International Poster Journal IPJ of Dentistry and Oral Medicine

Int Poster J Dent Oral Med 2008, Vol 10 No 03, Poster 414

# Full-mouth versus partial-mouth recording in experimental gingivitis studies

**Language:** English

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**Date/Event/Venue:**
March 21-24, 2007
IADR/AADR/CADR 85th General Session and Exhibition
New Orleans, Louisiana, USA

## Introduction

Clinical indices are the most widely used parameters for the assessment of plaque and gingivitis in clinical trials on oral hygiene products. However, a full-mouth recording of these indices is the most time consuming part of a study. In 1959, Ramfjord introduced a partial mouth recording system which included six teeth and their replacement teeth when the tooth of first choice is missing. In further studies it was proven that these so called "Ramfjord teeth" could be used in epidemiological studies to describe the extent of gingivitis (Fleiss et al. 1987).

## Objectives

Therefore, the aim of this investigation was to determine whether correlations exist between full-mouth and partial-mouth recording of plaque, gingivitis, and discoloration in Experimental Gingivitis (EG) studies.

## Material and Methods

A 21-day experimental gingivitis study was conducted preceded by a 2-week recruiting phase. The clinical controlled, randomized trial was performed according to the regulations of Good Clinical Practice.

**Study populations:**
Group A: 79 dental students (PlI ≤ 0.5)
Group B: 78 participants from a local population (PlI ≥ 1.0)

**Mouthrinses:**
Chlorhexidine 0.20%
Chlorhexidine 0.06%
Amine fluoride/stannous fluoride (ASF)
Negative control (placebo)

**Parameters:**
Plaque index (PlI, Silness & Löe 1964)
Gingival index (GI, Löe et al. 1967)
Discoloration index (DI, Brecx et al. 1993)
At all time points full-mouth recording of the indices was performed in all treatment groups.

**Time points of parameter recording:**
Recruiting week 14 days prior baseline,
Baseline (D 0),
Follow up after 7 days,
After 14 days,
Final visit after 21 days (D 21).

**Statistics:**
The means of full-mouth recording were calculated and compared to the means of the six "Ramfjord teeth" in each participant. Pearson correlation coefficients ($p \leq 0.05$) were calculated to compare between full-mouth and partial-mouth approach.

## Results

• Statistically significant correlations between full-mouth and partial-mouth approaches were determined for GI, PlI, and DI ($p < 0.000$).
• Correlations existed at all time points and in all mouthrinse groups.
• The majority of the correlations exceeded 0.90 but 0.70 in any case.
• When the means of the full-mouth recording were compared to the means of the "Ramfjord teeth", the differences were not higher than 0.07.

**Group A**

| **Baseline** | **Placebo** | | **ASF** | | **0.06% CHX** | | **0.20% CHX** | |
|---|---|---|---|---|---|---|---|---|
| | R | p | R | p | R | p | R | p |
| **PlI** | 0.962 | 0.000 | 0.936 | 0.000 | 0.962 | 0.000 | 0.732 | 0.000 |
| **GI** | 0.962 | 0.000 | 0.936 | 0.000 | 0.962 | 0.000 | 0.949 | 0.000 |
| **DI** | 0.861 | 0.000 | 0.784 | 0.000 | 0.711 | 0.000 | 0.802 | 0.000 |

Table 1: Index correlations between full-mouth and partial-mouth approach at baseline; Pearson correlation coefficients (R) and p-values

| **Baseline** | **Placebo** | | **ASF** | | **0.06% CHX** | | **0.20% CHX** | |
|---|---|---|---|---|---|---|---|---|
| | R | p | R | p | R | p | R | p |
| **PlI** | 0.974 | 0.000 | 0.916 | 0.000 | 0.965 | 0.000 | 0.995 | 0.000 |
| **GI** | 0.979 | 0.000 | 0.968 | 0.000 | 0.947 | 0.000 | 0.965 | 0.000 |
| **DI** | 0.926 | 0.000 | 0.979 | 0.000 | 0.973 | 0.000 | 0.954 | 0.000 |

Table 2: Index correlations between full-mouth and partial-mouth approach at D 21; Pearson correlation coefficients (R) and p-values

**Group B**

| **Baseline** | **Placebo** | | **ASF** | | **0.06% CHX** | | **0.20% CHX** | |
|---|---|---|---|---|---|---|---|---|
| | R | p | R | p | R | p | R | p |
| **PlI** | 0.974 | 0.000 | 0.950 | 0.000 | 0.963 | 0.000 | 0.966 | 0.000 |
| **GI** | 0.986 | 0.000 | 0.920 | 0.000 | 0.980 | 0.000 | 0.967 | 0.000 |
| **DI** | 0.906 | 0.000 | 0.945 | 0.000 | 0.900 | 0.000 | 0.927 | 0.000 |

Table 3: Index correlations between full-mouth and partial-mouth approach at baseline; Pearson correlation coefficients (R) and p-values

| **Baseline** | **Placebo** | | **ASF** | | **0.06% CHX** | | **0.20% CHX** | |
|---|---|---|---|---|---|---|---|---|
| | R | p | R | p | R | p | R | p |
| **PlI** | 0.966 | 0.000 | 0.911 | 0.000 | 0.914 | 0.000 | 0.970 | 0.000 |
| **GI** | 0.965 | 0.000 | 0.974 | 0.000 | 0.985 | 0.000 | 0.970 | 0.000 |
| **DI** | 0.939 | 0.000 | 0.963 | 0.000 | 0.958 | 0.000 | 0.985 | 0.000 |

Table 4: Index correlations between full-mouth and partial-mouth approach at D 21; Pearson correlation coefficients (R) and p-values

## Conclusions

Assessment of the "Ramfjord teeth" is as reliable as the full-mouth scoring in Experimental Gingivitis studies. The assessment of the "Ramfjord teeth" saves time for both participants and investigators, reduces costs, and results in a study simplification without distorting the outcome.

The study was supported by GABA International AG.

## Literature

1. Ramfjord SP: Indices for prevalence and incidence of periodontal disease. J Periodontol. 1959, 30, S. 51-59.
2. Fleiss JL, Park MH, Chilton NW, Alman JE, Feldman RS, Chauncey HH: Representativeness of the "Ramfjord teeth" for epidemiologic studies of gingivitis and periodontitis. Community Dent Oral Epidemiol. 1987,15, S. 221-224.

## Abbreviations

EG = Experimental Gingivitis
PlI = Plaque index
GI = Gingival index
DI = Discoloration index
D 0 = Day 0 (Baseline)
D 21 = Day 21 (Final visit after 21 days)

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**Poster Faksimile:**