

Original Research Article

Effects of a motivational program for caregivers on the oral hygiene quality of 10-to-36-month-old children: a pilot study

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Abstract

Introduction: Dental caries is the most common chronic disease in childhood and a major problem for world public healthcare. For dental caries onset, the presence of dental plaque is primordial, being plaque removal one of caries preventive measures. Children younger than 3 years old depend on adults for dental plaque controlling. **Objective:** To assess the quality of oral hygiene of children before and after a motivational program conducted with their caregivers. **Material and methods:** Twelve caregivers and 16 children (from 10 to 36 months old) entered the study. The children's oral hygiene quality was assessed with the Oral Hygiene Index (OHI) of upper and lower incisors at baseline, 1 and 3 months after the instructional lecture on oral health given to the caregivers. **Results:** It was verified a statistical difference in OHI of upper/lower incisors between baseline and 3 months after the lecture. At 1-month assessment after the lecture, there was an improvement in OHI of the upper incisors. There was no statistically significant difference between upper and lower incisors. All incisors OHI for the three assessments showed a statistically significant difference between the groups at baseline and 1 month after the lecture, returning to the initial indexes after 3 months. **Conclusion:** Punctual health education activities are not effective. They need to be continuous to institute changes in behavior regarding oral health.

Introduction

Dental caries is the most common chronic disease in childhood, being a major problem for public world health [8]. In Brazil the prevalence of caries in children ranges from 12 to 46%, and the age group developing more caries is 1-3 years old [2, 4]. Caries etiology is multifactorial and it occurs by the presence of bacterial plaque on tooth surface.

Dental plaque removal is part of a set of preventive measures for oral health maintenance. Children younger than 3 years old depend on adults to conduct most of their hygiene activities, including oral hygiene. They are dependents on caregivers who may be either their relatives or employees of nurseries and kindergartens. The younger the child, the greater the dependence on the caregivers, and until three years of age this dependency is total. Regarding dental hygiene, children from this age on should be encouraged by the family to a gradual independence.

Motivation is important for maintaining oral hygiene. It can be achieved by demonstration of tooth brushing, informative lecture, folders with pictures, audio visual and other resources. Some studies report improvements in oral hygiene after various periods of time after preventive-educative programs for children, [10, 11, 12] while other studies report no improvement at all [7].

There is a concern related to the oral hygiene of people who depend on caregivers. Bueno *et al.* (2005) [3] showed that a motivational program with caregivers induced a non-significant improvement of oral hygiene in people with different physical and mental disabilities after 1 year.

In face of the importance of prevention against dental caries in babies, the involvement of caregivers in this age group, and the lack of studies assessing the quality of oral hygiene in babies, the present study aimed to assess the quality of oral hygiene in children before and after a motivational program conducted with their caregivers.

Material and methods

Twelve caregivers who assist 16 children of Vila Sandra Childhood Education Center, located in Curitiba, Parana, Brazil, entered the present study. Initially, it was applied a questionnaire which allowed to know the caregivers profiles and their knowledge on caries disease prevention and etiology. Following, a lecture about oral health was given using transparencies and macro models for the demonstration of oral hygiene procedures. The

questionnaire about oral health was re-applied immediately after the lecture.

The babies were examined in children specific hammocks (Macri), under natural light. A drop of plaque revealer (0.7 basic fuchsin - Eviplac) was applied with the aid of a fine brush on upper and lower anterior teeth, waiting 30 seconds to quantify the dental plaque. Oral hygiene quality was assessed using the Greene and Vermillion index [6], considering buccal surfaces of both upper and lower incisors present in the mouth. The assessment was conducted simultaneously by two evaluators previously calibrated (Kappa of 0.83).

The children's hygiene assessment was executed before (baseline), 1 and 3 months after the oral hygiene lecture and demonstration.

The OHI data was submitted to statistical analysis. ANOVA for repeated measures followed by Duncan's test (comparison between different moments of assessment) and Student's t-test (comparison between upper and lower teeth at the same time of evaluation), with a significant level of 5%.

All the phases of the present study were carried out after approval of the Ethics Committee in Research of Positivo University (project number 005/2008) and after the sign of a free and clarified consent form by the parents and/or responsible person for the children.

Results

Half of the caregivers in this study completed college studies while the other half had incomplete college studies at the moment of the study, showing a high educational status. They showed knowledge regarding etiology and prevention of caries disease. Seventy percent of them reported to be "easy" to perform oral hygiene in children. All of them reported that the lecture brought additional information to their knowledge about oral health.

Table I shows the mean values and standard deviation of the Oral Hygiene Index (OHI) for upper and lower incisors at baseline, 1 and 3 months after the motivational program for all the assessed children, regardless if they attended to all three appointments. There was statistically significant difference between OHI of upper/lower incisors at baseline (first assessment) ($p < 0.001$) and after 3 months (third assessment) ($p < 0.01$). There was no statistically significant difference in OHI between upper and lower incisors in 1-month group, because there was an improvement in OHI of the upper incisors.

Table I - Oral Hygiene Index of upper and lower incisors at baseline, 1 and 3 months after the lecture on caries prevention and hygiene demonstration

	Baseline (n = 16)	1 month (n = 16)	3 months (n = 13)
Upper OHI	2.34±0.65	1.87±0.80	2.23±0.66
Lower OHI	1.41±0.88*	1.66±0.69	1.69±0.88*

* p < 0.05 compared to upper OHI (Student t test)

Table II shows the mean values and standard deviation of upper and lower teeth OHI, and total number of children present at the three assessment appointments. There was a statistically significant difference only for the OHI of upper incisors, between baseline and 1-month groups (p < 0.05). There was no difference for lower incisors OHI and between baseline and 3-month groups.

Table II - Upper, lower and total Oral Hygiene Index (OHI) of the assessed teeth at baseline, 1 and 3 months appointments after the lecture

	Before (n = 12)	1 month (n = 12)	3 months (n = 12)
Upper OHI	2.50±0.43	1.70±0.79*	2.18±0.67
Lower OHI	1.50±0.86	1.50±0.79	1.65±0.93
Total OHI	2.00±0.59	1.63±0.59	1.92±0.73

* p < 0.05 when compared to baseline and 3-month appointments (ANOVA repeated measures followed by Duncan's test)

Discussion

It was chosen to assess babies' OHI on the buccal surface of upper and lower incisors due to the ease of visualization in this area and because these teeth are usually used in risk indexes for caries disease onset in babies. Alaluusua and Malmivirta (1994) [1] studied four variables to feasibly assess the caries experience on the chairside. Visible dental plaque showed to be the best risk index for caries in babies. Mohebbi *et al.* (2006) [9] assessed the presence of dental plaque on the buccal surface of incisors and verified that the presence of visible dental plaque was associated with early caries in childhood for children aging from 1 to 3 years old. This result was also reported by Fraiz and Walter (2001) [5]. In this study, it was used a plaque disclosing to make plaque visualization easier.

There was no statistically significant difference in OHI between upper and lower incisors at one month assessment due to an improvement in oral hygiene of upper incisors reflecting the motivational status soon after the program. At 3-month assessment, OHI values were similar to those at baseline assessment, prior to the program. These results are similar to those showing that motivation needs to be continuous in order to maintain good quality in oral hygiene [3, 10, 11, 12].

When the groups in which children attended to all the 3 assessments were compared, there was a

statistically significant difference in 1-month group, showing once more an improvement soon after the program. As the results of the 3-month assessment did not show any improvement when compared to baseline evaluation, it was chosen to interrupt the assessments and search for new motivational strategies for further studies.

The presence of dental plaque is related to the risk for early and severe caries onset in childhood [5]. Correct oral hygiene removes dental plaque reducing the risk for caries disease onset. Because children depend on their caregivers, it is needed not only information but also educational and motivational measures to be incorporated in the routine of oral hygiene for longer periods or even in permanent regimen [3].

Conclusion

Punctual activities in health education are not effective in long term. There is a need for continuous actions to incorporate changes in daily routine.

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