

## Clinical Trials Demonstrate That Use of OraCo Online Support Service Following Dental Visits Enhances Patients' Oral Hygiene Awareness

Lion Corporation (Representative Director, President and Executive Officer: Masayuki Takemori) has confirmed the effectiveness of OraCo, an online support service provided by dental hygienists to patients following dental clinic visits. Clinical findings showed that patients' awareness of oral hygiene improved through online support from dental hygienists, who helped them implement the guidance provided during their dental clinic visits. This evidence-based approach helps sustain motivation and is expected to foster long-term good oral care habits.

Lion presented the results of this research at the 74th Annual Meeting of the Japanese Society for Oral Health (JSOH) held from Friday, May 16 to Sunday, May 18, 2025, at the Toki Messe Niigata Convention Center in Niigata Prefecture.

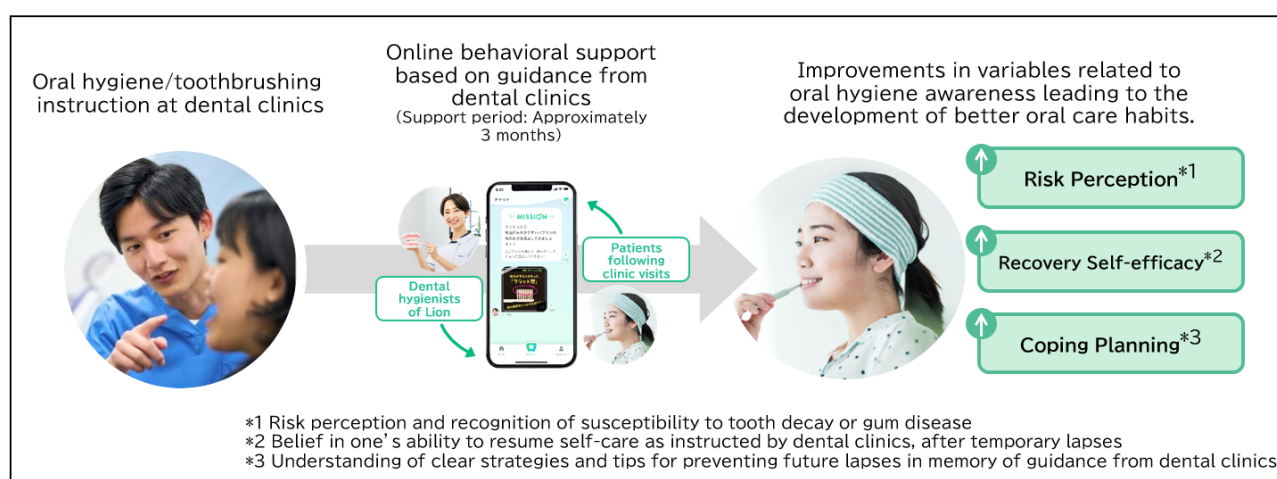


Figure 1: Research Overview

### ■ Background of Research

Prevention of the two major dental diseases, tooth decay and gum disease, requires a two-pronged approach consisting of "self-care" on the part of the individual and regular visits to the dentist for "professional care." To ensure proper self-care, dental clinics provide instruction on toothbrushing and oral hygiene. However, providing guidance only at the time of consultation has been shown to be insufficient, as patients' memories tend to fade following their visits, making it difficult for them to continue with long-term self-care in line with the guidance.\*<sup>4</sup> Furthermore, while digital tools have been shown to be effective in supporting oral care behavior, few studies have examined the impact of continued support from dental hygienists after clinic visits to help patients with daily self-care. To address this gap, we conducted a clinical trial to assess the effectiveness of OraCo, an online support service in which dental hygienists assist patients in continuing their oral care at home.

\*<sup>4</sup> Lion survey (Interview survey of dental clinics; 30 cooperating dental clinics; conducted from April 2022 to June 2024)

\*<sup>5</sup> Fernandez, C. E., et al. "Teledentistry and mHealth for Promotion and Prevention of Oral Health: A Systematic Review and Meta-analysis." *Journal of Dental Research*, Vol. 100, No. 9 (2021): pp. 914-927.

## ■ Method of Research

- **Participants:** 25 members of an “OraCo app user group” who received behavioral support via the app for three months following a visit to a dental clinic, and 25 members of a “non-app user group” who did not use the app (aged 20–59)
- **Behavioral support:** Over a three-month period, the app user group members received 15 individualized behavioral tasks and advice in the app based on oral hygiene instruction given at the dental clinic.
- **Evaluation method:** Five questionnaire surveys were conducted before the start of the behavioral support and at 1-, 4-, 8-, and 12-week intervals once the program was under way.
- **Variables:** Items related to oral hygiene awareness and behavioral change\*<sup>6</sup> (Table 1)

\*6 Questions based on variables from the Health Action Process Approach Model, a theory of health behavior change proposed by R. Schwarzer

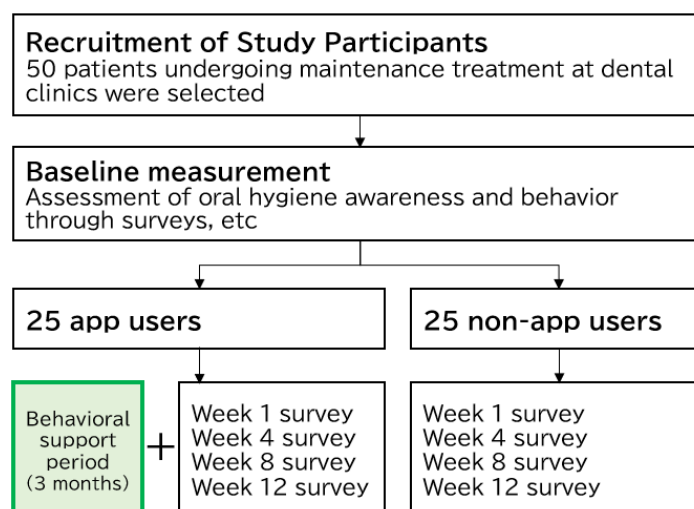


Figure 2: Survey Method

Table 1 Variables and Questions Related to Oral Hygiene Awareness and Behavioral Change

| Variable classification | Variable name                            | Question  |
|-------------------------|--|---|
| Motivational phase      | Risk perception                          | Do you think you are prone to cavities or gum disease?  |
|                         | Outcome expectancies                     | By continuing the guidance provided at the dental clinic at home, I believe it is possible to maintain and improve the condition of my mouth.     |
|                         | Task self-efficacy                       | Even when busy, I am confident that I can implement the guidance provided at the dental clinic.   |
|                         | Intention                                | For the next month, I plan to follow the instructions I received at the dentist's office every time I brush my teeth.                             |
| Volitional phase        | Action planning                          | I clearly understand the techniques and tips for incorporating the guidance provided at the dental clinic into my daily routine.                  |
|                         | Coping planning                          | Even if I forget to follow the instructions at the dental clinic, I clearly understand the tricks to make sure I don't forget the next time.      |
|                         | Maintenance self-efficacy                | Even when busy, I am confident that I will continue oral care based on the guidance I received at the dental clinic.                              |
|                         | Recovery self-efficacy                   | Even after a break of two to three days in following the guidance received at the dental clinic, I am confident in resuming instructed oral care. |
|                         | Compliance with oral hygiene instruction | Are you able to practice what you are instructed to do at the dental clinic with each oral care session?  |

## ■ Results of Research

Among the variables related to oral hygiene awareness and behavioral change, the items that were significantly higher in the app user group than in the non-app user group were risk perception in the motivational phase, and recovery self-efficacy and coping planning in the volitional phase (Figure 3). In particular, with regard to risk perception—such as recognizing one’s vulnerability to tooth decay or gum disease—the group using the app demonstrated a noticeable improvement after one week of use, with statistically significant improvement observed after four weeks.

Furthermore, the app user group showed a significant improvement in the recovery self-efficacy, which is belief in the ability to resume self-care within two to three days of an interruption in guidance from dental clinics, and in the coping planning, which is understanding of clear strategies and tips for preventing future lapses in memory of guidance from dental clinics.

These results indicate that patients recognized the risk of developing tooth decay and gum disease (risk perception) and gained confidence in their ability to continue appropriate self-care (recovery self-efficacy, coping planning).

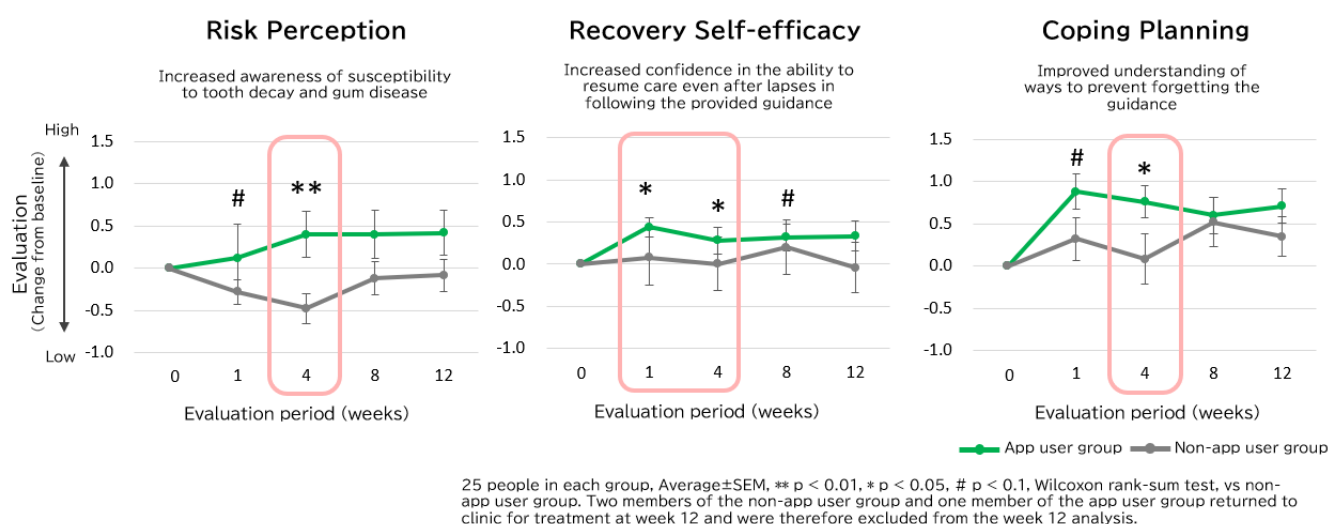


Figure 3: Results of Variables with Significant Differences

In addition, in the open-ended survey of the app user group (Table 2), respondents reported that online support from dental hygienists helped them to be more conscious of oral care and maintain greater consistency than usual. These survey responses suggest the importance of providing easy-to-review guidance with images and videos that are easy for patients to understand, and having dental hygienists provide support, helps improve patients’ motivation for oral care while encouraging better living habits.

Table 2: Excerpts from open-ended survey responses from the app user group

- Messages are sent regularly, allowing me to review past toothbrushing advice and recall recommendations I had forgotten.
- Receiving regular comments from dental hygienists helped me maintain my motivation.
- On days when I’m tired, I tend to skimp on brushing, but I sometimes remind myself of the dental hygienist’s advice to get back on track.
- The tips on brushing techniques presented through photos and videos are easy to understand and very helpful. In particular, the videos make it clear how much pressure to apply when brushing, making it easier to brush properly.

The above results confirm that the online behavioral support for oral care by dental hygienists following dental visits improves patient awareness of oral hygiene. Furthermore, it was suggested that this could lead to sustained good oral hygiene habits (self-care) based on guidance provided at dental clinics, which has been considered difficult until now.

Going forward, we plan to apply the patient data accumulated in the app to improve oral hygiene guidance at dental clinics, as well as for conditions where self-care is important, such as oral function.

Lion will utilize the results obtained from this study to promote good oral healthcare habits and contribute to the creation of better habits among people.

\*The above research results were announced as follows.

[The 74th Annual Meeting of the Japanese Society for Oral Health]

○Date: May 16 (Fri) to 18 (Sun), 2025

○Venue: Toki Messe Niigata Convention Center, Niigata Prefecture

○Title: “Impact of a Novel Smartphone App on Maintenance of Oral Hygiene Behaviors: Randomized Controlled Pilot Study.”

○Presenters: Lion Corporation, Tetsuhiro Shimodaira, Kohei Ishii, Mitsuo Kimura

#### ■ Reference Information

Starting April 1, 2025, we launched OraCo, a new service that collaborates with dental clinics to promote good oral care habits. For more information on how to implement the service in your dental clinic or for more information on the service, please visit the following site:

[OraCo service website for dental clinics \(Japanese\)](#)

