

## Original Paper

# The House of the Little Tooth Diniz: An Oral Health Educational Project

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### Abstract

*Dental caries is currently one of the major public health problems, given its high incidence among 6-12-year-old children. This age group of children is considered a priority group, due to the transitional period of the replacement of deciduous teeth. This article intends to present a ludic-pedagogical instrument for oral health education, targeted at these children, based on the learning of problems related to oral health through a story narrative and associated pictograms. By means of a health education manual with several pictorial representations of dentistry clinical acts, we intended to imagerically reinforce the therapeutic adherence of children to Paediatric Dentistry as well as oral health prevention care, which are considered determinant factors for oral health success amongst children. The choice of a handbook format for this purpose was considered a health education pedagogical strategy with added value to the Paediatric Dentistry appointment setting, granting patients an active and leading role in their therapeutic path. The handbook can also be of use to younger children, through parental storytelling, establishing a dyadic communication between parents, educators and professionals.*

**Keywords**

*pictograms, paediatric dentistry, oral health education, caries, deciduous teeth*

**1. Introduction**

Dental caries is currently one of the major public health problems, given its high incidence among children—45.2% in 6-12-year-old children (DGS, 2015), thus negatively affecting the quality of life and systemic health of individuals. This age group is considered a priority group, due to the transitional period of the replacement of deciduous teeth. In addition, this is also the time frame when the internalization of good life-lasting oral hygiene behaviours is more effective (Dias, Amorim, Esteves, Reis, & Duque, 2006). Nevertheless, the anticipatory fear associated to caries' pain seems to discourage subjects from Dental Medicine appointments, in turn impeding preventive dental care strategies and contributing to a vicious cycle of permanent malaise (Dias, Amorim, Duque, & Guilherme, 2006; Góes, Domingues, Couto, & Barreira, 2010; Marques, Gradwohl, & Maia, 2010; Oliveira et al., 2012; Dias, Cruz, & Martins, 2015; Dias & Martins, 2016).

In a study carried out at the Egas Moniz University Clinic (Reis, Dias, & Leal, 2008), it is noteworthy that early first-time appointments in Paediatric Dentistry are a future determining variable of the therapeutic adherence to good oral hygiene behaviours in patients. According to this study, the early experience of neutral or positive experiences in the Odontopaediatric therapeutic setting, may serve as a “neutralizing barrier”, preventing the development of future traumatic dental care experiences. As such, it is imperative to overcome the therapeutic obstacles found in Paediatric Dentistry hastily and with maximum effectiveness, in order to promote the early adoption of oral health education strategies. The use of pictograms as an oral health education pedagogical instrument is one of such strategies, (Chernoff, 1973; Magalhães, Alvarenga, & Nina-e-Silva, 2013) aiming to promote the intrapsychic involvement of children's playfulness, as well as their active participation in dental care, thus stimulating a selfcare routine behaviour (Cook, 1971; Dias, Amorim, Esteves, Reis, & Duque, 2006; Reis, Dias, & Leal, 2008). Furthermore, the use of ludic-pedagogical instruments in the oral health education of children allows for the expansion of symbolic thinking, which in turn supports the therapeutic relationship Dentist-Patient (Dias, Monteiro, Naben, Sobral, & Neves, 2018).

With the present paper, we intend to present an interactive handbook as an oral health education instrument. The playful narrative allows children to identify themselves to the characters present in the story, connecting the characters' personal oral health experiences with their own (Magalhães, Alvarenga, & Nina-e-Silva, 2013). Simultaneously, we intend to support the learning of relational and pedagogical communication strategies in the pre- and post-graduate training of Paediatric Dentistry health professionals, promoting the strengthening of the therapeutic alliance Dentist-Patient in future clinical practice.

## 2. Method

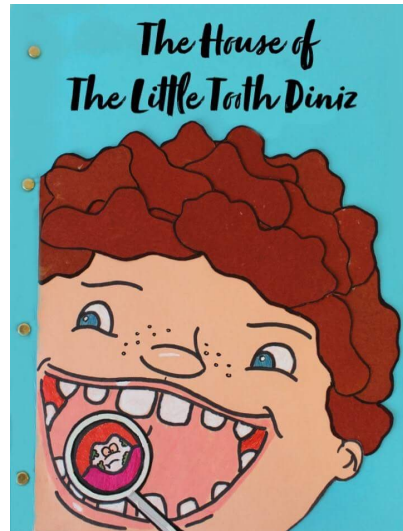
The main objective of the present oral health education handbook entitled “The House of The Little Tooth Diniz” was the retelling of a story that symbolically illustrated possible clinical acts practiced in the Paediatric Dentistry appointment setting, as well as the revaluation of oral hygiene habits adopted by children. During the story’s retelling, patients should be able to identify themselves with the character by means of projective identification, thus relating to the character who leads the story (Dias & Simões, 2016). We also intended for this handbook to be used during periods that precede or proceed the dental care treatment act itself, as well as to engage parents as secondary patients regarding the oral health care provided to children (Sarnat, Arad, Hanauer, & Shohami, 2001; Dias, Monteiro, Naben, Sobral, & Neves, 2018).

Chromatic and figurative contrasts were sought to create visually dynamic sensations and pictorial appeal in the handbook’s panels. In addition to the chromatic focus given to the panels, textured elements were added, with the goal of capturing children’s attention. In fact, touch invites sensorial contact, in turn leading to more archaic and sensorial intrapsychic mental representations. Small “interactive highlights” were also created in panels’ layouts, which aimed to encourage children to interact with the handbook and to be attentive to the pictorial and symbolic plotting of the narrative. Examples of such are: i) the story of Dr. Cobra, symbolically depicting the Paediatric Dentist as the traditional mutilating Tooth Puller (triggerring archaic fears in the children’s imaginary) (Dias, Amorim, Duque, & Guilherme, 2006); ii) the opening of the Paediatric Dentist’ office door in kinetic form; iii) the interaction of the plaque revealer and the use of translucent paper in the panel; iv) the tooth brush attached to velcro as a detailed explanation of the brushing technique; v) the shedding of deciduous teeth, symbolizing the first loss of a deciduous tooth by placing it in a small teeth box.

## 3. Instrument’s Description

The target population of the present oral health education instrument were children of both genders, aged six to twelve years. In addition, this handbook was also aimed at parents, teachers and health educators as a secondary target population, due to their fundamental pedagogical role in children’s daily life, which makes them the social partners of choice in the implementation of oral health education strategies.

The handbook’s leading character was a boy named Simão, placed on its cover emphasizing an excessively open mouth (Chernoff, 1973; Magalhães, Alvarenga, & Nina-e-Silva, 2013), in clear opposition to other elements of the face. In contrast, “Diniz, the tooth”, a supporting character, was deliberately enlarged by the use of an intraoral reflecting mirror, symbolically attesting to its relevance in the story’s narrative (Figure 1).



**Figure 1. Handbook's Front Cover**

In the handbook's first panel we are invited to step inside "Diniz, the tooth's" house, the interior of the oral cavity, where much of the action takes place. Here, the introduction of his tooth family is metaphorically highlighted, and each tooth given a name. The images and names given to deciduous teeth allow children to formulate an idea of the anatomical constitution of the dental arch, thus enabling an easy recollection of the teeth' categorization. By resorting to teeth's anthropomorphization, namely by drawing them with facial expressions that refer to basic human emotions, we intended to emphasize in children's imagination teeth are with personalities and feelings, thus conferring a greater importance to their preservation and to good oral hygiene.

In the handbook's second panel entitled "The brushing hour", Simão's facial expression clearly demonstrates his non-cooperative attitude towards tooth brushing, despite the anthropomorphic friendly expressions of the toothbrush and toothpaste (Figure 2).



**Figure 2. Handbook's Panel Entitled "The Brushing Hour: Facial Expressions of Simão towards Dental Hygiene"**

The handbook's fourth panel points to the detrimental consequences of pathogenic eating (e.g., too much sugar). Hence, in this panel the story's villains emerged, destroying the oral cavity's flora and allowing the development of dental caries in the dental arc (Figure 3).



**Figure 3. Handbook's Panel Entitled "The Attack of the Tooth Puller: Antropomorphized Representation of Tooth Decay"**

In the handbook's fifth to tenth panels, "Bia", a secondary character, is introduced as a metaphorical proxy of the tongue. Bia represents the voice of reason and the moral of the story, narrating the attack operated by the Tooth Puller to the dental family (Figure 3) and emphasizing the role of cariogenic foods and poor oral hygiene in the destruction caused by dental caries. These panels attested to several passages of Simão's daily life, marked by the discomfort of dental pain, as well as by fear associated to the Paediatric Dentistry's appointment (Figure 4). The set of panels that depict the anxiogenic thoughts experienced by Simão, refer to the somewhat intimidating unconscious ideas of children regarding a therapeutic setting experienced as unsettling and threatening.



**Figure 4. Handbook's 7th Panel Entitled "Dental Nightmares: Illustration of a Child's Fears Related to the Perception of the Dentist and of Dental Care Instruments"**

The goal of the handbook's panels 10 to 12 was to focus on a good oral hygiene, demonstrating the need of adequate tooth brushing. In fact, the dental arch may present at a first glance a clean and healthy appearance, which may not correspond to a real good oral hygiene. For this purpose, a dental plaque revealer is used, described playfully as a paint that reveals the teeth attacked by the Tooth Puller (the dental caries), as a children's symbolic equivalent for "the moment of the truth" revealer (Figure 5). Indeed, technically speaking, the application of a dental plaque revealer exposes the dental plaque present in the oral cavity, denouncing poor oral hygiene. Thus, in panel 10, a translucent paper which can be coloured by children was attached over the represented teeth, creating a visual image with different shades and textures associated to damaged teeth—thereby revealing the dental caries caused by the accumulation of harmful bacteria.



**Figure 5. Handbook's 10th Panel Entitled "The Moment of Truth—Dental Plaque Revealing Moment"**

The handbook's panel 11 entitled "Turbine in action" aims to demonstrate the relevance of early intervention in dental care, which allows avoiding pain caused by dental plaque, while providing at the same time adequate aesthetics-asepsis (Figure 6). This panel resorts to captivating pictorial playfulness, particularly by the rough textures of the panel's materials (associated to the black holes caused by the existence of cavities in the teeth) and by panel's protrusions (symbolizing turbine's water droplets). Once again, the anthropomorphization of pictograms was used, namely of the turbine and drill, which were drawn with friendly facial expressions, vigorous colours and imposing postures. In parallel, linguistic euphemisms were employed in the narrative, namely by adopting the term "water shower"; in fact, the use of water is associated to many dental care instruments, which may frighten children during dental treatment.



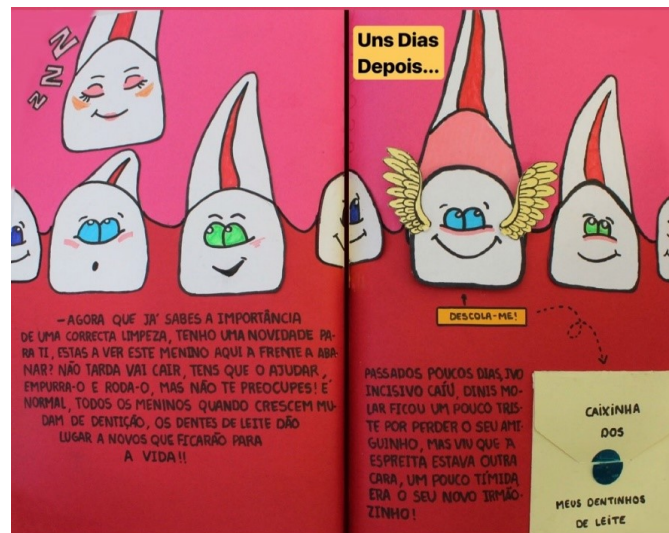


**Figure 6. Handbook's 11th Panel Entitled "Turbine in Action—Intervention of the Dental Instruments"**

Due to the importance of the relational and pedagogical communication between the Paediatric Dentist and the children, in the handbook's panel 12 entitled "New notification" the role of the dentist as a health educator was highlighted. Here, the panel revealed greater narrative density in proportion to the drawing content and a Dentist-Patient dialogue via social media chat is simulated. Characters are turned into "emojis", expressing their emotions in the virtual world. The use of social media iconography in the present handbook presupposed a greater motivation for children's digital content learning, since younger generations are strongly influenced by information technologies.

The themes of the handbook's panels 13 to 16 were strongly related to the shedding of deciduous teeth, reinforcing the concept that the way deciduous teeth are cared for will affect the good oral health of permanent teeth, in turn promoting self-preventive behaviours (Dias, 2005; Dias, Amorim, Esteves, Reis, & Duque, 2006) that aim to hinder future iatrogenic dental care habits. As an example, panel 14 entitled "Wagging, wagging, falling out", was based on the unconscious fear experienced by children related to the loss of the first deciduous tooth. Here, we intended to show children what happens when a deciduous tooth falls out, thus appeasing a certain persecutory mourning and feelings of loss that may otherwise be experienced. We consider this to be a critical milestone in patients' education, letting them know that deciduous teeth, despite falling out, are preceded by permanent teeth that can be maintained for the rest of life, given a correct oral hygiene (Figure 7).





**Figure 7. Handbook's 14th Panel Illustrating the Shedding of a Deciduous Tooth and Its Permanent Tooth Replacement**

Finally, handbook's panels 15 to 16 refer to children's imaginary world and are centred on the Tooth Fairy myth. The Tooth Fairy is a symbolic character of folk mythology in numerous countries, stating that when children lose one of their baby teeth, they should place it underneath their pillow and the Tooth Fairy will visit while they sleep, replacing the lost tooth with a wish come true. Ironically, the Tooth Fairy of this oral health education handbook does not correspond to the literary stereotypes (usually represented by a fragile and feminine creature) but is rather a robust character willing to tackle poor oral hygiene behaviours (Figure 8).



**Figure 8. Handbook's 16th Panel Entitled "The Tooth Fairy"**

#### **4. Results and Discussion**

The present oral health education instrument entitled "The House of The Little Tooth Diniz" arose from the urgent need to create educational play instruments resorting to pictograms with symbolic value, as a means of linking clinical acts practiced under dental care treatment to children's imagination.

The presence of several pictorial representations throughout the narrative course of this oral health education manual intended to imagetically reinforce the therapeutic adherence of children to Paediatric Dentistry, as well as to oral health prevention care, which are considered determinant factors for oral health prevention amongst children aged six to twelve years. In addition, the choice of a children's literature handbook format for the present oral health education manual was considered an oral health education pedagogical strategy with added value to the Paediatric Dentistry appointment setting, granting the patient an active and leading role in their therapeutic path.

Although the target population is composed of subjects aged six to twelve years, this instrument can be extended to a larger target population, namely to younger children, who can benefit from interactive storytelling, in turn creating a dyadic communication bridge between parents, educators and health professionals. Alternatively, younger children may also individually interact with the imagetic and visual reading of the pictograms, thus enabling their self-education concerning oral health care concepts.

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