

# Prevalence of child malocclusion and its association with time of breastfeeding and/or deleterial habits in children from 2 to 6 years old at public schools in Bento Gonçalves, Rio Grande do Sul, Brazil – pilot project

Giovana De Bacco<sup>1</sup>, Juliana Schenato<sup>2</sup>, Patrícia Valério<sup>3</sup>

<sup>1,2</sup>Health Department of Bento Gonçalves, RS, Brazil

<sup>1</sup>Faculty of Dentistry, Universidade Federal do Rio Grande do Sul, RS, Brazil

<sup>3</sup>Patrícia Valério Institute, Belo Horizonte, Brazil

<sup>3</sup>Corresponding author

**E-mail:** <sup>1</sup>[giovana.debacco@bentogoncalves.rs.gov.br](mailto:giovana.debacco@bentogoncalves.rs.gov.br), <sup>2</sup>[schenato.juliana@bentogoncalves.rs.gov.br](mailto:schenato.juliana@bentogoncalves.rs.gov.br), <sup>3</sup>[patricia.valerio@terra.com.br](mailto:patricia.valerio@terra.com.br)

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**Abstract.** Knowing that the worldwide prevalence of malocclusion in early childhood is 54 %, we carried out a pilot project in the first half of 2022 at Public Schools in Bento Gonçalves RS, evaluating 1938 children between 2 and 6 years old. The prevalence of malocclusion found was 23 %. Anterior open bite, whether or not accompanied by posterior crossbite, was the most prevalent malocclusion. About 70 % of the children were not breastfed or breastfed for less than 6 months, presenting a non-nutritive sucking habit. Assessing 5 years old children alone, this prevalence rose to 54 %. The results reinforce the need of public health policies that promote and support prolonged breastfeeding, which expand the knowledge of parents or guardians and school staff about the adverse effects caused by the use of pacifiers and baby bottles, with the adoption of transdisciplinary measures for the prevention, interception and treatment of malocclusions in a timely manner.

**Keywords:** malocclusion, suckling, deleterious habit.

## 1. Introduction

Malocclusion is the third largest oral health problem in the world and an important public health issue. The national oral health survey carried out in 2010 identified malocclusion in 67,3 % of children aged 5 years. Breastfeeding is associated with a lower prevalence of malocclusion, having an effect proportional to its duration<sup>2</sup>. Non-nutritive sucking is another factor that contributes to the increased prevalence of malocclusion in this age group<sup>3</sup>. In early childhood, the worldwide prevalence of malocclusion is 54 %, remaining unchanged in the permanent dentition<sup>4</sup>. This pilot project aimed to evaluate the prevalence of malocclusion in children aged 2 to 6 years enrolled in public schools in Bento Gonçalves, RS, and to relate it to the duration of breastfeeding and the presence of non-nutritive sucking. In view of the results, justify the need for integration between Department of Health and Department of Education, in order to promote quality of life, based on the promotion of oral health, prevention and timely intervention in malocclusions.

## 2. Methodology

### 2.1. Clinical examination

The epidemiological survey was carried out in the first semester of 2022 by the dentist of the prevention team at public schools of Bento Gonçalves, RS, Brazil. Children between 2 and 6 years old were examined. Examination of the oral cavity was performed through direct visual inspection, using disposable wooden spatulas to push away soft tissues.



**Fig. 1.** Dentist Juliana Schenato during clinical examination in 5 years old student at Educador Paulo Freire Public School. Personal archive. Photo with consent of the child's parent. May/22

## 2.2. Classification

The following types of malocclusion were categorized: anterior open bite, posterior crossbite, deep bite, anterior crossbite and anterior open bite alongside posterior crossbite, regardless of severity. Once the data was extracted, the condition of specifically children at 5 years old were analyzed, an age group used in other studies. As soon as the malocclusion was identified, the nursing technician received a data collection form to deliver to the person responsible for the child, with the intention of relating the changes in growth and development found with the time of breastfeeding and deleterious sucking habit (pacifier or finger).

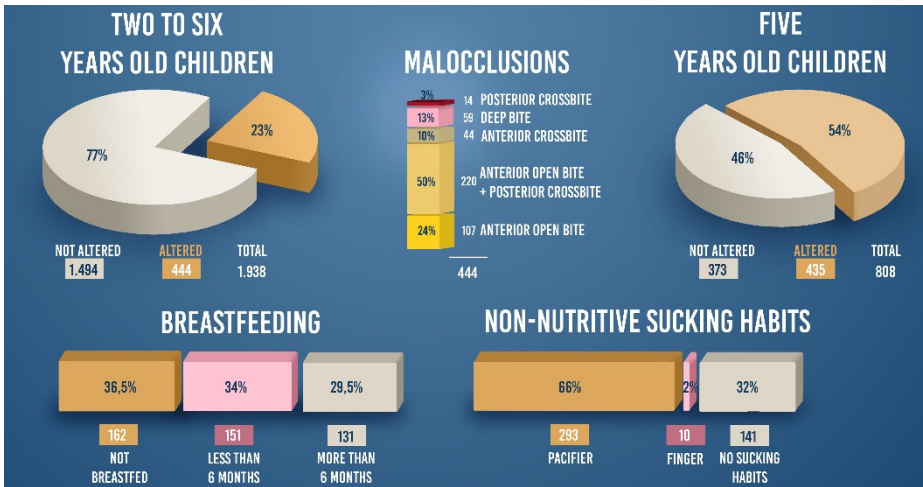


**Fig. 2.** Types of malocclusion classified: 2A (anterior open bite) 2B (anterior open bite alongside posterior crossbite), 2C (deep bite), 2D (anterior crossbite), 2E (posterior crossbite)

## 3. Results

1938 children were examined. Of these, 23 % (444 children) had some type of malocclusion. Anterior open bite alongside posterior crossbite was the most prevalent type of malocclusion (50 %), followed by anterior open bite (24 %), deep bite (13 %), anterior crossbite (10 %) and posterior crossbite (3 %). Evaluating the duration of breastfeeding in the group of children with malocclusion, were observed that 36.5 % of them did not breastfeed or were breastfed for less than 6 months (34 %). In addition, 66 % use a pacifier and 2 % suck their thumb. Analyzing children aged 5 years (808 children) alone, the prevalence of malocclusion increased to 54 %. The influence of the short period of breastfeeding and the presence of non-nutritive sucking habits on

the prevalence of malocclusions was clear.



**Fig. 3.** Graphs representing the sample examined, the alterations found, the alterations in the age group of 5 years, and the duration of breastfeeding and the presence of non-nutritive sucking in children who presented some type of malocclusion

#### 4. Conclusions

Given the high prevalence of malocclusion found in this pilot project (especially at 5 years old children) and the association with a short period of breastfeeding and the presence of non-nutritive sucking habits, it urges the need of public health policies that promote and support the prolonged breastfeeding and expand the knowledge of parents and school staff about the adverse effects caused by the use of pacifiers and baby bottles, with the adoption of transdisciplinary measures for the prevention, interception and treatment of malocclusion in a timely manner.

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#### Data availability

The datasets generated during and/or analyzed during the current study are available from the corresponding author on reasonable request.

#### Conflict of interest

The authors declare that they have no conflict of interest.

#### Ethics statement

The research met all applicable standards for the ethics of experimentation. According to resolution. Participants provided written informed consent prior to the study.

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**De Bacco Giovana** coordinator of oral health at Health Department of Bento Gonçalves, RS, Brazil since 2017. Dentist graduated from the Faculty of Dentistry of the Lutheran University of Brazil (ULBRA/Canoas), in 1997. Specialist in Pediatric Dentistry, Faculty of Dentistry, UFRGS, Brazil in 2001; Specialist in Orthodontics by FUNORTE in 2011. Update of Functional Jaw Orthopedics by SOBRACOM in 2021.



**Schenato Juliana** specialist in dental prosthesis by Sobracid, São Paulo, Brazil in 2008 and specialist in family health from Universidade Gama Filho, Rio de Janeiro, Brazil, in 2011. Dentist graduated from the Faculty of Dentistry in Lutheran University of Brazil in 2004. Works on the prevention team at public schools in Bento Gonçalves since 2014.



**Patrícia Valério Specialist** in Jaw Functional Orthopedics, dedicating her life to basic sciences, focused on bone physiology in order to support the functional orthopedics practicing. Doctorate at Federal University of Minas Gerais, Brazil Junior pos-doc supported by CNPq, Brazil and Senior pos-doc supported by FAPEMIG, Brazil. Invited researcher at Istanbul Technical University and Marmara University in Turkey; Aveiro University in Portugal; Ioannina University in Greece; University El Bosque in Colombia. Speaker in more than 11 different countries.