

Review Article

The Evidence-Based Periodontology

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Abstract

At the best determination and the administration treatment of a patient who has a periodontology and periodontal problem based upon an evidence, the required thing is to combine the findings of clinical examinations, if required test results will be taken and the scientific data concerning to the complaint of the patient at the dentistry literature with the complaint of the patient. The purpose of this compilation is to focus on the importance of the evidence-based treatment at the better determination of the treatment choices for the periodontology patients in the 21th century that the quality has raised at every field.

INTRODUCTION

Evidence-based dentistry is the decision of the best treatment choice by combining the findings of the patients obtained from the clinical treatment of the patient with the general health condition of the patient and the literature knowledge [1-9]. Evidence-based treatment can be applied for any field of dentistry. If it is defined in terms of the periodontology, evidence-based periodontology uses the findings by combining the patient complaints, findings of clinical examinations, if required medical test results will be taken, scientific findings concerning to the complaint of the patient at the dentistry literature with the complaint of the patient at the best determination and the administration treatment [10,11] (Figure 1). 5 steps are followed during the implementation of evidence-based periodontology [13-23]. These are as follows:

1. A question about the patient complaint and the clinical

problem definition can be responded. (A clinical question)

2. Reaching to the best evidences which can answer the question. (Find evidences)
3. Criticizing and the judgment of the evidences obtained. (Appraisal of evidence)
4. Performing of the obtained evidences by combining with clinical experience and the values peculiar to the patient. (Application of evidence)
5. Evaluation of the processes and the clinical performance. (Evaluation)

A question the patient complaint and the clinical problem definition can be responded

It is the first step of evidence-based periodontology. This step is the most important and difficult step because the problems of patients are converted an suitable and structured questions. [13,14,24,25]

While constituting a question [26],

- Patient
- Intervention
- Comparison
- Outcome criteria are considered.

These 4 criteria can be shortened by using the first letters of the English equivalents' as PICO [13,27].

At the patient criteria, the health problem for which the patient applies to the clinic, general health condition, age and the gender are evaluated. Especially, the choice of treatment and treatment process are more important for patients with diabetes mellitus, cancer, autoimmune diseases such as pemphigus and



Figure 1 The elements of evidence-based periodontology.

pemfigoid, cardiovascular diseases, HIV and Hepatit B, C and pregnancy. These patients need special health care.

During intervention step, the process is searched to remove the problem. The best options of treatment, tests, prognoz are determined for patients. In this step, we ask ourselves these questions:

- What treatment can be applied to the patient?
- What tests can be applied to determine the disease?

During the comparison step, the healthy people at the population, people having the same problem and the people applying for the clinic are compared. Additionally, selected treatment option, diagnostic test is compared with the others.

At the outcome step, by combining all the criteria mentioned above, an answerable question is created. The created problem should be taken into consideration for which part of the etiology, medical prognosis, diagnosis or treatment. [18,28-30] (Table 1).

Before obtaining the evidences, evidence resources need to be specified. According to the subject of the created question, evidence resources change. For example; while cohort case control and case series are the evidence resources to answer the clinical problem related to etiology/ medical prognosis/ damage; randomize controlled tests are the evidence resources to answer the clinical problem concerning to the treatment.

There are 4 basic ways to reach the evidence resource [18,20,31].

1. Consult a colleague
2. Consult a textbook
3. Review an essay about the subject caught the eye before.
4. Use the bibliographical data base such as Medline or Pub med.

In the evidence resource searches by using data base, reading the hundreds of literature concerning to the subject is both difficult and motivation breaking for the researchers. In this case, the importance of systematical compilations and meta-analysis which are the important evidence resources stand out. Systematical compilations are the scientific studies carried out by the doctors who are experts in their works. These are the studies which the information is collected systematically, valued and synthesized. And the meta- analysis are carried out by combining the results of the multi studies and making the statistically analysis in a certain subject.

The value level of both of the study types are as high as the evidence resource [7,32]. After evidence resources are specified, they can be separated as Primer resources (original searches) and secondary resources (systematic compilation, meta- analysis) [30,33]. After the evidence resources are obtained, it can be reached the best evidence to answer the problem.

According to Sackett et al., strength of evidences is characterized like a pyramid. The level of evidence is increased by one climbs up in the evidence pyramid. Low evidence levels are animal experiments, bench research, and expert opinion. Case series, case control, cohort studies are middle evidence levels. Randomize control trials has high evidence levels. [1,15,34] (Figure 2).

Criticizing and Judgment of the Obtained Evidences (giving critical value for evidence)

After the evidence resources are obtained, the next step is to explain the meaning of the evidences [19]. When the evidences are given meaning, each evidence needs to be approached out of regard and equally [20]. Obtained evidences are evaluated according to certain criteria. For example; Wong scale evaluating the basic searching elements and ask what, who and how questions, Consort directive [Jadad scale] evaluating the quality of clinical tests, Timmer scale specifying the abstract quality, QUOROM directive showing the quality at systematic review, SESTA paradigm evaluating the statistical data can be used [6,35-40]. After evidence are evaluated and results are obtained, Bayesian model for determining the conformity for universal true for this results, Markov model which aims to determine the optimal form at the final decision step is used [41]. Lastly, at the final step of all of these evaluations, Consensus protocol and report making the cumulative synthesis are issued [36,37,42].

Performing of the Obtained Evidences by Combining with Clinical Experience and the Values Peculiar to the Patient

This step is to apply the evidences obtained from the research result on the patient. But, it shouldn't be forgotten that the general health condition and the specifications of the patient can affect the found evidences and accordingly this can make the solution negative found for removing the problem. Therefore, factors determine the effectiveness and the impact of the treatment. These factors include the meeting an absolute risk of the patient without an unplanned event before the treatment, the decrease at risk due to the clinical specifications of the patient, the current systematical diseases or local diseases which

Table 1: Examples of question with PICO criteria.

Question Type	Patient/Problem	Intervention	Comparison	Outcome
Treatment	How can be treated gingival recession in mandibular anterior teeth?	Subepithelial connective tissue grafts treatment with consantre growth factor	Subepithelial connective tissue grafts Treatment with platelet rich fibrine	How much is gingival recession reduce treatment with consantre growth factor?
Diagnosis	Periodontal pocket deep	Digital subtraction radiography	Controlled force periodontal probes	Bleeding on probing is seen with controlled force periodontal probes
Prognoz	Osteointegration in implant treatment	Diabetic patients	Non-diabetic patients	Is Osteointegration less common in diabetic patients?

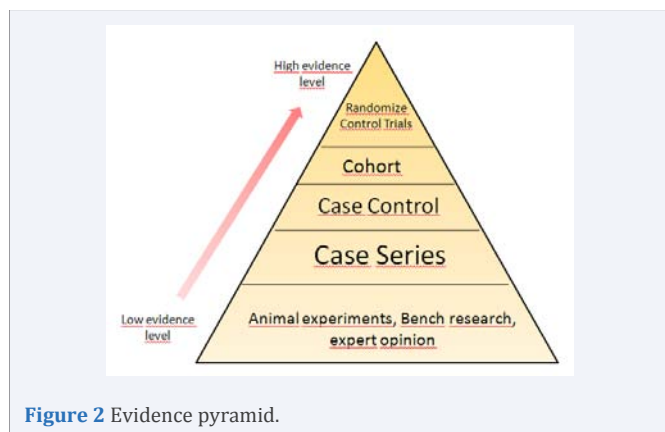


Figure 2 Evidence pyramid.

decrease the advantage of the process and affect negatively the period of the recovery of the disease, contraindications, patient's environment, social and cultural factors, education situation and the expectations during and after the treatment [39]. The doctor should embody his/her patient to this process after evaluating these factors on his/her patient and combining the clinical experiences and the doctor should finalize the last decision and the treatment choices with his/her patient. At the evidence-based periodontology, clinical success is achieved with not only the evidences that the clinician found but also the expectation and the clinical specifications of the patient [43-45].

Evaluation of the Processes Carried Out and the Clinical Performance

The target at this stage is to evaluate the condition of the patient after the processes performed on the patient and to see whether the patient's problem is solved or not. Actually, at this stage, clinician checks his/ her own success and the ability of evidence- based method. Each performance at this stage is specified according to whether he/ she can achieve a question answering the patient's problem, whether he/ she obtains the correct evidence resources and evidences or not, whether he/ she chooses the best and the most riskless process, whether he/ she takes into consideration of the expectation and the decisions of the patient. A clinician having adequate performance at every stage both performs the best treatment for his/ her patient and gains new information for his/ her clinical experiences [39,43,46].

Advantages of Evidence-based Periodontology [29,40].

1. By evaluating the scientific data, to minimize the faults for the final diagnosis, to reduce the wrong diagnosis possibility,
2. To choose the best treatment for the patient,
3. To decrease costs and time in treatment, accordingly contribution to the national economy,
4. To increase at knowledge and experience due to the literature surveillance by the clinicians
5. To observe and develop the clinical performance
6. To increase at patient satisfaction
7. To decrease in the legal liabilities of the doctors.

Performing of Evidence- Based Dentistry to the Periodontology

Periodontal tissue has complicated and dynamic form. Therefore, diseases and problems occurring on this tissue are complicated and dynamic as well. Dentistry and periodontology should not only treat the diseases but also take care of the aesthetical principles when they remove the problems. And this makes the diagnosis and the treatment of a patient applying for a periodontology clinic more complicated. In literature, there are a lot of evidence-based periodontology studies. For example; Santos A. (2003) researched relationship between control of plaque and gingivitis use to evidence based dentistry principle [47]. Engebretson S. (2013) analyzed periodontal treatment and diabetes outcomes as a systematic review and meta-analysis [48]. Carlsson GE (2016) investigated evidence-based implantology [49].

Whereby the applying of the evidence- based method to the periodontology, this will be an advisor and a problem solving at a good number of problems from the diseases such as gingivitis, periodontitis to complicated periodontal surgery, from holding a mobile tooth in the mouth to the multi- implant planning, from cysts to soft tissue tumors and to pemphigus and pemphigoid. As the treatment methods carried out with evidence-based periodontology are more successful than the traditional methods, the possibility of reappearing the same disease will be declined in the upcoming years and the increases at the patient satisfaction and the oral hygiene motivation will be observed. With the increasing of the scientific certainty of the tests and the methods used for diagnosis, wrong diagnosis possibility will decrease and therefore the better treatment for patient and reduced risk in terms of legally for doctor will be provided.

DISCUSSION AND CONCLUSION

The purpose of evidence-based dentistry is to support dental practitioner for treatment of dental problems. Evidence-based periodontology is more objective, more transparent and less biased process than traditional periodontology [12]. However, Evidence-based dentistry has several problems such as quality, quantity and dissemination of evidence [11,19]. Additionally, a lot of clinicians don't have enough time to learn and apply evidence-based dentistry and don't know access to evidence usage with resources [1,9]. Thanks to developing technology, internet, use of American Dental Association's web site, dentists can easily access to evidence [33].

Periodontitis is a disease affecting to large population of all in the world. There is a relationship between periodontitis and gene polymorphism and the ethnic differences effect host responses to bacterial dental plaque [50,51]. For example, in Turkish population, localize aggressive periodontitis is seen more often [52]. Together with Evidence-based periodontology, the most effective treatment options are chosen easily under the disease risk population. All in the world, dentist can share their own result of case-control study and treatment method about diseases at the particularly ethnic population in evidence-based dentistry web site just as The Cochrane library. Patient is at the center of treatment because of evidence-based periodontology. There are special treatment options for each patient and dental problem.

By means of the researches which have been made in 21st century and the easy information obtaining, evidence- based periodontology notion needs to be used more. In our world where the quality in every field increases, doctors must turn the evidence- based periodontology into an education philosophy and they must perform on any of their patient in order to present more quality and treatment opportunities in periodontology field. The consideration capacity of young clinicians should be increased by giving evidence- based periodontology education before and after graduation in the universities. Through the training of data base usage, the better usage of data bases like Medline or PubMed for dentistry students or new doctor can be made easier. In the fast changing word, it shouldn't be forgotten that from diagnosis methods to treatment choices are changing fast as well. A complicated treatment applied previously can be applied with easier way. Legal problems of the doctors will also decrease with the developing in medical diagnostic tests and reducing in the diagnosis faults. By means of the correct diagnosis and optimal treatment with the reduced needless process and drug usage, treatment costs will be reduced and therefore it contributes to effective source usage and national economy. Scientific data and happy patients will be obtained owing to the evidence- based periodontology.

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