Individual Prediction of Treatment Outcome in Patients with Temporomandibular Disorders.
A quality improvement model.

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This thesis is based on the following papers:

I Sundqvist B, Magnusson T. Individual prediction of treatment outcome in patients with temporomandibular disorders.
Swed Dent J 2001; 25:1-11.

II Sundqvist B, Magnusson T, Wenneberg B. Comparison between predicted and actual treatment outcome in patients with temporomandibular disorders treated by TMD-trained general dental practitioners.
Swed Dent J 2003; 27:131-41.

III Sundqvist B, Wenneberg B, Magnusson T. Validation and improvement of a predictive model for treatment outcome in patients with temporomandibular disorders.
Acta Odontol Scand 2007; 65:109-18.

IV Sundqvist B, Wenneberg B, Magnusson T. Comparison of individual prediction of treatment outcome made by a TMD specialist and a TMD-trained general dental practitioner in patients with temporomandibular disorders.
Swed Dent J 2007; 31:55-63.

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Abstract

The general aim of this thesis was to create and evaluate a quality improvement model for prediction of treatment outcome in patients diagnosed with Temporomandibular Disorders (TMD) of either *Muscle* or *Mainly TMJ* (Temporomandibular Joint) origin, treated with interocclusal appliances and/or occlusal adjustment. The model was assumed to generate negative predictors of treatment outcome through evaluating all patients predicted Good reaching an objective treatment goal but not having an improvement of 50% or more. The model was created and evaluated by *one* TMD specialist. The questions were (I) was it possible for the TMD specialist to predict treatment outcome individually in patients diagnosed with TMD and, from the results, create a quality improvement model? (II) Was it possible for eight TMD-trained general dental practitioners, under the supervision of the TMD specialist, to treat TMD patients with similar results to the TMD specialist if the TMD specialist had examined, treatment planned, and individually predicted the treatment outcome? (III) Was it possible for the TMD specialist to improve the possibility to predict individual treatment outcome over time? (IV) Was it possible for *one* TMD-trained general dental practitioner to copy the clinical part of the model and achieve the same results as the TMD specialist, in patients selected by the TMD specialist?

Out of 5165 patients subjected to a functional examination of the masticatory system, 3602 were diagnosed with TMD and subgrouped as either *Muscle* or *Mainly TMJ* symptoms. The patients were predicted to have a Good, Dubious, or Poor possibility to have an improvement of 50% or more after treatment. Patients predicted Poor were not offered any treatment. A correct prediction of actual treatment outcome Good was defined as an improvement of 50% or more for muscle and/or TMJ symptoms. A total of 2625 patients began treatment at the specialist clinic for TMD and 2128 completed the full course of treatment. The patients were treated with counseling, interocclusal appliances and/or occlusal adjustment. Treatment outcome was evaluated at an objective treatment goal as improvement in percent using a verbal Numeric Rating Scale ranging from 0 to 100.

The results suggest that (I) individual treatment outcome can be predicted in patients with TMD treated by *one* specialist in TMD and a quality improvement model could be created, (II) eight TMD-trained general dental practitioners could, under the supervision of the TMD specialist, treat TMD patients with similar results to the TMD specialist, (III) the TMD specialist could improve the possibility to predict individual treatment outcome over time, and (IV) the clinical part of the model could be copied by *one* TMD-trained general dental practitioner with similar results to the TMD specialist.

In conclusion, the model works in the hand of *one* TMD specialist and the clinical part for *one* general dental practitioner, but it needs to be evaluated by other clinics/clinicians before it can be claimed to be generalizable. The model has identified new negative predictors for treatment outcome in patients with TMD. These predictors need to be investigated further in well controlled clinical trials. The created model is a PDSA cycle.

Key words: clinical trial, interocclusal appliances, occlusion, occlusal adjustment, prediction, quality improvement, temporomandibular disorders, treatment outcome