EDITORIAL

DOI: https://doi.org/10.20453/reh.v35i4.7350

Gilmer Solis-Sánchez
Methodological Coordinator of the Subdirectorate of Health Services Research of the Center for Health Technology Assessment at the National Institute of Health.

The role of evidence-based dentistry in health decision-making: from theoretical concepts to clinical practice

Gilmer Solis-Sánchez [1]

[1] National Institute of Health (INS), Center for Health Technology Assessment (CETS), Subdirectorate of Health Services Research (SDISS). Lima, Peru.

Historically, professional activities in the health sciences have been regarded as dependent on clinical experience, both one's own and that of instructors, who transfer their knowledge to future generations. However, while it is undeniable that procedural expertise is acquired through practice, it should not be assumed that technical skill is detached from information. On the contrary, the integration of both allows for better therapeutic outcomes, expressed as greater clinical effectiveness and translational health benefits (1,2).

This rationale underpins the philosophy of evidence-based dentistry (EBD), which in recent decades has been strengthened both in undergraduate and postgraduate dental education and in individual professional practice, as well as in public policies that impact the population.

UNDERSTANDING EVIDENCE-BASED DENTISTRY

Today, restating the definition of EBD may seem redundant and unnecessary; therefore, this document will not address it directly. Rather than conceptual memorization, what is needed is an understanding of how this approach is applied at different levels of the dental profession.

To begin with, it is important to clarify that EBD does not consist of having a prior study—specifically, a scientific article—that supports the correctness of a procedure performed by the clinician. This construct—erroneously adopted by some professionals—does not truly represent EBD, but rather a mechanism of professional justification that is not genuinely professionalizing.

EBD should be understood as an approach whose process begins with the need to provide quality care in response to a specific need (problem), which is translated into a clinical question. The answer to this question must consider three pillars: (i) the best available scientific evidence, (ii) the clinician's skills,

Online: December 30, 2025

Cite as:
Solis-Sánchez G. The role of evidence-based dentistry in health decision-making: from theoretical concepts to clinical practice. Rev Estomatol Herediana. 2025; 35(4): 249-252. DOI: 10.20453/reh.v35i4.7350

and (iii) patient preferences. The integration of these elements implies that decisions will vary according to context. A clear example of this is found in clinical practice guidelines, where, despite the available evidence, recommendations differ across countries, regions, cities, health care facilities, etc., for a variety of reasons, including economic factors and the availability of human or material resources, among others (3).

AVAILABLE SCIENCE AND ITS ROLE IN EVIDENCE-BASED DENTISTRY

When referring to EBD, it is common to think that you need to have the latest research findings, which is not entirely wrong, but it is reductionist in terms of what is required of science.

At this point, the first pillar of EBD—the available science—must be addressed. This pillar should be understood beyond simply considering "conducted studies" published as scientific articles (in indexed, peer-reviewed journals). It should also include health technologies, whether "hard", such as available biomaterials (with clearly defined characteristics and evidence of performance or clinical validation), or "soft", such as clinical procedures (with standardized protocols and objective information derived from long-term follow-up) (4).

Accordingly, EBD requires not only the existence of relevant studies, but also the availability of recent and innovative health technologies in the local setting, proper training for their correct application, and evidence supporting their outcomes. With these elements in mind, it is essential to assess whether the necessary resources are available to implement these health technologies, a decision in which patient preferences should also be considered. At this stage, inevitably and inherently within the process, the three pillars of EBD converge (2).

SCIENTIFIC ARTICLES IN EVIDENCE-BASED DENTISTRY

Within the framework of available science, published scientific articles play a key role, as they synthesize the evidence generated around health technologies that clinicians and health decision-makers seek to implement. In this context, identifying a single "useful article" is not enough; rather, an appropriate process of literature searching, screening, and critical appraisal of the available evidence must be conducted (5).

Regarding the search for scientific articles, this process should not be carried out arbitrarily. On the contrary, it should follow a systematic approach that allows for the efficient retrieval of relevant literature. To achieve this, the true objective of the problem to be addressed must be clearly identified, thereby avoiding a "blind search" and saving time. For example, when information on the efficacy or effectiveness of a treatment is required, the search strategy should prioritize the retrieval of systematic reviews, clinical trials, and longitudinal observational studies (6). This strategy would improve the sensitivity and specificity of the search and reduce the number of articles to review (7).

Owing to technological advances, the process of literature searching has become increasingly user-friendly and efficient, supported by the availability of search engines that allow the use of PICO questions, advanced strategies, filtering options, and, more recently, artificial intelligence tools, which do not exempt human verification (7).

Once relevant articles have been identified, the next step in the search process is their retrieval. This stage presents significant barriers, as it requires access that is not always free. Although the Peruvian Government, through the National Council for Science, Technology, and Technological Innovation (Concytec), and universities have implemented access to some bibliographic databases, these are often insufficient, leading to the use of informal means to retrieve information or simply dismissing articles, introducing bias in the early stages of the research process. At this point, there is a clear need to strengthen mechanisms for accessing scientific information by promoting open science.

Once the articles have been obtained, a screening process must be conducted to remove duplicates and exclude studies that do not address the problem of interest, either at an early stage when reading the title and abstract, or later by reviewing the full text. Various digital tools are available to support this stage, including reference managers (such as Zotero, Mendeley, and EndNote) and the Rayyan platform, which is particularly useful because it allows the generation of traceable records of all exclusions, including documented reasons that can later be audited and summarized (8).

Caution is required at this stage as selection errors may be made under improper motivations, leading to the exclusion of articles that do not support the "desired results" of professionals, resulting in confirmation bias or cherry-picking. To prevent this, professionals must have a solid understanding of scientific integrity, that independent review by at least two reviewers be implemented, and that transparency in the adopted processes be ensured (9).

Critical reading of the retrieved scientific articles is a key activity that must be strengthened in both undergraduate and continuing professional education, as it enables the identification of study quality, appropriate interpretation of findings, and their application to patient care.

Adequate critical reading does not require the professional to be an expert in research methodology or ethics; rather, it requires sufficient knowledge to identify whether studies include methodological safeguards that limit the risk of bias. This involves the appropriate use of established tools according to study design, such as RoB, ROBINS-I, NOS, CASP, AMSTAR-2, QUADAS-2, ROBIS, JBI, and QUIPS, among others (10).

EVIDENCE-BASED DENTISTRY AND DECISION-MAKING

All the above should not be seen as purely academic exercise limited to the university setting, but rather as a professional standard that must be adopted in both individual and collective care to achieve clinically effective results.

Although the implementation of Evidence-Based Dentistry (EBD) in private practice consultations may be considered impractical, it should be understood as an investment aimed at developing standardized care protocols that not only guide appropriate clinical management but also serve as technical and scientific support in situations that require the selection of suitable treatments. This is particularly relevant considering that, although clinical practice guidelines may exist, they are often merely referential, as they are not always adapted to the context in which they are intended to be applied or may be outdated (11).

From a governmental perspective, although this is not widely recognized, budgetary programs that link public funding to specific outcomes benefiting the population rely on available evidence derived from rigorous scientific research. In this way, these programs promote the establishment of an agenda for evidence generation in cases where there is an insufficient body of high-quality scientific evidence, which may include prospective evaluations of the impact of interventions that have already been implemented. These aspects are addressed in the technical document outlining the minimum content of Budgetary Programs (12).

In conclusion, although EBD is a widely discussed and promoted concept, professionals must internalize it as a philosophy inherent to their training to provide effective care and, in turn, develop evidence-supported protocols that can be satisfactorily audited. This requires not only the interest of professionals, but also the support and active participation of a wide range of public and private stakeholders—both within and outside academia—to meet the standard of evidence-based health decision-making.

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