

EDITORIAL

DENTIST-PATIENT COMMUNICATION OF TREATMENT OUTCOMES IN PERIODONTAL PRACTICE: A NEED FOR DENTAL PATIENT-REPORTED OUTCOMES



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ABSTRACT

Periodontal practice has made tremendous progress toward evidence-based treatment over the past decade. Importantly, a new classification scheme for periodontal and peri-implant treatments has recently been devised that is incorporating current evidence and enabling patient-specific periodontal care. However, this important progress can be further accelerated with the availability of patient-perceived outcomes of periodontal and implant interventions. The majority of existing clinical studies assess treatment effects based on clinician-measured surrogate outcomes, such as probing depth and attachment levels which are easily communicated to or perceived by dental patients. As dental patient-reported outcomes (dPROs) gain momentum in dental practice, our understanding of the true outcome of dental therapies is vastly increasing. In periodontal research in particular, the utilization of dPROs has clearly demonstrated that periodontal disease contributes to an individual's burden of disease in a substantial manner. Correspondingly, disease treatment interventions seem to lead to varying levels of patient-perceived improvements. The present editorial aims to highlight the importance of patient communication of treatment outcomes in periodontal and implant research and to review the information on available measures for capturing dPROs.

Every time when a dentist feels ill or is injured, they go to see their medical doctors. When at the doctor's office for a hip replacement due to arthritic bone loss, the outcome that both the dentist-patient and medical doctor assess after surgery is improvement in the ability of the patient to perform daily tasks by walking independently and without pain. While assessment of the millimeters of preoperative bone loss and the postoperative radiographic bone density are critical for the doctor's assessment, these are not communicated to the patient in most occasions merely because they are not experienced by the patient and do not pertain to their chief concern, that is "will I be able to walk without pain again", an outcome that is patient-perceived.¹

Now let us assume that the same dentist-patient recovers nicely and returns to practice to treat a dental patient who presents with the chief concern: "will you be able to save my wobbly teeth". After examination, it becomes apparent that the dental diagnosis should be generalized chronic severe periodontitis, with

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KEYWORDS

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multiple intrabony defects associated with moderate tooth mobility. The dentist has a customary discussion with the patient that includes the following explanation: “you have bony defects of approximately 6-7 mm in 2 teeth in your upper right quadrant. If we add demineralized freeze-dried bone to graft these defects, I am confident that we can gain 3-4 mm of attachment. This is going to be our goal!” The dentist is thrilled, but the dental patient may be experiencing more moderate enthusiasm than the dentist. These clinician-assessed outcomes are not patient-perceived.^{2,3} In a continuous attempt to provide evidence-based treatment options, dentists frequently use scientific evidence derived from extensive research. Unfortunately, most dental research outcomes do not include dental patient-reported outcomes (dPROs) or are focused on more technical issues.² Therefore, the dentist’s ability to discuss patient-perceived improvement expectations is hampered by the limited available, high-quality studies that assess dPROs in periodontal practice. Translating clinical outcomes to patient value enhances clinician-patient communication and may increase the patient’s acceptance of the recommended treatment.⁴

UTILIZATION OF DPROS IN PERIODONTICS

In the periodontal literature, very few studies exist that evaluate patient perceptions as short-term outcomes of their periodontal treatment.⁵ Traditionally, the assessment of periodontal treatment outcomes has relied heavily on the measurement of surrogate clinical outcomes for periodontal tissue destruction.⁶ These clinically based measures are neither readily communicable to patients nor strongly associated with how patients are impacted by the disease.⁷ The pressing need to assess how patients perceive the effects of periodontal therapy has been highlighted in the periodontal literature, but the implementation of such measures has been impeded by lack of a practical and informative measures that can capture the psychosocial dimension of periodontal disease.^{7,8}

Previous efforts to encompass the psychosocial dimension of periodontal disease in clinical practice have primarily focused on the assessment of oral health-related quality of life (OHRQoL).⁹⁻¹¹ The periodontal community has not adopted these efforts for routine use mainly because of their utilization of research-focused, extensive measuring instruments (eg, use of a long, 49-item Oral Health Impact Profile [OHIP], the most widely used research instrument in this area) that lack clinical applicability. As a result, the psychosocial dimension of periodontal disease is not routinely assessed in clinical practice and clinical decision-making still relies upon the interpretation of signs of disease by practitioners.⁸

Table 1. QoL measures in the periodontal literature (published during 2014/01/01 to 2015/08/31).

QoL measure	Number of studies ^a	Questionnaire length
Original Oral Health Impact Profile (OHIP-49)	1 ¹²	49-items
Short Oral Health Impact Profile (OHIP-14)	7 ^{9,10,13-16,17}	14-items
UK Oral Health-Related Quality of Life (OHQoL-UK)	2 ^{18,19}	16-items
Oral Impacts on Daily Performance (OIDP)	2 ^{20,19}	14-items
Oral Health-Related Quality of Life Model (OHRQL)	1 ²¹	26-items
Functional Assessment of Chronic Illness Therapy-Fatigue (FACIT-F)	1 ²²	13-items
Utian Quality of Life survey for menopause (UQoL)	1 ²³	23-items
Custom nonvalidated questionnaire	1 ²⁴	10-items

^a One study utilized 2 questionnaires.

We performed a systematic review of MEDLINE via PubMed utilizing a relevant combination of keywords and Boolean operators [quality of life AND (periodontal OR periodontitis)] from 2014/01/01 to 2015/08/31 (unpublished data). Our search yielded 108 articles, only 15 of which reported on the assessment of OHRQoL in periodontal populations (refer to [Table 1](#)).^{9,10,12-24} Of the 15 relevant articles, 7 articles utilized a shortened version of the OHIP-14,^{9,10,13-17} 3 utilized other OHRQoL-based short questionnaires,¹⁸⁻²⁰ (shortly defined as 16 or less items), 1 utilized a long OHRQoL-based instrument,²¹ 1 utilized the extensive 49-item OHIP,¹² and 3 utilized health-related quality of life instruments or custom instruments that have not been validated in dental populations.²²⁻²⁴ Only 2 studies utilized questionnaires that have had their psychometric properties specifically tested in periodontal populations, namely the OHIP-49¹² and the Oral Health-Related Quality of Life Model.²¹ The psychometric properties of the remaining instruments for the assessment of OHRQoL may not be relevant to persons with periodontitis, as they experience halitosis,²⁵ tooth sensitivity,^{26,27} and gum bleeding²⁸ more frequently than other populations and also have fewer teeth.^{27,28} The findings shown in [Table 1](#) underline the substantial heterogeneity in the currently utilized measures

of OHRQoL in periodontics and the lack of accepted instruments specifically developed in patients with periodontitis.

A systematic review of the literature on the effect of periodontal diseases on quality of life concludes that with respect to OHRQoL, multiple different survey formats have been used, most of which was an abbreviated OHIP.²⁹ The variety of tools used in the studies included in this systematic review makes data synthesis challenging when trying to compare outcomes from different studies.

UTILIZATION OF DPROMS IN ESTHETIC PERIODONTAL PROCEDURES

Limited evidence exists when evaluating the use of dPROMs for esthetic periodontal procedures, that is, repair of mucogingival defects and root coverage. There is great value in including patient satisfaction and OHRQoLs in periodontal regeneration studies along with other objectively measured patient-centered outcomes.⁷ As evidenced from several systematic reviews and meta-analyses of root coverage procedures, the measurable outcomes include the percentage of complete root coverage, clinical attachment level gain, dentin hypersensitivity reduction, width of attached, and/or keratinized tissue.³⁰⁻³² However, the studies assessed in these meta-analyses do not include either patient satisfaction with the treatment provided or its effect on the patient's chief complaint because these studies do not assess patient satisfaction as an outcome. A limited number of studies are available that assess patient satisfaction with root coverage procedures, and those that are available present results different from most others published. For example, in evaluating patient satisfaction with either acellular dermal matrix or coronally advanced flap for root coverage, Mahajan et al³³ found that coronally advanced flap was considered the better option by the patients in terms of patient comfort and cost-effectiveness. These outcomes are not in agreement with those of the American Academy of Periodontology regeneration workshop which conclude that the subepithelial connective tissue graft procedures provide the best outcomes for clinical practice.^{30,32} A plausible reason for the discrepancy between these studies is that the American Academy of Periodontology consensus report used percent of mean and complete root coverage as measures, while Mahajan et al³³ used patient satisfaction as their outcome.^{30,32,33} By drawing parallels to the original example of the medical doctor assessing his/her patient for a hip replacement surgery, in esthetic periodontal treatment planning, our focus should be on how the patient experiences the outcome of the procedure and not the exact percentage of root coverage achieved. If the patient's chief complaint is dentinal sensitivity, how did the treatment work to reduce it? Chief complaints and their

resolution have rarely, if ever, been included as outcomes in randomized clinical trials (RCTs).

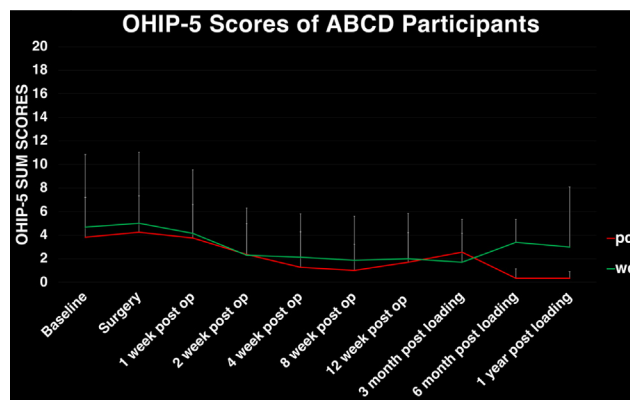
UTILIZATION OF DPROS IN ORAL IMPLANTOLOGY

Another area in periodontics that presents a high volume of literature is implant dentistry. As clearly stated in the Group 3 International Team for Implantology Consensus Report,³⁴ patient-reported outcome measures (PROMs) are rarely gathered in clinical studies evaluating implants. It is, however, the conclusion of this consensus that PROMs should be gathered using OHRQoL and patient satisfaction questionnaires. Specifically, when assessing the esthetic outcomes of implants, it was found that overall implant esthetics and mucosal esthetics were highly rated by patients, whereas implant neck design, restorative material, or provisionalization had no effect on the patient's ratings of esthetics of implant-supported Fixed Dental Prosthesis.³⁴ The direct benefit to dental patients can be clearly illustrated by the example of papillary recession management. Papillary recession in the anterior maxilla can have important esthetic effects leading to black triangles that are very challenging to manage. It is a known adverse event related to implant placement and often requires extensive and comprehensive interdisciplinary orthodontic, prosthodontic, and periodontal management. While clinicians can readily determine the presence of papillary recession, a large cross-sectional study on two hundred Caucasian dental outpatients revealed that a significant portion of persons with papillary recession do not have visible recession during maximum smile.³⁵ The availability of data assessing whether persons who have clinical recession do not have visible papillary recession are experiencing esthetic or social decrements in their OHRQoL would be of high importance to avoid overtreatment. Oral implantology is one of the areas of dental research that could benefit from a systematic inclusion of dPROs as part of its health and economic evaluations. Including OHRQoLs in oral implant research and assessing dPROs as one of the outcomes when evaluating dental implant success criteria may have a significant impact on the overall quality of oral health care.^{36,37}

UTILIZATION OF DPROS IN IMPLANT RESEARCH: A CASE STUDY

The need to include dPROs as an assessment is evident when evaluating the large number of studies and systematic reviews assessing the survival or success rate of dental implants in different populations. Specifically, when examining the effect of diabetes on dental implant survival, evidence shows that there is a significantly lower survival rate of dental implants when placed in patients with type 2

Figure 1. OHIP scores from a preliminary analysis of the Alveolar Bone Changes in Diabetes (ABCD) Cohort study. OHIP-5, five-item Oral Health Impact Profile.



diabetes.^{38,39} Most study outcomes are related to measures of implant stability and clinical health. However, assessing the patient-perceived benefit on their treatment and complications is quintessential in guiding decision-making. This lack of evidence and the need for such studies is specifically highlighted in the Group 3 International Team for Implantology Consensus Report where the authors conclude that OHRQoLs should supplement other clinical parameters that define implant success.³⁴ A case study is offered by means of preliminary analyses of the Alveolar Bone Changes in Diabetes (ABCD) study (<https://clinicaltrials.gov/ct2/show/NCT02395315>). People with diabetes mellitus generally lose more teeth than persons without diabetes, but implant placement in poorly controlled diabetics is not routinely performed because of the lack of relevant evidence and the risk for implant failure and associated complications. There are many layers to how the investigation of the safety and efficacy of implant placement in poorly controlled diabetics could be performed. One approach would be to simply assess implant success at a given timepoint after implant placement, for example, 1 or more years. However, such an investigation would be minimally informative because it does not capture cases in which, for instance, a diabetic person would undergo wound healing complications that would require them to receive antibiotics, compromise their ability to function or work for a period of time, or even require hospitalization. A more granular approach that captures a greater view of the entire dental patient experience could assess implant success and further assess intraoperative and postoperative complications. This more in-depth analysis would be more informative but somewhat problematic because it is not clearly evident how compromising these complications would be to the

dental patient's well-being. For instance, if a small flap dehiscence causes minor irritation when eating acidic food for a few days, it would likely not deter this person from undergoing implant placement if the odds for implant success were favorable. On the other hand, implant wound infection as a diabetes-related adverse event requiring intravenous antibiotics for resolution and loss of work days may have made this person regret ever having an implant surgery. Therefore, what is lacking is a valid assessment of the implant surgical placement effect to this person's OHRQoL. As discussed earlier, there is no current consensus on a universally accepted OHRQoL in dental research, but there is a clear trend for brief measurement tools. While discussion of the available tools extends beyond the scope of this editorial, the interested reader is referred to Reissman³ and John et al.²⁶ for comprehensive overviews. The ABCD study attacked the issue of implant placement in poorly controlled diabetics by using a brief version of the OHIP with only 5 items that offer good interpretability of the 4 dimensions of OHRQoL.²⁶ As shown in figure 1, an interim analysis of ABCD study results revealed that there was no significant effect noted because of the surgical procedure in either poorly controlled diabetics or normoglycemic controls for the 4-week postoperative period. In fact, there was an overall reduction in OHIP-5 sum scores and no additional patient-perceived burden, as compared with normoglycemic controls related to oral function, orofacial pain, orofacial appearance, or psychosocial impact as a result of implant placement or its postoperative sequela in poorly controlled diabetics seeking implant therapy. Thus, a clear interpretation can be made that any postsurgical complications occurring as a result of implant placement in the ABCD sample population are minor and not compromising perceived oral health.

Therefore, the merit of implant placement in these persons certainly outweighs any minor surgical complications.

CONCLUSIONS

In the dental literature, studies that assess patient satisfaction or other patient-related outcomes are rare. The need to perform evidence-based clinical dentistry is unquestionable; however, the lack of knowledge that combines patient-related outcomes to clinically measurable outcomes presents significant patient-clinician communication issues. Not including dPROs as outcomes in research studies leads to a unilateral evaluation of the condition examined, as this allows only the objective aspect of the disease to be evaluated and excludes the subjective aspect.⁴⁰ Specifically, when treating periodontal disease, the objective outcome (probing depth reduction) may be achieved in part by recession which in turn is commonly seen as an undesirable outcome by the patient (subjective). Therefore, the importance of including dPROs and dPROMs along with the objective criteria is significant.⁴⁰ The need for inclusion of PROs in dental studies has been determined in several dental specialties such as orthodontics and prosthodontics.^{3,41} As clinical measures usually focus on a tooth, implant, or arch, dPROMs assess the patient.³ A possible reason why dPROMs are not frequently assessed is the lack of a simple, short, and effective standardized questionnaire. When executing an RCT, including a long (ie, OHIP-49, OHIP-14) list of questions becomes an issue of patient compliance with the study and generates a large amount of data that are difficult to evaluate. Despite the fact that this type of data is easy to collect with patient questionnaires and so on, creating the right dPROM is not easy.³ Standardizing the dPROMs and designing questionnaires with a limited number of OHRQoLs may be the best approach to incorporate a PROM in RCTs.⁴¹ Focusing on 5 questions pertaining to the measurement of oral health outcomes as described by Listl,⁴² why oral health outcomes should be measured, what should be measured, by whom, when, and where offers great potential for the future of oral health. Using this as a guideline may help create shorter questionnaires and allow for increased patient compliance. Knowing the patient's pretreatment status and chief complaint is an integral part of the decision-making process in all dental procedures, and it is extremely important that this is included in the study design.^{3,41}

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