Nonsurgical Periodontal Treatment Can Improve HbA1c Values in a Mexican-American Population of Patients With Type 2 Diabetes Mellitus (DM2) and Periodontal Disease (PD)

**SUMMARY**

**Subjects**

One hundred fifty-four subjects of Hispanic origin, non-smokers, with T2DM (subjects with HbA1c ≥ 6.5% and subjects with initial HbA1C values between 5.7% and 6.5% if they were taking hypoglycemic medications), and localized or generalized severe chronic periodontitis according to the American Academy of Periodontology (AAP) criteria[^1] were randomly allocated to the control (n = 77) or the experimental group (n = 77). One hundred twenty-six participants completed the study (66 in the experimental and 60 in the control groups). Mean age (±SD) for the participants was 51.5 (±9) years for the experimental group and 54 (±10.2) years for the controls. Baseline mean SD HbA1c percentages for the experimental group measured 9.0 ± 2.3% and 8.4 ± 2.0% for the controls, respectively. The percentages of males in the experimental and control groups were 45.5% and 41.7%, respectively.

**Key Exposure/Study Factor**

Nonsurgical periodontal treatment (scaling and root planning [SRP]) was administered to the experimental group by using an ultrasonic scaler (Dentsply, York, PA, USA) and Gracey curettes. Two quadrants were instrumented at each appointment under local anesthesia; the endpoint of the treatment was the achievement of smooth root surfaces. This treatment was performed by two calibrated periodontists. Both control and experimental groups were given patient education regarding periodontal disease and its association with diabetes along with oral hygiene instructions, including the modified Bass technique and the use of interproximal toothbrushes and dental floss.

**Main Outcome Measure**

Change in HbA1c levels at 4 months was the primary outcome of the present study. Changes in periodontal clinical parameters were evaluated as secondary outcome measures.

**Main Results**

Baseline mean (SD) HbA1c was 9.0 (2.3%) and 8.4 (2.0%) for the experimental and control groups, respectively. Four months after baseline, HbA1c decreased by 0.6% (8.4 [1.9%]) in the experimental group, and by 0.3% (8.1 [1.8%]) in the control group. The difference between groups was not statistically significant (p = 0.89). Linear regression analyses demonstrated a correlation between change in HbA1c levels and (1) baseline HbA1c (regression coefficient = −0.46, 95% CI = −0.60 to −0.33) and (2) increase in the glycemic control medications (regression coefficient = −1.17, 95% CI = −1.97 to −0.38). In addition, a subgroup analysis was...
Conclusions
According to the results of the present study, nonsurgical periodontal therapy has no statistically significant impact on HbA1c levels of Mexican-American patients with DM type 2 and periodontal disease. The authors also concluded that nonsurgical periodontal therapy resulted in statistically significant improvement in the periodontal status of the experimental group compared to the control group.

COMMENTARY AND ANALYSIS
In the introduction of this manuscript the authors provide a detailed account of the relationship of the two disease entities. They give a concise report of how the presence of periodontal disease in patients with diabetes may be associated with systemic deterioration and how it may affect glycemic control and possibly other complications resulting from the presence of DM. They also state the potential beneficial effect of periodontal therapy on the glycemic control of patients with DM and how the results of the available studies are conflicting to an extent, thus justifying the aim of the present study. This is a well-executed study with the materials and methods section adequately explained in detail.

The number of participants is one of the strengths of the study with only the multicenter trial by Engebretson et al. having a larger study population to date. Randomization of the participants, examiner calibration, and the statistical analysis performed (multiple linear regression model) also add strength to the present study.

The present study succeeds to a very large extent in quantifying the effect of periodontal treatment on HbA1c for a Latin-American population that the authors state is underprivileged (low socioeconomically disadvantaged group). The authors again state that their sample might not be representative of the general population, but unless a multicenter and multinational trial is staged, no single group of patients can be representative of the entire population; it is well established that socioeconomic, dietary, and physical activity play a significant part in the glycemic control of patients with DM and there is diversity in these factors even within the population of the same country.

Only two minor points in this study raise questions. First, why were well-controlled DM patients allowed to participate? The authors state that 16 subjects had baseline HbA1c between 5.7% and 6.5%. On an already low and very well-controlled level of HbA1c, one cannot expect a substantial improvement by any intervention. However, as seen in the subgroup analysis, no statistically significant difference in the change of HbA1c was found when comparing poorly controlled subjects (HbA1c ≥7%) in the treatment versus control group.

Second, the timing of re-evaluation is questionable. Periodontal data were collected 4 to 6 weeks after periodontal treatment but HbA1c was assessed at 4 months, nearly 3 months after periodontal reevaluation. This is sufficient time for the periodontal conditions to change (one can probably assume to the worse, since no periodontal intervention took place during these 3 months). The authors stated that improvement of periodontal parameters was significant at 4 weeks, but whether the magnitude of the improvement remained unchanged and significant at 4 months, when HbA1c was measured, is unknown.

Apart from these two points, this is a well-thought-out, well-conducted, and well-reported clinical trial that enhances our understanding on the effect of periodontal treatment on the glycemic control of patients with DM on different populations around the world.

REFERENCES

REVIEWERS
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