scientific literature

We are currently at the fourth phase, i.e., the age of evidence. The hallmark of the age of evidence is the systematic reviews and the dominance of the randomized controlled trial (RCT) EBD involves critically appraising the scientific literature for the best available evidence to make clinical decisions [3]. They represent a substantial change in the paradigm of knowledge synthesis by ensuring inclusion of all relevant evidence, de-emphasizing the role of the expert, minimizing bias through strict protocols demanding objectivity and transparency in the review process. A hierarchy of evidence has been established to determine the types of research that would yield the best evidence. Sackett *et al.* [4] characterized the strength of evidence by developing a multilevel pyramid. According to this classification, systematic reviews that statistically analyze the data with a meta- analysis are considered the strongest level of evidence [5].



The American Dental Association define it as “an approach to oral health care that requires the judicious integration of systematic assessments of clinically relevant scientific evidence, relating to the patient’s oral and medical condition and history, the dentist’s clinical expertise, and the patient’s treatment needs and preferences” [6]

**Evidence-Based Dental Practice**

Evidence-based Dental Practice is the integration of an individual practitioner’s experience and expertise, with the

clinical appraisal of relevant available external clinical evidence from systematic research and with consideration for the patient’s needs and preferences [7]. To incorporate an evidence-based approach in dental practice, the practitioner’s experience is primary since it is his/her responsibility to consider clinically relevant evidence and informed patient’s preferences while defining the best course of treatment [8,9].

**Ebd Process**

EBD is a conscious process to identify the best and most up-to-date research that addresses a patient’s clinical problem. The research is used in conjunction with the patient’s values, aspirations and preferences, combined with the practitioner’s own clinical proficiency and judgment, to offer more effective ways of managing clinical problems [10, 11]. The practice of evidence-based dentistry relies on the earliest retrieval of the best information when it is needed, assessing the quality and deciding the relevance of the same to make a clinical decision in day-to-day practice [12,13].

There are two types of researches that are of considerable importance in dentistry: Qualitative and evidence- based. EBD relies on the evaluation of research as opposed to qualitative facts derived from research. Qualitative research lacks the regular appraisal of clinical interventions, which is the very basis of EBD. EBD has its roots in the discipline of clinical epidemiology, whereas qualitative methods have their foundations in the social sciences [14].

The five steps of EBD practice are as follows [15, 16].

1. Develop a clear, clinically focused question according to our needs
2. Identify, summarize, and synthesize all relevant studies, which can directly answer the focused question
3. Appraisal of the evidence in terms of its validity and applicability
4. Combine research evidence with clinical expertise and patients’ needs
5. Finally to assess the successful implementation of previous steps.

The implementation of evidence- based practice in dentistry depends critically on the understanding of how the process of the diffusion of knowledge from centers of research to general dental practice works. It is important to understand the context of general dental practice and the influence of factors that can affect the success of the treatment. In this approach, an understanding of the context of general practice is as important as an understanding of the evidence in determining the process of diffusion [17].

In traditional dental care, emphasis is placed on the dentist’s accumulated knowledge and experience from books, his adherence to accepted standards, and the opinion of experts and peers. Evidence- based practice, in contrast, places stress on using current evidence to solve clinical questions [18]. EBD requires special websites or well- trusted literature which can be relied upon from where practitioners can read and finally utilize for their needs. Glover *et al.* refined the hierarchy by characterizing literature as filtered information and unfiltered information. Filtered information is considered the higher level of evidence. It generates three categories of studies: Systematic reviews, critically appraised topics, and critically appraised individual articles

The Cochrane Collaboration [19, 20] is a worldwide effort to establish an online resource of pre- appraised bio- medical evidence, which is continuously expanded and updated.

Specifically, the collaboration is an international organization whose goal is to prepare, maintain, and provide systematic reviews of the effects of healthcare interventions. The overall aim is to produce periodically updated systematic reviews of randomized controlled trials in specific health areas. PubMed is a free medical database provided by the US National Library of Medicine and the NLM. Highly authoritative and up- to- date, PubMed gives us access to MEDLINE, NLM's database of citations and abstracts in the fields of medicine, nursing, dentistry, veterinary medicine, health care systems, and preclinical sciences <sup>[21]</sup>. Articles can be searched by keywords, specific phrases, and Medical Subject Headings or MeSH terms, which are standardized headings used by the National Library of Medicine for cataloging articles in PubMed central <sup>[22]</sup>.

### Advantages of Evidence-Based Approach

1. Improvement in effective use of research evidence in clinical practice
2. Uses resources more effectively
3. Relies on evidence rather than authority for clinical decision-making
4. Monitors and develops clinical performance <sup>[23, 24]</sup>

### Conclusion

EBD is a logical, common sense, patient- oriented approach that is not different from the regular treatment except that it takes into consideration the uniqueness of each patient. EBD approach empowers clinicians to question and consider the use of current best evidence in decision-making on the management of individual patients. It offers many benefits, ranging from more efficient and effective healthcare delivery to improve treatment standards and outcomes. For the clinician in everyday practice, EBD offers greater personal satisfaction in the knowledge that the patient's healthcare requirements are met by a treatment that is backed by scientific evidence.

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