

Paediatric Oncohaematology: Opportunities to Improve Quality of Life Through Adapted Oral Hygiene Systems

Brief description

Oncohaematological treatments can produce cytotoxic effects on the epithelial cells of the oral mucosa. The resulting exaggerated inflammatory response in the oral cavity may lead to oral mucositis, among other clinical manifestations. The impact on patients' quality of life is considerable.

One of the main consequences is the inability to perform proper oral hygiene, as the vast majority of available toothbrushes have bristles that are too firm or brush heads that are too large, making them unsuitable for use in these patients¹.

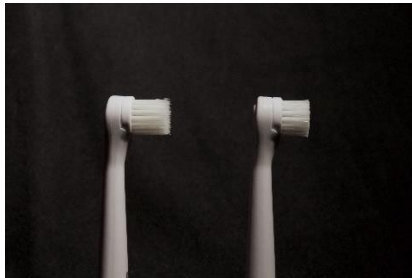


Figure 1. Brush heads of the PHB ACTIVE JUNIOR electric toothbrush manufactured by DENTAID. On the left, a head with ultra-soft bristles. On the right, a traditional head.

Why is this technology studied?

The onset of mucositis arises as a result of an inflammatory response of the epithelial mucosa to the cytotoxic effects that occur during cancer treatment with chemotherapy and/or radiotherapy. The use of a low-speed rotational electric toothbrush with an ultra-soft bristle head facilitates acceptance of toothbrushing among paediatric patients during hospitalisation for oncohaematological treatment. This type of toothbrush enables effective removal of supragingival biofilm during the patient's hospital stay.

In addition, it helps to reduce gingival bleeding, edema, and inflammation—variables assessed solely through clinical observation by the dentist during the patient's hospitalisation. **It belongs to** DENTAID Research Center (Dentaid S.L.), Department of Translational Science & Development.

How does it work?

The product is a rotational electric toothbrush operating at 6,000 rpm, available in pharmacies under the name **PHB® Active Junior Electric Toothbrush**, by the brand **Laboratorios PHB, S.L.** It bears the CE marking and is sold under the following national product codes: **CN: 172259.1** – green handle and **CN: 172258.4** – red handle.

In Paediatric and Adolescent Oncology and Haematology Units, the youngest patients are the most susceptible to developing mucositis as a result of their treatment. This is due to their higher cellular mitotic activity at younger ages, compounded by any pre-existing oral pathology.

¹ 1.-Pulito, C., Cristaudo, A., Porta, C.L. et al. Oral mucositis: the hidden side of cancer therapy. *J Exp Clin Cancer Res* 39, 210 (2020).
2.-Andriakopoulou C S, Yapijakis C, Koutelekos I, Perdikaris P. *In Vivo* May 2024, 38 (3) 1016-1029; DOI: <https://doi.org/10.21873/invivo.13535>.
3.-Alqahtani SS, Khan SD. Management of oral mucositis in children. *Eur Rev Med Pharmacol Sci*. 2022;26(5):1648-1657.4.-Gündogdu F, Sayar S. Oncology nursing practices in the management of chemotherapy-related oral mucositis in accordance with evidence-based guidelines: a descriptive and cross-sectional study. *Support Care Cancer*. 2022 Nov;30(11):9549-9557.

Proper oral hygiene before and throughout the course of therapy helps to minimise the occurrence of these oral conditions, thereby supporting the uninterrupted continuation of their oncological treatment.



Figure 2. Patient affected by mucositis performing oral hygiene using a toothbrush with an ultra-soft bristle head.

What future products will it develop?

Oral hygiene systems adapted to the age and specific needs of patients undergoing oncological therapy. The ultimate goal is to help improve the quality of life of children and adolescents undergoing antineoplastic therapy, which often leads to oral conditions such as mucositis, particularly following the application of chemotherapy and radiotherapy protocols.

Competitive advantages compared to other research

To date, no other multidisciplinary studies are known to have been developed with this specific aim. Our team presented preliminary results from the pilot study at conferences in the fields of Paediatric Oncology and Paediatric Dentistry, respectively.

Elomba Biahakue, A; Planells del Pozo, PN; Corrales Sarabaza, O; Góngora León, I; Beltri Orta, P. Pediatric Oncohematology: Possibilities for Improving Quality of Life through Adaptive Oral Hygiene Systems. A Pilot Study. *Odontol Pediátr* 2024;32(1):1-30

Prospective observational study on oral hygiene in pediatric patients undergoing cancer treatment using a low-intensity electric toothbrush with an extra-soft rotating head. Gutierrez M, Beltri P, Elomba A, Alvarez C, González A, Cela E, Planells P, Mata C. XVI National Congress of the Spanish Society of Pediatric Hematology and Oncology. Palma de Mallorca. 2024.

Where has it been developed?

Oncology. CI: Cristina Mata Fernández.

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The project is being developed at the **Gregorio Marañón General University Hospital** (Paediatric and Adolescent Oncology and Haematology Units) and at the **Faculty of Dentistry, Complutense University of Madrid (UCM)**.

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