

Integration of supplementary periodontal education in a comprehensive diabetes education program

Pfeffer TA*, Schulz J, Meyer K, Staufenbiel I, Adam K, Geurtsen W, Günay H

Department of Conservative Dentistry, Periodontology and Preventive Dentistry, Hannover Medical School

Introduction:

Diabetes mellitus comprises a heterogeneous group of metabolic disorders affecting the metabolism of carbohydrates, lipids, and proteins. Chronic hyperglycaemia as cardinal symptom of diabetes leads to macro- and microvascular changes. Thus, patients with diabetes have an increased risk for macrovascular (cardiovascular disease, cerebrovascular disease, and peripheral vascular disease) and microvascular complications (neuropathy, nephropathy and retinopathy). Numerous studies have shown the mutual influence between periodontitis and diabetes mellitus. In addition, macro- and microvascular changes can be observed in the periodontal tissues of diabetic subjects. Therefore, periodontitis should be considered as a further complication of diabetes mellitus.

Education programs providing information about the relationship between diabetes and diabetes-associated complications are integral part of diabetes treatment guidelines. However, information about the mutual influence between periodontitis and diabetes mellitus is not integrated in diabetes education programs, yet.

Aim of this study was to evaluate the effect of supplementary periodontal education including information about the relationship between diabetes and periodontitis and instructions for oral hygiene within a comprehensive diabetes education program.

Material and methods:

144 diabetic subjects were included in the study and divided in two groups (test group: TG, control group: CG). Both groups were asked to complete a questionnaire including questions regarding age, gender, smoking and drinking habits, oral hygiene, knowledge about the mutual influence between periodontitis and diabetes mellitus, and metabolic control at t0. Afterwards, both groups received an information brochure about the relationship between periodontitis and diabetes mellitus.

Subjects of the TG received a supplementary periodontal education during a comprehensive diabetes education program in collaboration with a practice specialized in endocrinology and diabetology. Subjects of the CG received additional information during a diabetes information event (diabetes tour).

A second questionnaire was completed by subjects of both groups after two years (t1).

In addition, subjects of the TG had to answer questions concerning the supplementary periodontal education.



Fig. 1 A comprehensive diabetes education event



Fig. 2 Diabetes information event (diabetes tour)

Results:

144 subjects (87 female and 57 male) were divided into a test group TG (n=57, 43 female, 14 male) aged 25-83 years (mean age 54.73 ± 10.57 years) and a control group CG (n=87, 44 female, 43 male) aged 29-79 years (mean age 61.2 ± 13.52 years).

After two years significantly more subjects were informed about the mutual influence between diabetes and periodontitis in both groups (McNemar-test, p<0.0001, Fig. 5). Subjects of the TG compared to subjects of the CG spent more time in brushing their teeth (Chi-square-test p=0.023, Fig. 3), used more utilities for oral hygiene (Chi-square-test p=0.009) changed their toothbrushes more often (Chi-square-test p=0.0016, Fig. 8), and were significantly better informed about periodontal diseases (McNemar-test, p=0.034) and about the fact that diabetics are more susceptible to periodontitis than non-diabetics (McNemar-Test, p<0.0001, Fig. 6).

In the TG the utilisation of oral hygiene products in addition to toothbrushes increased from 30.6% at t0 to 76.5% at t1 (Fig. 4). The average number of dentist visits increased in both groups (Fig. 7), however, with a greater increase in the TG. Furthermore, subjects of the TG underwent less invasive dental treatment measures than subjects of the CG (less periodontal therapy, fillings, root canal treatments, prosthodontics, and tooth extractions). The majority of subjects considered supplementary periodontal education as an important part of diabetes counselling.

Q: "How much time do you spend on oral hygiene procedures?"

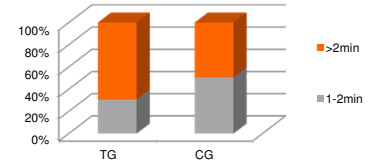


Fig. 3 Comparison of oral hygiene procedures at t1

Q: "How often do you use oral hygiene products in addition to toothbrushes?"

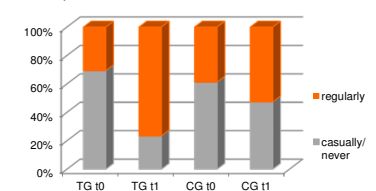


Fig. 4 Comparison of adjuvant oral hygiene products

Q: "How often do you replace your toothbrush/ brush head?"

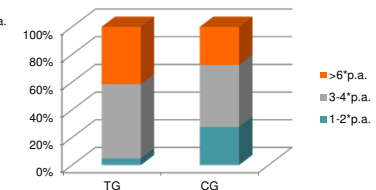


Fig. 8 Comparison of oral hygiene habits at t1

Q: "Did you know about the correlation between periodontitis and diabetes mellitus?"

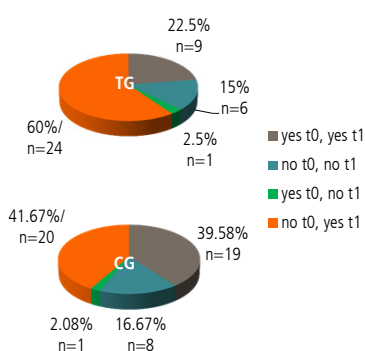


Fig. 5 Development of knowledge about the correlation between periodontitis and diabetes mellitus

Q: "Did you know that diabetics are more susceptible to periodontitis than non-diabetics?"

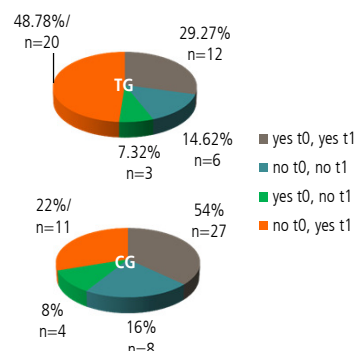


Fig. 6 Development of knowledge about the fact that diabetics are more susceptible to periodontitis than non-diabetics

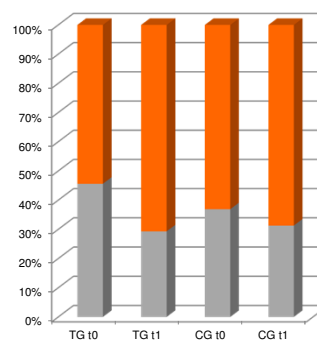


Fig. 7 Average frequency of dentist visits p.a.

Conclusion:

The supplementary periodontal education was shown to increase the awareness of oral hygiene procedures and the knowledge about the relationship between diabetes and periodontitis and should be integrated in diabetes education programs.

Acknowledgements: The authors thank Dr. Malcharzik and his team "Diabetes Kröppcke" in Hannover for the cooperation.