Evidence-based dentistry: An overview

In the current era, clinicians are expected to keep up with the advancements in dental therapies, materials, research, and clinical recommendations. There is abundance of research-based and even anecdotal evidence supporting various aspects of dentistry. Both clinicians and patients have ready access to all kinds of online information using web browsers from the comfort of their offices or homes. It is therefore common for doctors and patients to use online resources for a quick search and to prepare for the upcoming medical/dental visit. Although online information is a great resource, it is often difficult for the clinicians and more so for the patients to evaluate the extensive literature available in terms of validity, quality of data, and reliability of information.

There is a growing need to bridge the gap between research and clinical dental practice and to optimize the information available to clinicians and patients. This need can somewhat be met by formulating evidence-based clinical guidelines for best practices that the dentists can refer to with simple chairside and even patient-friendly versions. Since both the populations are already using online resources, it is of interest that the right kind of resources should be made available to them. It is also critical that these resources must be derived from high-quality evidence-based research, which can be used to establish the best standards for clinical care. The concept of evidence-based medicine was introduced in the 19th century and referred to as the conscientious, explicit, and judicious use of current best evidence in making best decision about the care of individual patients.[1] The same principle has been utilized in dentistry worldwide with some of the top dental organizations such as the American Dental Association (ADA) and the American Academy of Pediatric Dentistry at the forefront of this development. The ADA defines the term "evidence-based dentistry (EBD)," as an approach to oral health care that requires the judicious integration of systematic assessments of clinically relevant scientific evidence, relating the patient's oral and medical condition and history, with the dentist's clinical expertise and the patient's treatment needs and preferences.[2] As it is clearly evident, the ADA identifies three main areas in evidence-based dental care: Relevant scientific evidence, patient needs and

preference, and dentists' clinical expertise. Since the patient needs/preferences and clinical expertise are subjective and can vary among various providers and population, relevant scientific evidence is of critical importance. There is perhaps no perfect recipe for optimal clinical practices, but keeping it evidence-based is probably the clinician's best bet.

Best Scientific Evidence

Among the available hierarchy of evidence, systematic reviews and meta-analysis take the top position and contribute to the highest level of evidence, followed by randomized clinical trials (RCTs). These are followed by non-RCTs, cohort studies, case–control studies, cross-over studies, cross-sectional studies, case studies, and expert opinions.[3]

One can consider an intervention to have a strong supporting evidence if it is backed up by at least one systematic review of multiple well-designed RCTs.[4] Well-done systematic reviews or meta-analysis evaluate the quality of evidence to back the strength of recommendation. The Grading of Recommendations Assessment, Development and Evaluation (GRADE) system is often used to rate the quality of evidence and grading strength of recommendations in systematic reviews and clinical practice guidelines. The GRADE process evaluates the study design, risk of bias, imprecision, inconsistency, indirectness, and magnitude of effect. Based on the assessment, a summary of tables is created, and strong, moderate, or weak quality recommendations are assessed to balance the desirable and undesirable consequences of the various management options.[5]

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Even with a plethora of research publications, there exists a gap in the evidence-based knowledge in several areas of clinical dentistry. An interesting systematic review was published that assessed the systematic reviews done in pediatric dentistry.[6] The paper identified systematic reviews and research/knowledge gaps in several areas of pediatric dentistry such as behavioral management problems/dental anxiety, caries risk assessment and caries detection, prevention and nonoperative treatment of caries in primary and young permanent teeth, operative treatment of caries in primary and young permanent teeth, prevention and treatment of periodontal disease, and treatment of traumatic injuries in primary and young permanent teeth. This review gave a valuable insight on what we know so far in pediatric dentistry as well on the areas where we need to do further work.[6]

Translating Evidence into Clinical Practice and Related Barriers

Even though we may have the best evidence obtained from well-done systematic reviews and meta-analysis in certain areas of dentistry, it is often tedious for the practitioners to read through the elaborate reviews and extract relevant information out of them. For this purpose, it is of paramount importance to create clinical recommendations/guidelines and critical summaries that can be useful to all.[7]

Simultaneously, it is important to recognize that there are several barriers to the implementation of EBD. The information overflow from so many websites and journals can often overwhelm a clinician. Sometimes, due to the lack of data, the systematic reviews may be insufficient to produce relevant clinical guidelines.[8] Another barrier could be related to patient needs and preferences, which may cause everything else to take a backseat. Finally, the clinician's experience and lack of motivation to change what may have worked well for the practice for years can present to be a challenge.[8]

Conclusions

Even though the EBD has been the "buzz word" for quite some time now, the acceptance into dental practices has been a relatively slow process. However, to offer the acceptable clinical care and meet the increasing awareness of the patient population, it is in the best interest of the practitioners to adopt EBD sooner rather than later. The importance of providing a balanced mix of science, clinical expertise, and patient needs to optimize patient care in a practice cannot be underestimated.

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