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Monitoring and motivating patients with smart technology

Report of a joint project between the dentistry department of the local health unit of Modena and Curaprox Italy.
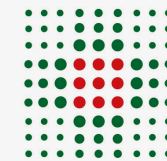
Introduction

In recent years, there has been a shift in how dental professionals provide preventive treatment. Prevention has become increasingly tailored to patients' individual needs, and dental professionals are progressively assuming the role of oral health coaches. Here, smart technology is becoming an ever bigger part of the process. These changes can be regarded as positive, but they raise some questions. How effective is the use of smart technology regarding patient communication? Can it help to motivate patients to clean interproximally? Does it promote recall appointments during which gingival inflammation is monitored? Does it contribute to patients' oral health improvement in general?

The BOB-App is a motivational practice tool that helps to instil behavioural change in patients through simple and interactive communication. Patients are actively engaged in each hygiene appointment and made aware of their own oral health status. The behavioural change that the BOB-App aims to promote is the daily use of interdental brushes or other interdental aids to remove interproximal plaque.

A collaborative project was conducted between Curaprox Italy and the dentistry department of local health unit Modena and it's three districts (North, South and Central) with the aim of clinically and statistically verifying the effectiveness of the BOB-App in establishing an interdental brushing routine in patients, in order to reduce interproximal inflammation and increase recalls. The project was authorised by Dr Pietro Di Michele and performed by dental hygienists Silvia Sabatini, Michela Grazia and Michela Chiaromonte. All the data was processed by Sabina Floridia, a dental hygienist and consultant for Curaprox Italy. This slide show summarises the project and its results.

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How does the BOB-App work?

The first step is to enter the number of crowns, implants and missing teeth of the patient into the app. The second step is to enter the recommended interdental brush size or aid for each interproximal space. The third step is to enter the bleeding on interdental brushing (BOB) score. Lastly, add a photograph of the patient's current oral health situation as a visual aid. The BOB-App then automatically provides a mouth map (visual representation) of the patient and the BOB score, consisting of 4 categories: severe, moderate, mild and no inflammation. Because the app provides a graph of the BOB scores determined at each recall, patients can track their oral health over time. Both the mouth map and the graph are sent to the patient by email or can be printed out to take home.

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What kind of patient usually comes to the dentistry department of the local health unit for oral health treatment.

Most patients coming for oral hygiene treatment at the dentistry department of local health unit of Modena typically come from a low-income background, suffer from gingival inflammation and do not speak Italian well. The biggest challenge for the dental hygienists is explaining the importance of prevention in the form of proper oral hygiene at home. Communication is complicated because of the language barrier. A large number of the patients have a high bleeding and plaque index, but do not attend recall appointments. Improvement is thus rare.

Patient inclusion criteria

- 16–73 years of age
- Presence of at least 20 natural teeth (dental crowns included)
- At least 8 interproximal spaces suitable for interdental brushing

Patient exclusion criteria

- Heavy smoking (over 20 cigarettes a day)
- Presence of implants only
- Inability to comply with the given instructions

Interdental brushes compatible

Curaprox CPS Prime

Curaprox CPS Perio

Implementation of the BOB-App

The dental hygienists received training on how to use the BOB-App during oral hygiene treatment. They received a tablet loaded with the BOB-App, a tablet holder, a mirror and interdental brushes. The BOB-App was then implemented during regular oral hygiene check-ups in order to map patients' interproximal bleeding, communicate and visualise their oral health status, and motivate them to clean interproximally daily.

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Results

Number of patients

58 Total

32 Females   **26** Males

Number of patients   Number of BOB scores

18 — 1

38 — 2

2 — 3

3%
3 BOB scores

66%
2 BOB scores

31%
1 BOB score

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51.502
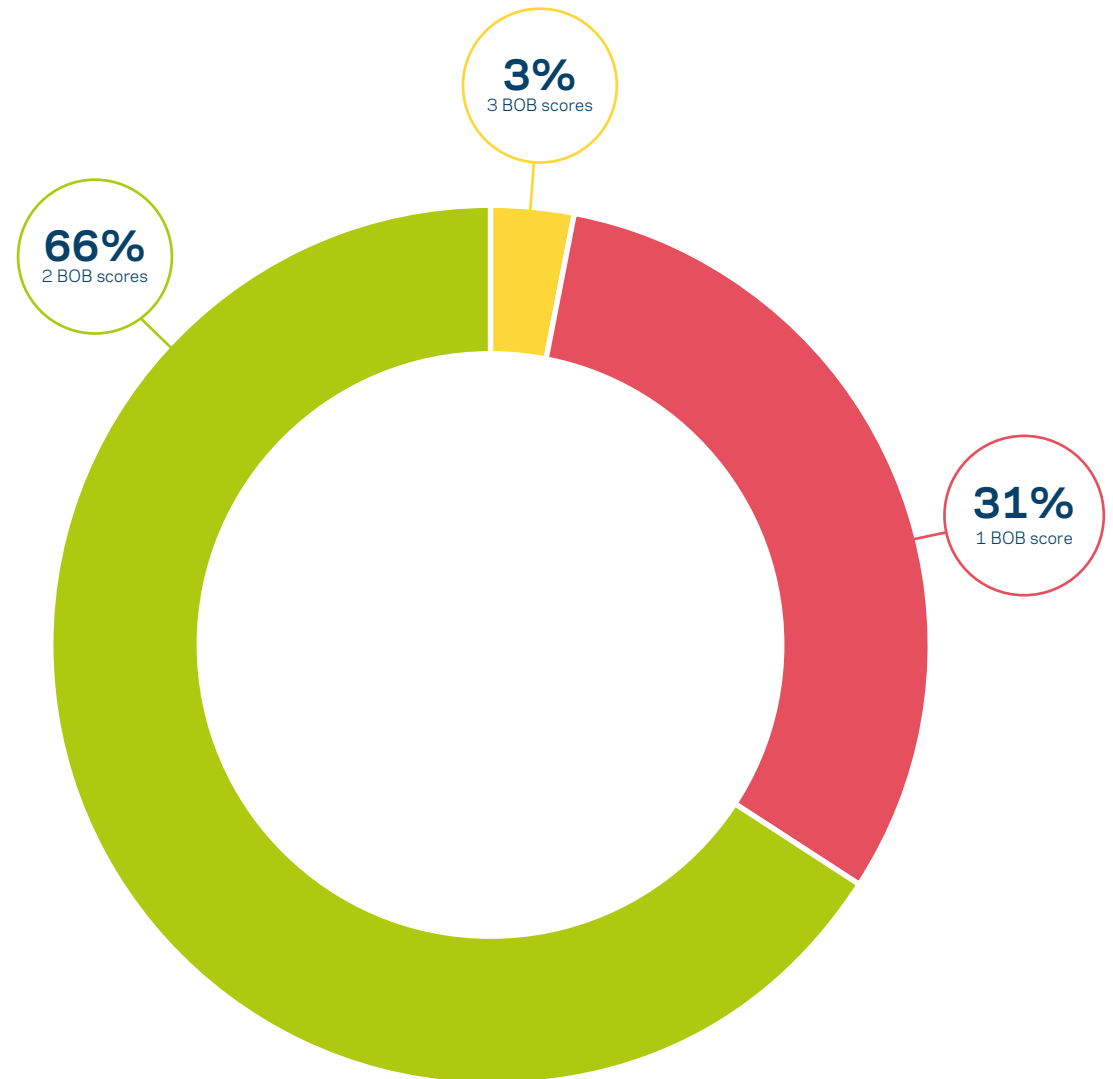Total ID spaces

2.280
Prime

274
Perio

163
Non-IDB
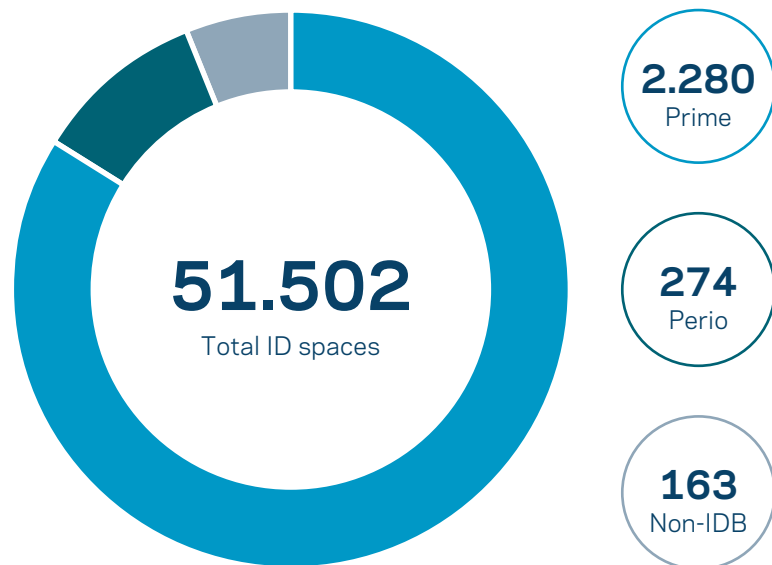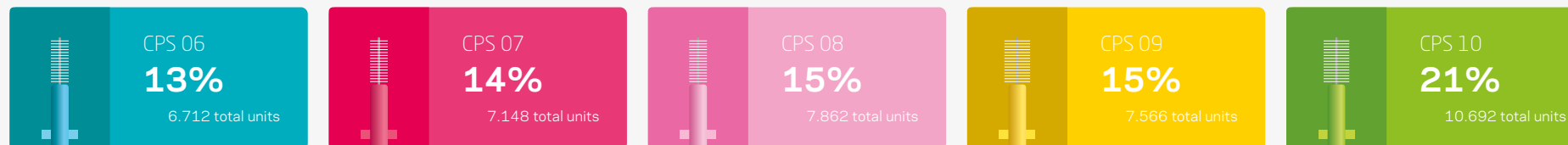
Interproximal spaces & interdental brushes

A total of 51.502 interdental spaces were examined, of which 2.280 required prime size interdental brushes, 274 perio sizes and 163 other interdental cleaning aids.
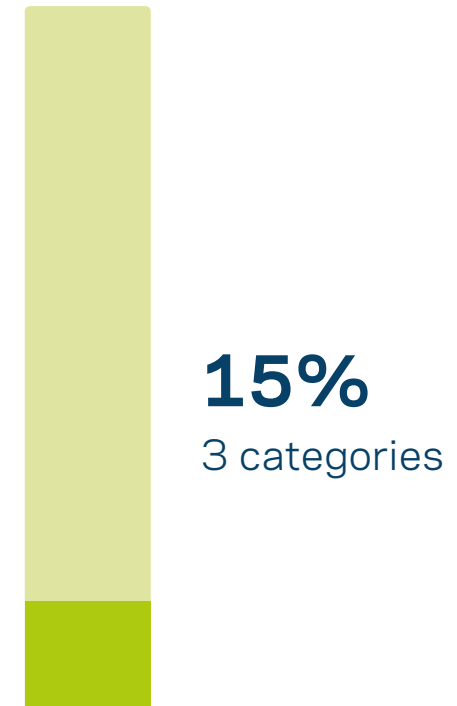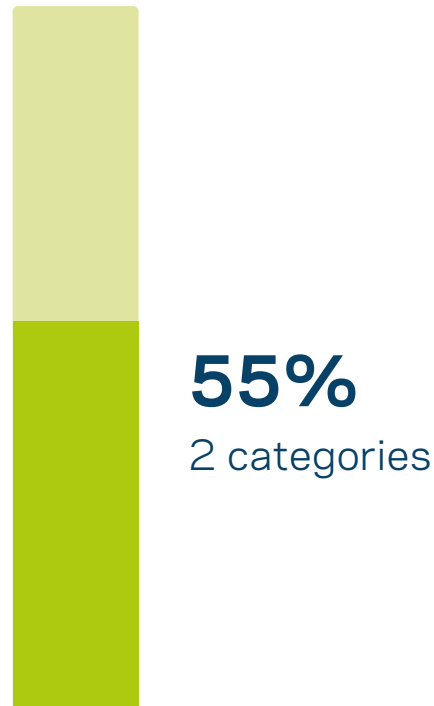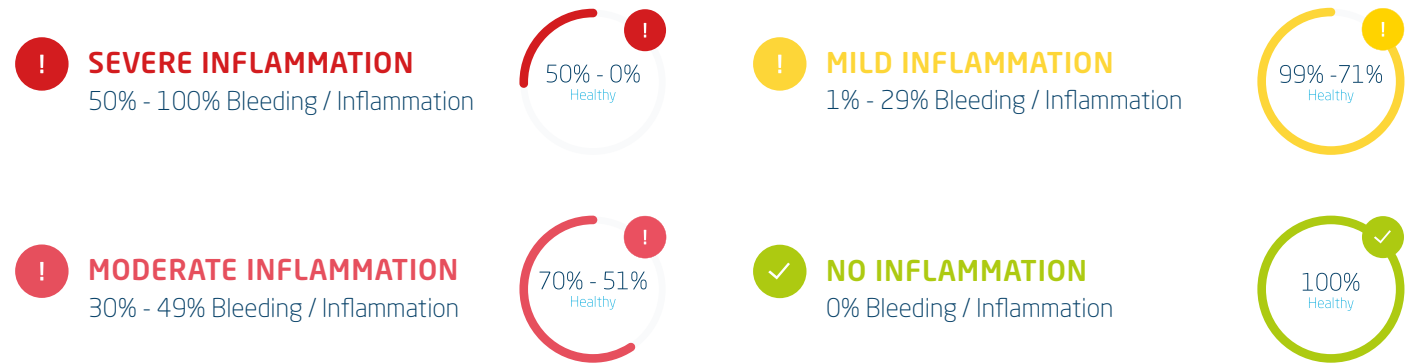
CPS 06
13%
6.712 total units

CPS 07
14%
7.148 total units

CPS 08
15%
7.862 total units

CPS 09
15%
7.566 total units

CPS 10
21%
10.692 total units

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Number of BOB scores	Appointment	BOB score (% bleeding / inflamation)			
		Severe (50% - 100%)	Moderate (30% - 49%)	Mild (29% - 1%)	No Inflammation (0%)
1 (18 patients)	Appointment 1	7 patients	5 patients	4 patients	2 patients
2 (38 patients)	Appointment 1	30 patients	3 patients	3 patients	2 patients*
	Appointment 2	3 patients	7 patients	18 patients	10 patients
3 (2 patients)	Appointment 1	2 patients	–	–	–
	Appointment 2	1 patient	–	1 patient	–
	Appointment 3	–	–	2 patients	–
		❗	❗	❗	✔

* Of the 2 patients who had no inflammation at the first appointment, 1 remained at 0% inflammation and 1 went from 0% to 12% owing to a changed clinical situation—a molar had been extracted and a fixed orthodontic appliance had been placed.

10 patients (30%)
moved up 1 category on the inflammation index

18 patients (55%)
moved up 2 categories

5 patients (15%)
moved up 3 categories

! **SEVERE INFLAMMATION**
50% - 100% Bleeding / Inflammation

50% - 0%
Healthy

! **MODERATE INFLAMMATION**
30% - 49% Bleeding / Inflammation

70% - 51%
Healthy

! **MILD INFLAMMATION**
1% - 29% Bleeding / Inflammation

99% -71%
Healthy

✓ **NO INFLAMMATION**
0% Bleeding / Inflammation

100%
Healthy

30%
1 category

55%
2 categories

15%
3 categories

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Conclusions

All 3 dental hygienists agreed that the BOB-App facilitated communication with patients. The percentage of patients participating in the BOB-App project who showed up for their recall appointment was surprisingly high, and the improvement of their oral health was unexpectedly positive. According to the dental hygienists, these patients showed the most significant oral health improvement of all the patients they had treated during their time at the dentistry departments.

Available on:

Download on the App Store

GET IT ON Google Play

The dental hygienists reported that a major advantage of using the BOB-App was the improved personal attention that patients received and that this was the key to the greatly improved oral health of these patients.

The project and its results were presented during the SISIO (Società Italiana di Scienze dell'Igiene Orale) congress, 9-10 July 2021, in Rome.

Would you like more information about the BOB-App?

Visit **www.curaproxinterdental.com**