

FEATURE ARTICLE

PRACTICAL IMPLEMENTATION OF EVIDENCE-BASED DENTISTRY INTO DAILY DENTAL PRACTICE THROUGH A SHORT TIME DEPENDENT SEARCHING METHOD

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ABSTRACT

Introduction

Despite the fact that the benefits of implementation of Evidence-Based Dentistry (EBD) into clinical practice is increasingly being highlighted, there are still clear limitations in its implementation into daily dental practice. One potentially important barrier to effective implementation into practice is the perception of EBD as a time-consuming process. The aim of the present study is to increase the familiarity of dental practitioners with the benefits of different time-dependent 'practical' search strategies important to EBD using a clinical question from the field of dental implantology as an example.

Materials and Methods

The PICO (population, intervention, comparison, outcome) question used in this study was: "In young adults with anterior single-tooth implant what is the effect of immediate or delayed loading on success?" A bibliographic search according to the Haynes 5S pyramid, together with 3 different time-dependent strategies (5-min, 30-min and more than 60-min), were applied.

Results

Both the Haynes 5S Pyramid and time-dependent search strategies revealed promising results for enhancing decision-making for determining the feasibility of immediate or conventional loading of anterior single dental implants. Results clearly showed that selection of the loading protocol would be case (patient)-specific and also indicated high primary implant stability and bone quality as the most important prerequisites for a successful immediate/early loading. From among the 3 different time-dependent strategies (5 min, 30 min and more than 60 min), the 60+ min search results were quite comparable with the Haynes pyramid search results.

Conclusion

It is likely that the different time-dependent search strategies may have the potential to support the clinical decision making process and may improve the implementation of EBD into daily dental practice. Increased time spent searching

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naturally seems to increase the extent of this support. However, even with short time-dependent searches, busy dental clinicians may get an improved idea/opinion regarding a clinical question.

INTRODUCTION

The therapeutic decision for some clinical cases is a complex process which depends on many important factors but the scientific basis is indispensable. This decision is the mainstay of patient care.¹ Evidence-Based Dentistry (EBD) is a tool that helps clinicians with such important decisions. The foundation for evidence-based practice was laid out by David Sackett who defined it as “integrating individual clinical expertise with the best available external clinical evidence from systematic research.”^{2,3} Applying Evidence-Based Medicine principles to dentistry, the American Dental Association defined the term Evidence-Based Dentistry as: “an approach to oral health-care decision-making that requires the judicious integration of systematic assessment of clinically relevant scientific evidence relating to the patient’s oral and medical conditions and history, together with the dentist’s clinical expertise and the patient’s treatment needs and preferences.”⁴⁻⁶

The importance of EBD use lies in the possibility of having guidelines to help the clinician make an intelligent decision. In essence, EBD does not give definitive answers; it does not exchange the totalitarianism of the expert for the totalitarianism of the literature. As stated in Sackett’s definition, EBD depends first on the clinical expertise of the practitioner. This expertise is critical in the field of dentistry where we have not been able to do a significant number of randomized, controlled clinical trials and prospective studies. If there were a reliable number of qualified prospective studies, it would be possible to retrieve a well-performed meta-analysis or systematic review of the evidence on any clinical question related to dentistry to clarify each problem. But there aren’t enough studies to validate some clinical decisions and, therefore, clinicians must apply the best available evidence to make a decision.²

Since the 1980s an evidence-based approach to clinical education has been applied in medicine (Evidence Based Medicine – EBM) at McMaster University, Ontario, Canada. It takes a systematic approach to summarizing the large volume of literature that health care providers need to assimilate into their practices. This concept soon expanded to other clinical areas and in dentistry this model was adopted later. The goal of the international non-profit organization, the Cochrane Collaboration, is to produce accurate and up-to-date information available worldwide on the effects of health care, and has an Oral Health Group that has produced a lot of systematic reviews. Their web site <http://hiru.mcmaster.ca/cochrane/default/htm>^{1,2,4,7-9} is one

of the best places to consult the best evidence and help to make a clinical decision. A tour through the Cochrane Collaboration, which is medicine’s EBM system, shows that most systematic reviews involved drugs with therapeutic interventions that introduce small changes from one setting to another or one practitioner to another. The “best evidence” standard does not address representative sampling in research studies to ensure that studies are conducted under conditions resembling those of dental practice, or in the range of dental practices that exist.^{10,11}

Knowing how to use the best scientific evidence in clinical practice is not easy and must be a fundamental skill of the dentist. Many clinicians are familiar with PubMed (www.ncbi.nlm.nih.gov/pubmed). This database is the premier source for information on journal papers in the biomedical sciences. Only some of them are relevant studies to answer therapeutic questions and few are systematic reviews, which can be used in clinical practice directly. To improve searches there are strategies to obtain relevant papers. Moreover, there often are preferable strategies leading to EBD resources that process and appraise the evidence, thus facilitating its use in clinical practice.¹²

Among the various questions that clinicians can raise during their practice, one related to dental implants can be used as an example to build a practical case on where to apply EBD.

Clinical Practice Problem

The anterior aesthetic zone is a particular area where aesthetics and especially the long waiting time for osseointegration has become a real challenge for practitioners (Figure 1). To further shorten treatment time, special emphasis has been placed on immediate implant placement in fresh sockets.¹³⁻¹⁵ In addition to different loading protocols, different patterns of occlusal contact have also been proposed.¹³⁻²¹ Although clinicians may be familiar with the rationales for different loading models, they still may experience difficulties in making their own decisions in daily dental practice especially in complex cases in the aesthetic zone. At this point, EBD may serve as a tool to support them in making reliable decisions. However, implementation of EBD into daily practice does not seem to be at the desired level and the perceived barriers by individual dentists may be of particular importance. Among the various other barriers (e.g. limited awareness and knowledge, and lack of financial incentives) a recent study has identified ‘lack of time’ as an important barrier to implementation of EBD into daily dental practice.²² Thus, it might be assumed that there may be a potential for different time-dependent and less ‘time consuming’ search strategies to support ‘busy’ clinicians in overcoming the ‘lack of time’ barrier and improve the clinical decision-making process. Thus, the aim of the present study – based on a dental implantology-related clinical

Figure 1. Case 1. Clinical appearance before and after dental implant treatment in the anterior aesthetic zone.



question – is to generally support dental practitioners in their evidence-based clinical decision-making attempts with a specific reference to the different time-dependent EBD search strategies, and to evaluate the outcomes of these different search strategies through a given clinical question.

MATERIALS AND METHODS

PICO Question

Building the question is a key step in the process of searching for the evidence that supports the clinical decision.¹² This question can be used academically in an expert review (background question) or just to answer a question in a clinical practice (foreground question).^{1,12} First of all a question should be identified in practice. In addition to the nature of the question, one must identify its main components. After that, the standardized question which forms the basis for the systematic review must be framed.¹

The acronym PICO arises from the four components that will help us build the question for the systematic review, and from this point on we will refer these questions as “PICO questions.” The main components are: Population (P), the patients relevant to the question; Intervention (I), the treatment or prevention strategy or, possibly, the harmful exposure of interest; Comparison (C), the management strategy used as a reference against which to compare the intervention; Outcomes (O), the consequences of the intervention in which we are interested.^{1,12}

In order to reach an evidence-based clinical decision, the clinician must first identify the main PICO components (Table 1). The study population must be well defined to achieve relevant research results. In this study, the Population is defined as “young adults with anterior upper single-tooth implant.” The intervention should be objective and relevant, related to the population defined. In this example, the Intervention is “immediate dental implant loading.” When we compare the therapeutics to introduce, care must be taken to prepare the related alternative to the subject population. In this

case, the Comparison is “delayed loading.” Lastly, the outcome should be approached very carefully. It is sometimes difficult to find the “exact” consequences of interventions of interest and substitute outcomes, or several outcomes must be investigated. In this paper the Outcome is “success.”^{1,12}

The PICO question is: “In young adults (P) with anterior single-tooth implant (I) what is the effect of immediate or delayed loading (C) on success (absence of peri-implantitis, bone loss and prosthetic failures) (O)?”

Bibliographic Search

Since the general aim of the present study was to increase the familiarity of dental practitioners with EBD and its implementation into daily dental practice via different search strategies to improve the clinical decision-making process, different search strategies were applied to the same clinical question. Helpful information and instructions regarding the Haynes pyramid EBD search process and also the different time-dependent search procedures (5 min, 30 min and more than 60 min) were applied to the question “In young adults with

Table 1. To reach a clinical decision the clinicians must first build a PICO question.

Population	Young adults with anterior single-tooth implant	Group of patients with the intervention
Intervention	Immediate dental implant loading	Immediate dental implant loading
Comparison	Delayed loading	Delayed loading
Outcome	Success	Success

Building process of the PICO question.

anterior single-tooth implant what is the effect of immediate or delayed loading on success?" to evaluate the outcomes of these different searches in helping dentists improve their clinical decision-making.

All searches were performed by the same author (GNG). In time-dependent search procedures (5 min, 30 min and more than 60 min) a clock with an alarm function was used to track time. In the Haynes 5S Pyramid Protocol a clock with a chronometer function was used and the average search time was detected as 2 h and 50 min.

RESULTS

Search Guided By Haynes 5S Pyramid Protocol

One of the options for a systematic review is the "Search Guided by Haynes 5S Pyramid Protocol," a bibliographic search which can be performed according to the 5S pyramid proposed by Haynes.²³ In the 5S model, beginning in the basement "studies" and building up from this step there are "syntheses," "synopses," "summaries" and at the top of the model "systems" (Figure 2). In computerized decision support "systems," patient data are entered into a computer program and matched to programs or algorithms in a computerized knowledge base, resulting in the generation of patient-specific recommendations.^{24,25}

In this search, when the keywords "young adults with single-tooth implant" and "success" AND "delayed loading" OR "early loading" were used, no specific results were detected in any steps of the pyramid. For that reason, "anterior single-tooth implant" AND "dental implants and loading" keywords were selected for the rest of the search. In Table 2 the searches in first four steps, web sites where searches were performed and numbers of the reached studies are shown. In the last step "studies," a PubMed search was performed using different filters. All the hits identified in these searches were screened by title and, where necessary for clarification, by linking through to the abstract or full text (Table 3). After the search was performed according to the Haynes 5S pyramid protocol,

Table 2. Search results of Haynes 5S Pyramid Protocol for "Summaries," "Synopses" and "Syntheses" steps.

Summaries	1. Clinical evidence – www.clinicalevidence.com	No results
	2. DynaMed – evidence based content	No results
	3. UpToDate – uptodate.com	No results
	4. National Guideline Clearing House	No results
Synopses	1. ACP Journal Club	No results
	2. BMJ Evidence Updates	No results
	3. Evidence Based Dentistry	3
	4. Journal of Evidence Based Dental Practice	4
	5. Essential Evidence Plus	1
Syntheses	1. COCHRANE	3
	2. DARE	11
	3. PUBMED (reviews)	24

the publications were evaluated from top of the pyramid to the bottom.

Search Guided by 5-min, 30-min and More Than 60-min EBD Decision-making Strategies

In order to introduce EBD in the clinical decision-making process, three categories, 5-min, 30-min and more than 60-min EBD decision-making strategies, according to the time spent for the search, can be applied using the same question. The three different approaches clearly have their own advantages on time consumption and limitations on reliable outcomes (Table 4).²⁶ Search steps may be followed in Table 5.

At this point, the original question is reviewed and a conclusion can be framed on the search evidence. The conclusions can be applied to clinical practice, along with consideration of patient preferences and values, clinical circumstances and the clinician's experience and judgment.^{1,12}

Figure 2. Steps of Haynes 5S pyramid protocol.

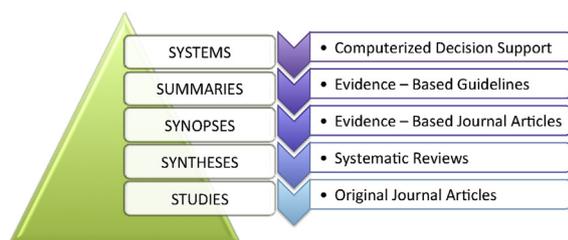


Table 3. Search results of Haynes 5S Pyramid Protocol for “Studies” step.

PubMed search	Filters				
Keywords	No	Clinical Trial	Controlled Clinical Trial	Publication date from 01/01/1970, Humans, In Young Adult: 19–24 years	Publication date from 01/01/1970, Humans, English
Anterior single-tooth implant, loading	128	30	6		
Single-tooth implant, loading	516	137	15		
“Dental implants, single-tooth” [MAJR] OR “previous single-tooth implant”				177	
“Dental implants, single-tooth” [MAJR] AND “Osseointegration” [MeSH Terms]					162
“Dental implants, single-tooth” [MAJR] AND (OR Early Delayed Loading)					52

RESULTS

Results Obtained From the Haynes 5S Pyramid Search

Publications which were found from the “Synopses” and “Syntheses” steps of Haynes 5S Pyramid search revealed limited results on the PICO question. An expert opinion by Cochran²⁷ discussed the current evidence for immediate loading of implants in comparison with early and delayed loading protocols. The authors concluded that if the implant site has high quality and quantity of existing bone, immediate loading protocols are possible. If the implant site has low quality and quantity of native bone and augmentation procedures are required, immediate

loading is more contraindicated. However, these findings are general considerations for immediate loading of dental implants and not specific for single-tooth implants in the anterior maxilla. In a Cochrane systematic review conducted by Esposito et al.¹⁵ clinical outcomes of implant-supported prostheses with different times for loading were compared. Eleven RCTs (300 patients with 790 implants) were included in the review and the results showed that there is no statistical significance between failure rates at different times of loading. The authors concluded that it is possible to successfully load implants immediately or early after implant placement; however, case selection and the degree of primary implant stability was a primary requisite for success.

Table 4. Advantages and limitations of time dependent EBD making strategies.

Strategies	Advantages	Limitations
5 min	Fast, simple and free. Requires little advanced skill	Requires that the topics should be well researched May not completely or directly answer the PICO question
30 min	Fast, simple and may thoroughly answer your question. Demands a minimum amount of time. Efficiently utilizes high quality systematic reviews and other pre-appraised evidence. Free or minimal cost.	Requires some reliance on others for critical appraisal.
1 h+	The most thorough answering of your question. Requires no reliance on others for critical appraisal.	May be time-consuming and requires advanced skill level. Minimal to moderate cost.

Table 5. Search results according to the time dependent EBD making strategies.

Keywords: “anterior single-tooth implant” and “dental implants and loading”

5 min	Cochrane	3 systematic reviews (abstracts were evaluated)
	DARE	11 systematic reviews (abstracts were evaluated)
	PubMed	24 systematic reviews (abstracts were evaluated)
30 min or less	Journal of Evidence Based Dental Practice (jebdp.com)	3 critical summaries
	Evidence Based Dentistry (nature.com)	4 critical summaries
	PubMed (systematic reviews and randomized controlled studies)	24 systematic reviews and 15 controlled clinical studies
1+ h	systematic review in PubMed	Similar to Table 3
	randomized controlled studies in PubMed	
	Other high quality studies in PubMed	

Moreover, the meta-analyses and the review articles obtained from the search revealed that there is no difference in implant success rates with different loading protocols. Early restoration of single implants in the maxillary anterior site represents a successful and predictable treatment modality from an aesthetic point of view.^{28–33} However, none of these studies was limited to a young population requiring single-tooth implant in the anterior maxilla. In contrast to these findings, a systematic review by Sanz-Sanchez et al.³¹ reported that immediate loading may impose a greater risk for implant failure when compared to conventional loading.

Other PubMed search results including RCT, clinical trials, prospective and retrospective studies and case series are given in [Table 6](#).

Results Obtained From 5-min, 30-min and More Than 60-min EBD Decision-making Strategies

When trying to do the search within 5, 30 or more than 60 min we came up with different results. In the 5-min strategy, evaluation of abstracts of these systematic reviews obtained from Cochrane, DARE and PubMed (with systematic review filter) search revealed that evidence on immediately loaded implants in the anterior maxilla is absent. According to these fast and simple search results, immediately loaded implants had similar success rates with conventionally loaded implants.^{29–31} However, data should be evaluated with caution because they are limited. Long-

term studies with stronger study designs are needed especially on immediate loading implants in the maxilla.^{32,33,50} Also, single-tooth implants may impose greater risk for implant failure when compared to immediately loaded full arch restorations.

In the 30-min or less search strategy, critical summaries revealed promising short-term results for immediate, early and conventional single-implants in the aesthetic zone.^{51,52} However patient selection is important for success of immediate loading as high primary implant stability is reported to be one of the prerequisites for a successful immediate/early loading procedure.⁵³ A fast evaluation of clinical trials revealed that immediate loading of single-tooth implants, including anterior maxilla, is as successful as conventional loading in selected patients.^{34–38,41,43,45,47–49} In the more than 1-h strategy, results of comprehensive search including systematic reviews, randomized controlled studies and other high quality studies were in accordance with the findings of Haynes 5S Pyramid search.^{27,28,33–39,41,44,50,54,55}

DISCUSSION

Tooth loss in the anterior maxilla causes a great aesthetic problem. Patients with dental implants will have to wait for several months for the bone around the implants to heal (osseointegration) before a restoration is placed on the implant ([Figure 3](#)). Undoubtedly it would be beneficial if the healing period could be reduced without compromising the success of the treatment.

Table 6. Summaries of the RCTs, clinical trials, prospective and retrospective studies and case series associated with the present PICO question.

	Type of study		Population	Summary
Degidi et al. ³⁴	RCT	Immediately and one-stage loaded small diameter implants for single maxillary lateral incisor	60 patients	No statistically significant difference was found between immediately and one-stage restored small-diameter implants with regard to implant survival, mean marginal bone loss, and probing depth
Tsirlis ³⁵	RCT	Immediately loaded upper anterior single implants in cases of immediate and late implant placement	43 single implants inserted in 38 patients (20–60 years of age)	The author advocated immediate loading in upper anterior single implant, both immediate and late implant placement procedures, in cases where adequate initial implant stability was established
Lorenzoni et al. ³⁶	RCT	Outcomes of immediately loaded implants 12 months after placement	12 patients (mean age 51.8 ± 9.5 years; between 19 and 71)	Immediate loading of single-tooth implants in the anterior maxilla can result in successful treatment outcomes in terms of implant survival, stability and peri-implant tissue stability
Bell and Bell ³⁷	RCT	Compared immediate and delayed restoration of implants placed into fresh extraction sites in the anterior maxilla requiring single-tooth replacement	The mean ages of the patients for two groups were more than 55 years	Implant survival, satisfactory aesthetic and functional outcomes such as maintained gingival margins and papillary levels, and high torque values were obtained by immediate restoration of implants
Becker et al. ³⁸	Retrospective study	Analyzed 100 immediately placed and restored dental implants at 1-year follow-up	100 immediate placed and restored dental implants (80 in the anterior maxilla and 20 in mandible)	They reported one implant failure, all other implants maintained osseointegration and any significant prosthetic or surgical complication noted
Den Hartog et al. ³⁹	RCT	Compare the outcome of immediate non-occlusal loading with conventional loading for single implants in the maxillary aesthetic zone	A total of 62 patients with a missing maxillary anterior tooth, 31 in conventional loading group and 31 in immediate loading group	Immediate non-occlusal loading, which reduces the treatment time and could offer more comfort for the patient, is not less favorable than conventional loading for single implant in the maxillary aesthetic zone
Hall et al. ⁴⁰	RCT	Compared prosthodontic conventional restoration with the outcomes of immediate restoration of single implants placed in the anterior maxilla during 1-year follow-up	Twenty-eight implants in 28 participants (14 in conventional loading group and 14 in immediate loading group) with a mean age of 43.3 years	No significant differences in the implant success rate (as determined by radiographic bone loss and stability tests), prosthodontic maintenance, peri-implant mucosal response, and papilla index between the two groups over 1 year
Siddiqui et al. ⁴¹	RCT	To evaluate immediate full-occlusal loading of single-tooth implants	Sixty consecutive patients with one missing tooth between two intact teeth were treated with a total of 69 implants	Immediate full-occlusal loading of single-tooth restorations was safely performed in selected patients when good primary stability and an appropriate loading were achieved. However, heterogeneity of implant locations of this study (only 13.7% in anterior maxilla) should be taken into consideration when interpreting results for our PICO question

(continued)

Table 6. (Continued)

	Type of study		Population	Summary
Lindeboom et al. ⁴²	RCT	Compared immediately loaded with immediately provisionalized single-tooth implants in the anterior maxilla	50 implants were placed and immediately restored with provisionals (25 were in occlusion and 25 were non-occluding)	Clinical outcomes of immediately restored single-tooth implants with occluding and non-occluding provisionals were not different
Ferrara et al. ⁴³	Prospective case series	The outcomes of 33 immediately placed and provisionalized maxillary single-tooth implants over a 4-year observation period		Concluded that the aesthetic and functional results of immediately placed and restored maxillary anterior single-tooth implants were satisfactory
Donati et al. ⁴⁴	RCT	Evaluate the outcome of immediate functional loading of implants in single-tooth replacement using two different installation procedures	One hundred and fifty-one subjects, who required single-tooth rehabilitation in the area of 15–25 and 35–45, were enrolled for the study	They suggested that immediate functional loading of implants with sufficient primary stability may be considered as a valid treatment alternative in a single-tooth replacement
Zafiroopoulos et al. ⁴⁵	Retrospective clinical study	The 5-year survival rates of two different implant systems either immediate or delayed loading were investigated	Evaluates 241 single implants in 241 patients	Reported that immediately placed and provisionally restored implants had similar implant success rates to conventionally loaded implants placed in different regions of the mouth
Shibly et al. ⁴⁶	RCT	The effect of transmucosal healing and immediate loading on bone regeneration were studied		Reported that immediately placed and provisionally restored implants had similar implant success rates with conventionally loaded implants placed in different regions of the mouth ^{44,45}
Zhou et al. ⁴⁷	Prospective clinical study	Evaluated immediate and delayed loaded implants in anterior region	60 patients (25–90 years)	They reported that implant stability was different for immediately and delayed loaded implants at different measurement times indicating differences in osseointegration process between groups. Implant stability also changed according to bone type. Evaluating this study for the current PICO question, placement of implants in both maxillary and mandibular edentulous spaces for single-tooth loss should be taken into consideration
Ostman et al. ⁴⁸	Prospective observational study	Evaluated immediately provisionalized implants with a specified surface topography in support of single-tooth and fixed partial restorations	One hundred eighty-five patients enrolled at 15 international study centers received a total of 335 implants	They reported 94.9% cumulative survival rate after 1 year
Bilhan et al. ⁴⁹	Case series	Reported on three cases of immediate loading with up to 30 months of clinical follow-up		They suggest that good clinical results can be achieved in immediate loading or immediate implantation combined with immediate loading with appropriate indication, planning, and surgical techniques

Figure 3. Case 2. Clinical appearance before and after dental implant treatment in the anterior aesthetic zone.



Nowadays implants are loaded early on and even immediately. Immediate loading of single-tooth implants in the maxillary anterior region leads to a successful aesthetic result with papillae preservation, reducing the number of surgeries and the duration of the treatment. Therefore, it represents an attractive treatment option for the patients and clinicians. However, it would be useful to know whether there is a difference in success rates between immediately or early loaded implants compared with conventionally loaded implants. This was a good example of a clinical problem where the search strategies of EBD could be applied.

In EBD dentists should first perform searches, and also analyze and evaluate the validity of these search results. However, before a clinical decision for treatment planning can be made related to the original PICO question, dentists should consider their own clinical experience and knowledge about that case. Additionally, the patient's treatment preferences determine the final clinical decision. One should never forget that these clinical decisions should be absolutely case-specific.

After identifying the PICO question "In young adults with anterior single-tooth implant, what is the effect of immediate or delayed loading on success?" a systematic review was performed. This EBD review looked at the effects of restoration placement on the same day as the implant was placed, compared with delayed loading. In our scenario, the results obtained from Haynes 5S Pyramid search demonstrated that case selection is very important in anterior single-tooth immediate loading. The degree of primary implant stability, and quality and quantity of existing bone should be carefully evaluated; if these circumstances are satisfactory than immediate loading protocols could be applied. An immediate restoration of single implants is considered a successful and predictable treatment from an

aesthetic point of view.^{35,39,41,42} This procedure can be an attractive option treatment for patients and indeed clinicians.

It is possible to immediately load single-tooth dental implants successfully in maxillary anterior region in selected patients, though not all clinicians may achieve optimal results.¹⁵ A high degree of primary implant stability appears to be one of the prerequisites for a successful immediate/early loading procedure. Other factors such as the implant surface characteristics and bone quality in the implant site are also important for success of implants.^{27,39,55}

A significant portion of dental clinicians are likely to be aware of the term of EBD and its importance and relevance, however due to several barriers (e.g. lack of education on EBD, lack of time and lack of clinical guidelines for dental care, ambiguous and conflicting nature of the literature, the demands of work, financial constraints, poor availability of evidence, etc.) they may not apply EBD in their daily practice.^{22,56-58} It seems that one of the most frequently noted barriers is lack of time.^{22,55,56,58} Simplified versions of search techniques, requiring less time and skills, essentially aim to overcome this time-related barrier and to further support the clinical implementation of EBD. These time-dependent search techniques, or 'chair-side' EBD search strategies, may serve the clinician even when he/she has limited time to reach evidence.

In the present study we performed 3 different "time-dependent EBD search" strategies. According to our results in the 5-min strategy, limited but quick results were obtained which can be summarized as "immediately loaded implants had similar success rates as conventionally loaded implants." In 30-min and more than 1-h strategies more detailed EBD results were acquired, such as "immediate loading of single-tooth implants including anterior maxilla is successful as well as conventional loading and greater risk of

failure for immediately loaded single-tooth implants were reported when loading compared to immediately loaded full arch restorations, respectively.” The 3 different time-dependent strategies demonstrated that more than 60-min search results were comparable with Haynes pyramid search results. Moreover, for limited clinical conditions that were not complex, 5-min search results could give only an idea for limited conditions and also for this type of clinical conditions 30-min search results were supportive. It is obvious that one should always consider all the advantages and disadvantages of each of these strategies after obtaining search results; the clinician should carefully evaluate the results before reaching a decision regarding the utility of these results for the benefit of the patient.

The results of the evidence based search, which was performed by systematically collecting and analyzing the scientific evidence, revealed that the concept of immediate loading for a single implant in the anterior maxilla show results as successful as a conventional loading protocol. To achieve this favorable result, immediate loading should be performed according to a specified protocol with attention to adequate primary stability and careful patient selection.

The results indicate that there is no conclusive evidence to clinically differentiate between the different loading times of implants. Both immediate and delayed loading of implants represent similarities in prosthesis failure, implant failure or bone loss.

All the aforementioned studies have their own limitations. These shortfalls include sample size, follow-up period and type of randomization. We therefore strongly recommend further investigation and double blind randomized clinical trials with a more robust set up of rules and regulations to avoid bias. Additional research is needed to consider immediate loading as a valid treatment alternative for this population because current evidence is based on small sample size and short follow-up duration.

CONCLUSION

EBD may be perceived as time-consuming by some clinicians. However, different time-dependent search strategies may be preferred when time is limited and may enable EBD to be implemented into daily practice by busy clinicians. Thus, the familiarity of dental practitioners with such different search strategies may need to be further improved. Our findings demonstrate that on average a general practitioner is able to read 5 articles within 5 min. Three of these are Cochrane reviews.

By increasing the time range from 5 min to 30 min, the practitioner will achieve proportionally higher numbers of articles (from 5 to 25). Out of the 25 articles, on average, 12 are randomized clinical trials.

The 1 h Evidence Based Dentistry Data Reading reveals that a general dentist can read in that time almost 70 articles from Pubmed.

It can be concluded that during a busy day of clinical work the practitioner can be kept updated with evidence based dentistry by reading one article in a minute.

Regardless of the time spent on the evidence search, the crucial role played by EBD has a PICO question definition at the beginning. With one example of a carefully defined PICO question: “In young adults with anterior single-tooth implant what is the effect of immediate or delayed loading on success?” We have demonstrated different clinicians’ approach to an evidence-based search for relevant answers.

Studies show that a high degree of primary implant stability, the implant surface characteristics and bone quality appear to be some of the prerequisites for a successful immediate/early loading procedure. Other factors such as occluding and non-occluding provisionals don’t seem to interfere in the final outcome.

There is no conclusive evidence that immediate functional loading of implants may be considered as a valid treatment alternative to conventional loading in a single-tooth replacement.

Notwithstanding these limitations, promising results of immediate and conventional anterior single implants are clear. However, further investigations with more controlled randomized trials are required to avoid bias and to set up a strong treatment strategy.

Every up-to-date dental practitioner should be familiar with currently available opportunities to support his clinical judgment, knowledge and experience with evidence-based findings. This approach allows the clinician to inform the patient competently and professionally. The final decision about the treatment must be made in consensus with the well-informed patient.

CLINICAL IMPLICATIONS

It is possible to immediately load single-tooth dental implants successfully in the maxillary anterior region in selected patients, though not all clinicians may achieve optimal results.

There are tools that allow EBD to be implemented into daily practice even by busy clinicians.

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Abbreviations:

EBD – Evidence Based Dentistry
PICO – Population, Intervention, Comparison, Outcome
EBM – Evidence Based Medicine
RCT – Randomized Controlled Trials

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