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Dental Decay in the Change of Deciduous Teeth: The Child's Self-Perception

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Abstract

Background: Currently in Portugal, the percentage of children aged five to twelve who have already been to an oral health appointment is 57.6%. The prevalence of dental caries has declined over recent years, with the expectation that by 2020, 59% of Portuguese children will be caries-free.

Objective: The present study aimed to understand how children from this age group experience the mental representation of dental decay and its implications on the self-perception inherent to the loss of deciduous teeth.

Method: The sample consisted in 50 children of both genders, aged 5 - 12 years. A protocol was originally conceived where they were invited to draw two self-portraits - before and after the loss of deciduous teeth - and to answer open-ended questions with regards to such. The interpretation of the drawings and the open-ended questions were carried out through content analysis grids designed for such.

Results: Regarding the written answers to the open-ended question "Why do you think teeth fall out?", caries do not appear to be associated with the loss of deciduous teeth but rather "Bug" and "Bacteria", identified as the most representative categories (27.9% and 18,9% respectively), which is in agreement with the symbolic representation depicted in drawings.

Conclusions: The results obtained contribute to the (re)conceptualization of caries in this age group of children, which is also associated to the loss of deciduous teeth. The results also point to the need for developing educational tools for Oral health Education, in order to prevent caries in deciduous teeth and to foster good oral hygiene habits.

Keywords: *Deciduous Teeth; Self-perception; Mental Representation; Children; Drawings*

Introduction

The loss of deciduous teeth is likely to affect the aesthetics of the face, the child's quality of life, the development of orality, the integrity of the dental arch and its consequent development concerning the eruption of permanent teeth [1]. Children experience numerous modifications regarding the body and face image throughout their development, namely the eruption of deciduous and permanent teeth, since the loss of deciduous teeth involves physical, mental and relational alterations, which constitutes a life event of biopsychosocial nature [2].

Dental caries has a bacterial and multifactorial aetiology and affects a large part of children's population, sometimes configuring as a chronic disease [3,4]. Currently in Portugal, the percentage of children who have been to an oral health appointment is 57.6% [5]. However, the prevalence of dental caries has declined over recent years, with the expectation that by 2020, 59% of Portuguese children will be caries-free.

Children aged 5 - 12 years are either in the latency stage/preschool age or in preadolescence. The main developmental milestone in this age group is related to the insertion of the child in its psychosocial environment - the child is no longer the centre of the world but rather a participant protagonist of his or her existence [6].

According to the current scientific literature what the child thinks and feels is extremely relevant in the latency stage. Hence, qualitative methodologies, namely the use of drawing as a projective technique - also called "child-centered research" - are appropriate to depict the child's experience. Accordingly, drawing is the child's main form of cognitive and emotional expression in the latency stage, thus constituting itself as a universal language form. Thus, the use of drawings as a research tool has been a referencial in qualitative studies in the area of Health Sciences. Drawing is thus a projective empirical instrument that expresses the child's inner world, a media for knowledge and self-knowledge [7]. The presence of anthropomorphized drawings in this age group seems to be evident, with the attribution of human characteristics to inanimate objects; in turn a tool to transmit metaphorical messages through emotional expressions or facial human traits, such as smiles or tears [4,7].

As pointed in an empirical study [4], the pictorial representation of children of a healthy tooth is mostly drawn without the presence of stains, holes or fractures. In the pictorial representation of a healthy tooth, features of the human face were also drawn on the teeth, namely the presence of eyes, noses and smiling mouths. In contrast, the pictorial representation of children of a sick tooth is mostly drawn with stains, holes and fractures, as well as the presence of some human traits such as eyes, noses and smiles with a sad expression. The mental representation of a sick tooth is also associated with tears and injuries, which relates pain and feelings of sadness to a sick tooth.

Most healthcare professionals who work with children recognize that interpersonal communication is clearly enhanced when supported by play therapy [8], creating a "silent language" [9] whose meanings, belonging to the child's own world, are hard to explain through spoken language. Simultaneously, the child's visit to the dentist is often delayed due to the fear and anxiety experienced by children and parents, in turn related to emotional contagion [10]. Thus, it is very important the child's early contact with the dentist, in order to enable the practice of regular dentistry appointments from childhood on [11,12]. However, there are still children who do not seem to know the real meaning of dental caries, hence the need to create oral health education tools being that caries is usually associated with malaise and pain. It is also important to recognize the mental perception of children about caries in order to contribute to the (re) conceptualization of dental decay and its etiology.

Face image plays an important role in the concept of "personal attraction" and also in the development of the subject's self-esteem and self-image. The perception of appearance, namely of the face, directly affects mental health, psychosocial behaviour and the affective life of the human being along the life cycle trajectory [13]. The present study aims to understand how the child experiences the mental representation of dental decay [4] and its implications on the self-perception inherent to the loss of deciduous teeth.

Materials and Methods

The present study is cross-sectional, of an exploratory nature, of quantitative type and with field intervention.

Participants

The sample was collected in a clinical setting and consisted of 50 children of both genders, aged five to twelve years, recruited from the appointments of Paediatric Dentistry at the Egas Moniz University Clinic.

Data collection

In the present study, the participants were instructed to draw their self-portrait twice - before (moment M1) and after (moment M2) the loss of deciduous teeth - and to draw their mental representation of dental decay (moment M3). In addition, participants were also asked to answer six open-ended questions (moment M4), namely: (i) "Do you remember how old were you when your first milk tooth fell?"; (ii) "Do you think your face looked different when you looked in the mirror after that?"; (iii) "In what ways did your face look different?"; (iv) "How did you feel the moment you lost the first milk tooth?"; (v) "Why do you think teeth fall out?" and (vi) "What is dental decay for you?". Finally, participants were asked to complete a sociodemographic questionnaire (moment M5).

Instrument

Drawing, as a projective technique of a qualitative nature, is a graphic record of high empirical relevance. Hence, two pictorial content analysis grids were elaborated for the present study (one for M1 and M2 and another for M3), in order to proceed with the analysis of the drawings collected. The content analysis grid for M1 and M2 (before and after the loss of deciduous teeth) encompassed four main categories: i) "Figure size"; ii) "Isolated drawing of the face"; iii) "Presence of teeth in the oral cavity" and iv) "Presence of diastemas in the oral cavity". Nine subcategories were also created to analyse the drawings. In addition, the content analysis grid for M3 (mental representation of dental decay) encompassed five main categories: as i) "Number of teeth drawn"; ii) "Isolated drawing of the face"; iii) "Isolated drawing of dental caries"; iv) "Isolated drawing of the tooth" and v) "Anthropomorphism". 20 complementary analytical sub-categories were also identified for the analysis of the drawings collected.

In the present study the preliminary results regarding qualitative data (e.g. the drawings collected in M1, M2 and M3) were analysed through the content analysis of the written narrative of the open-ended questions (M4) and of the socio-demographic questionnaire (M5). These encompassed categories such as: (i) "Gender"; (ii) "Age"; (iii) "Kindergarten frequency"; (iv) "First visit to the dentist"; (v) "Household composition (e.g. living with mother and father)"; and (vi) "At what age teeth brushing begun".

Results and Discussion

In the drawings before the loss of deciduous teeth (M1), 60% of the surveyed children drew their face with the presence of dental pieces in the oral cavity, without diastemas or gaps between them. Contrary, in the drawings after the loss of deciduous teeth (M2), 82% of the surveyed children drew their face with diastemas and without the presence of all teeth in the mouth. In M2 it was also found that 66% of the pictorial representations of the face were larger than in M1 (Figure 1 and 2).

According to an empirical study [14], the smile can be categorized as broad smile, closed smile, upper smile, neutral face and no smile.

Figures 1 and 2: *Drawing of the face before (M1) and after (M2) the loss of deciduous teeth.*

The wide smile comprises the elevation of lips, the separation of lips and the display teeth, while the closed smile comprises the tightness of lips and the elevation of lips without showing teeth. Additionally, the upper smile is described as the elevation of the lips showing only the upper dental arch whereas the neutral face or face with no smile do not include the elevation of lips. In M2, the smile was depicted as an open smile, with the presence of teeth in 100% of the sample, whereas in M1 only 60% of the surveyed children depicted themselves with an open smile before the loss of deciduous teeth.

In the answer to the open-ended question " Do you remember how old were you when your first milk tooth fell?" in M3, 10% of the surveyed children reported not knowing the age of loss of their first tooth, while 20% claimed they were 5 years old and 68% claimed they were 6 years old.

In the answer to the open-ended question " Do you think your face looked different when you looked in the mirror after that?" in M4, 40% of the surveyed children answered No and 60% answered Yes, noticing differences in their face after the loss of deciduous teeth. Out of those 60% who answered Yes, 20% of the surveyed children reported that the face was larger, 26.6% reported having a longer face and 53.3% reported having gaps with no teeth in the oral cavity. 87.5% of the children that reported having gaps with no teeth in the oral cavity used the expression "I have got goalposts in my teeth" related to the edentulous mouth spaces.

Differences were found in terms of heterogeneity in the answer to the open-ended question " How did you feel the moment you lost the first milk tooth?" in M4: 6% of the surveyed children said they felt Surprised, 10% said they felt Proud, 14% were Scared and 70% were Happy. In turn, in the answer to the open-ended question "Why do you think teeth fall out?" in M4, 18% of the surveyed children said that teeth feel out when they were damaged, 32% said they did not know why and 50% said that teeth fell out in order to have other definitive ones.

Regarding the sociodemographic questionnaire in M5, 36% of the children surveyed were male, while 64% were female. The predominant age of the sampled subjects was 8 years old (20%). In the present study, 86% of the surveyed children report having attended kindergarten and 62% reported to live with both mother and father in the same household. In 14% of the cases the first visit to the dentist was at 3 years of age, in 20% of the cases it was at 6 years, in 32% of the cases at 4 years and in 34% of the cases at 5 years. Oral hygiene habits, namely at what age teeth brushing begun, were found in 10% of the cases at 1 year of age, in 44% of the cases at 3 years of age, in 36% of the cases at 4 years and in 10% of the cases at 6 years.

The pictorial content analysis regarding the mental representation of dental decay (M3) reveal remarkable differences when compared to the content analysis of the answers obtained in the open-ended question v) "Why do you think teeth fall out?" in M4.

The results obtained in the "Bug" subcategory (27.9%) followed by the "Bacteria" subcategory (18.6%) and "Spot" subcategory (16.3%), seem to be in agreement with figures in M3 that have been drawn with the symbolic representation of caries as a Bug and/or as Bacteria (Figure 3). It was also observed that the mental and pictorial representation of dental decay in M3 was drawn inside the tooth (65%), as opposed to the isolated drawing of dental caries (11.6%), the drawing of dental caries including the complete face (11.6%), within the oral cavity (9.3%) or including the whole human figure (2.3%).

The results of the qualitative analysis of the drawings also take on discrepancies when compared to the results obtained in the narrative of the written answers to question vi) "What is dental decay for you?" as illustrated in figure 3. As pictorially represented, caries' imago is predominated depicted as a "Hole" (35%), although such did not appear as a relevant category in the open-ended responses of M4 (11.6%). Dental decay when depicted alone was rather represented with cellular contours and with the presence of flagella, which points to a mental representation (imago) associated with bacteria and microorganisms. The caries figure when depicted isolated inside the tooth was mostly represented as a "Hole" (35%) and/or as a "Black tooth" (23.3%). It should also be noted that human characteristics - Anthropomorphism - were attributed to some teeth, all of them connoted with the feeling of sadness (Figure 4). In the pictorial represen-

tations of the anthropomorphized teeth lips were depicted downwards, together with sad eyes, the inner corner of the eyebrows raised, tears and wounds, being notorious the connotation of negative feelings attributed by the surveyed children to the concept of caries [4,15].

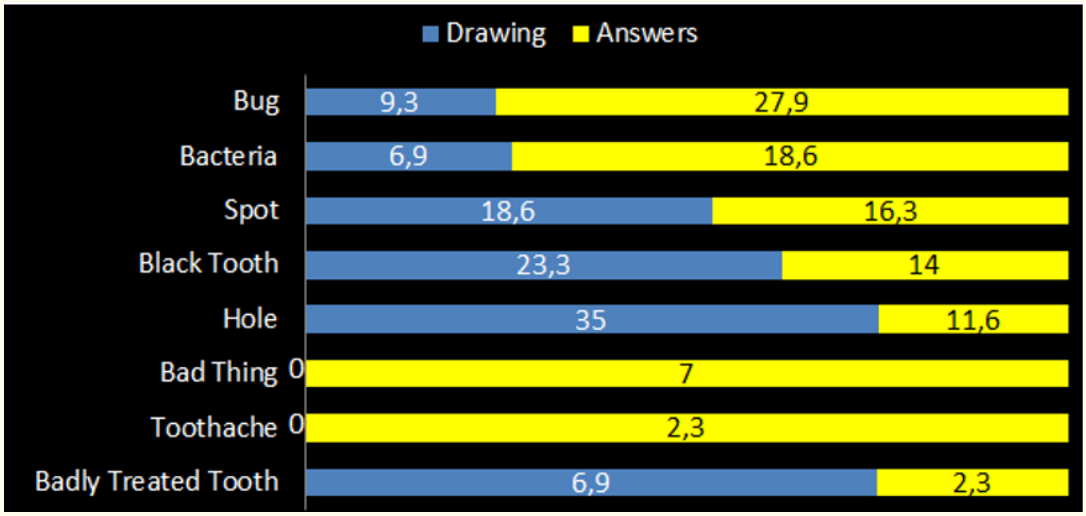

Figure 3: *Differences regarding the pictorial content analysis of the mental representation of dental decay.*

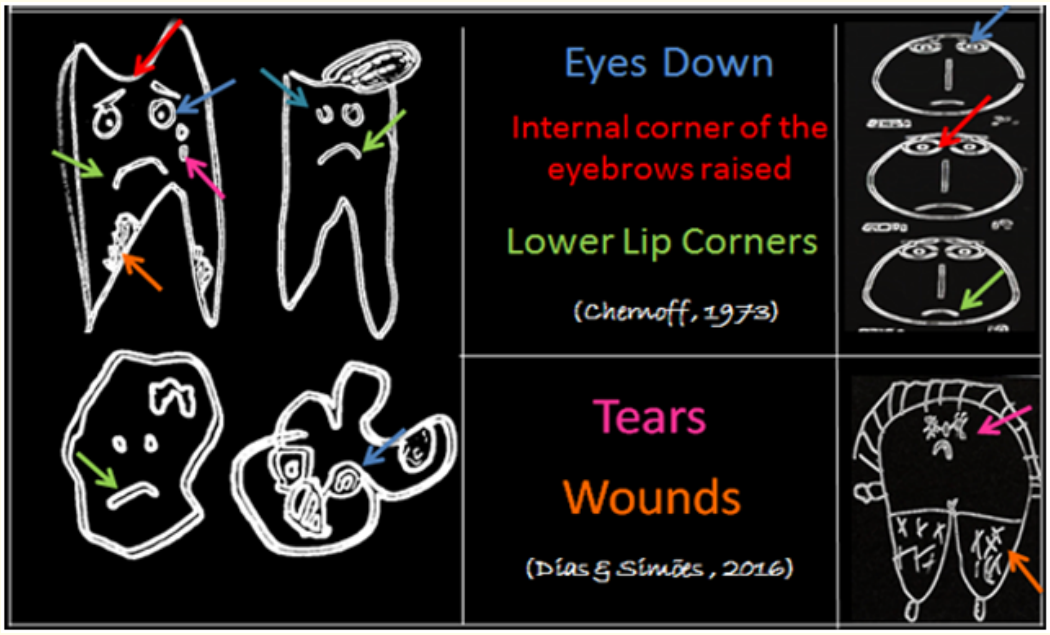

Figure 4: *Comparison of the subjects tooth anthropomorphism described in M3.*

Conclusion

Dental decay is the chronic disease in the oral cavity most common in children and due to its high prevalence is considered a public health problem. In consonance to the content analysis of the collected drawings in the present study regarding the loss of deciduous teeth, the symbolic representation of dental decay in the surveyed children aged five to twelve seems to be negatively connotated, according to the relevance of the subcategories "Hole" and "Black tooth" of the content analysis grid. Interestingly, when the mental representation of caries is drawn isolated, the figure is assumed to be with nuclear contours associated with flagella. Regarding the written answers to the open-ended question "Why do you think teeth fall out?", caries do not appear to be associated with the loss of deciduous teeth but rather "Bug" and "Bacteria", identified as the most representative categories. The child's self-perception about his or her face diverges when it is represented pictorially or through writing. Drawings were different before and after the loss of deciduous teeth: despite wide smiles being drawn in the totality of the sample, before the loss of deciduous teeth smiles were closed, without showing teeth, whereas after the loss of deciduous teeth smiles were open, with or without showing teeth gaps. The dimension of the pictorial representation of the face was also different, being larger in the drawings after the loss of deciduous. When compared with the open-ended written answers we can see that 40% of the survey children say they do not feel differences in their face after the loss of deciduous teeth although in the pictorial representations such is not observed. Children who claim notorious differences in their faces after loss of deciduous teeth are consistent with the pictorial representation of such. They report having a larger face (20%) and edentulous spaces in the oral cavity (53.3%) as shown in their drawings. The feelings of pride, surprise, fear and happiness were the main states of mind felt by the surveyed children on their loss of deciduous teeth, with a prevalence of 70% of a feeling of happiness associated with milk teeth loss. Hence, the loss of deciduous teeth is mostly associated to positive well-being feelings. It is extremely important to note that 50% of the surveyed children answered that deciduous teeth fell out in order to make room for definitive ones, which shows empirical knowledge on the part of children. The results obtained contribute to the (re)conceptualization of caries in this age group of children, which is also associated to the loss of deciduous teeth. The results also point to the need for developing educational tools for Oral health Education, in order to prevent caries in deciduous teeth and to foster good oral hygiene habits.

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