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# Evidence-based Decision Making In Dentistry

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Each day, health care professional make decisions about clinical care. It is important that these decisions incorporate the best available scientific evidence in order to maximize potential for successful patient care outcome. The ability to Find, Evaluate, Discriminate and Use information is the most important skill that can be learned as professional. Therefore, efficient use of this wealth of research data needs to be a part of clinical practice. Evidence-based practice aims to facilitate such an approach, accelerating the introduction of the best research into patient care.

This article will review the concepts of evidence-based decision making (EBDM) and will help to understand how evidence-based decision making can both inform on and benefit healthcare. We hope that the information in this article will provide a basic understanding of the concepts that will be relevant to reading.

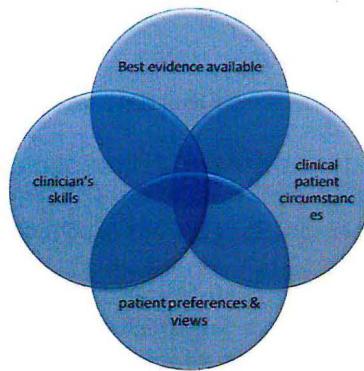
## Definition:<sup>1</sup>

An approach to decision making in which the clinician uses the best evidence available, in consultation with the patient, to decide upon the option which suits that patient best - (Muir Gray, 1997).

## History

- 1970 - Introduced in McMaster University (CANADA).
- 1980 - Adopted by Harvard University (USA).
- 1994: Oral Health Group as part of the Cochrane Collaboration set up.
- 1995 - Started in Oxford University (UK).
- 2000 - 1st Federation Dentaire Internationale Workshop (PARIS) discussed EBDM.
- 2000 - Center for EBD established at Davangere (INDIA).

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**Figure 1. Evidence based decision making**

**What is evidence-based decision making? <sup>2</sup>**

1. Evidence-based practice is a tool to support decision making & integrating the best evidence available with clinical practice. The highest quality evidence will be used if it exists, but if it does not, lower levels of evidence will be considered. Lower levels of evidence usually means research design more prone to bias & therefore with less reliable data.
2. Thus, it is the comprehensive integration of appropriate research evidence, patient preference & clinical expertise (Fig.1)

**What evidence-based decision making is not? <sup>2</sup>**

1. Evidence-based practice is not simply systematic reviews of randomized controlled trials, although this can be an important aspect.
2. Evidence-based practice is an approach to patient-care & nothing more. The expectations that are sometimes laid on it can be inappropriate.
3. It cannot provide answers if research data do not exist (other than Using expert opinion) & it cannot substitute for highly developed clinical skills.
4. Therefore, it can never be cook book healthcare or use statistics in isolation to drive clinical care.

**Evidence-based decision making vs. Traditional decision making:**

High quality research and the use of evidence are fundamental to both evidence-based decision making and traditional decision making. The differences between these approaches emanate from how research informs clinical practice. Evidence-based decision making uses a more transparent approach to acknowledge both the strengths and the limitations of the evidence. An appreciation of the level of uncertainty or imprecision of the data is essential in order to offer choices to the patient regarding treatment options. Evidence-based decision making also attempts to gather all available data and to minimize bias in summarizing the data. These aspects are keys to decision making and are highlighted in Table 1.

**Table 1. Comparison of evidence-based decision making**

Evidence-based Decision Making	Traditional Decision Making
<b>Similarities</b> <ul style="list-style-type: none"> <li>• High value of clinical skills and experience</li> <li>• Fundamental importance of integrating evidence with patient values</li> </ul>	
<ul style="list-style-type: none"> <li>• Uses best evidence available</li> <li>• Systematic appraisal of quality of evidence</li> <li>• More objective, more transparent and less biased process</li> <li>• Greater acceptance of levels of uncertainty</li> </ul>	<ul style="list-style-type: none"> <li>• Unclear basis of evidence</li> <li>• Unclear or absent appraisal of quality of evidence</li> <li>• More subjective, more opaque and more biased process</li> <li>• Greater tendency to black and white conclusions</li> </ul>

Furthermore, evidence-based decision making acknowledges explicitly the type or level of research on which conclusions are drawn. However, one aspect that influences the reliability of the data is the control of bias. Bias is a collective term for factors that systematically distort the results of research away from the truth.

## WHAT IS NEED THE FOR EBDM ?

### 1. The variation in practice patterns.

Variations occur because of a gap between the time that current research knowledge becomes available

and its application to care. Consequently, there is a delay in adopting useful procedures and in discontinuing ineffective or harmful ones.

Consequently, trends indicate the longer clinicians are out of school, the greater the gap in their knowledge of up-to-date care.

Need for translating it into information that is useful for each decision maker, including the patient.

The lack of or weak scientific evidence for answering specific clinical questions.

In these cases, an evidence based approach serves another purpose by helping to inform the profession and investigators of needed research.

### 2. The difficulty that clinicians encountered in assimilating scientific evidence into their practices.

Assimilating scientific evidence into practice requires keeping up-to-date through reading extensively, attending courses, and using the Internet and electronic databases, such as MEDLINE (PubMed) and the Cochrane Library, to search for published scientific articles. However, with the proliferation of clinical studies and journal publications, keeping current with relevant research is challenging. Consequently, substantial advances made in the knowledge of clinical health care has not been translated into practice or fully applied to allow patients to receive the total benefit.

### 3. To improve the quality of health care.

### 4. To demonstrate the best use of limited resources.

5. Evidence-based decision making is aimed at general practitioners to keep them abreast of the best available evidence on the latest developments in various aspects of clinical practice.

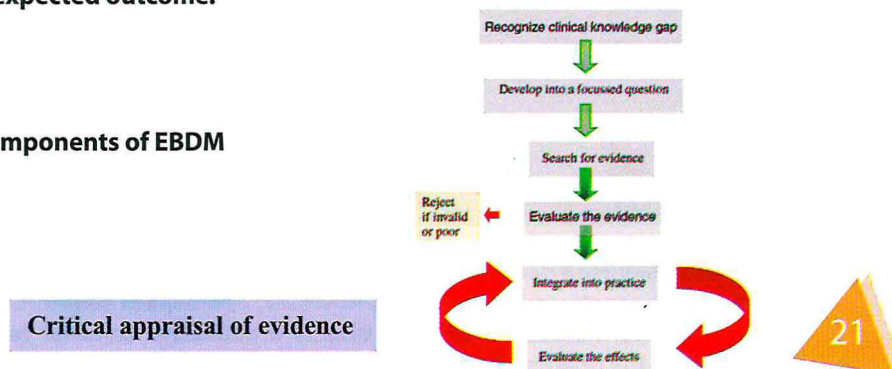
6. It is an invaluable tool for the specialist practitioners needing to maintain an awareness of new approaches outside their branch of dentistry.

7. In addition it can help to promote self directed learning & teamwork & produce faster & better doctors.

### The components of evidence-based decision making:<sup>2,5</sup>

Evidence-based decision making starts with the recognition of a knowledge gap. From the knowledge gap comes a focused question that leads on to a search for relevant information. Once the relevant information is located, the validity of the research needs to be considered in two broad areas. Firstly, is the science good (internal validity)? Internal validity focuses on the methodology of research. Secondly, can the findings be generalized outside of the study (external validity)? External validity might be affected by the way treatment was performed. For instance, if the time spent on treatment was extensive it might not be practical to provide this therapy outside of a research study. Another example could relate to the use of many specific inclusion criteria in a trial which could make it difficult to generalize the findings to a wider group of patients. The question the reader should ask is whether their types of patients are so different from the study that it is reasonable to expect differences in outcomes. After locating and appraising the research, the results then need to be applied clinically, or at least included in a range of options. Finally, the results in clinical practice need to be evaluated to reveal whether the adopted technique achieved the expected outcome.

Figure 2 Components of EBDM



## **IMPLEMENTING EVIDENCE-BASED DECISIONS:<sup>3</sup>**

Evidence-based practice requires either knowledge of current evidence or the ability to access and evaluate it for content, validity, and relevance. Although the difficulties in evidence retrieval and appraisal have been acknowledged, several factors must be considered when searching the literature. Once the evidence has been evaluated for content, it should not be viewed as the ultimate authority in making decisions about individual patients. Again, evidence should be used in conjunction with clinical experience and patient preferences to make good decisions.

### **LIMITATIONS & MISINTERPRETATIONS OF EBDM:**

#### **Limitations:**

1. Shortage of coherent, consistent scientific evidence.
2. Difficulties in applying evidence to the care of individual patients.
3. Barrier to the practice of high-quality medicine.
4. Need to develop new skills.
5. Limited time and resources.
6. Paucity of evidence that evidence-based medicine "works".

#### **Misinterpretations:**

1. EBDM denigrates clinical practice.
2. It ignores patients' values and preferences.
3. It promotes cookbook approach to medicine.
4. It is limited to clinical research.

#### **Conclusions:**

The principles of evidence-based healthcare provide structure and guidance to facilitate the highest levels of patient care. There are numerous components to evidence-based decision making including the production of best available evidence, the critical appraisal and interpretation of the evidence, the communication and discussion of the evidence to individuals seeking care and the integration of the evidence with clinical skills and patient values. The generation of best evidence and, alone, is not enough to practice evidence-based healthcare. However, an understanding of the principles should help to underpin the latter aspects. Evidence-based healthcare is not an easier approach to patient management, but should provide both clinicians and patients with greater confidence and trust in their mutual relationship.

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