

Assessment of mothers' participation in a program of prevention and control of caries and periodontal diseases for infants

Avaliação da participação de mães em um programa de prevenção e controle de cáries e doenças periodontais para lactentes

Evaluación de la participación de madres en un programa de prevención y control de las enfermedades caries y periodontal para lactantes

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ABSTRACT

Objective: To evaluate mothers who participated in an educational and preventive program for infants in relation to their knowledge on oral health practices.

Methods: A cohort study was performed with 112 mothers and their babies aged 0 to 8 months and registered in the project "Promotion of Oral Health in Early Childhood" from the Federal University of Maranhão (Northeast Brazil). Initially, semi-structured interviews on the level of mothers' knowledge as to their babies' oral health were conducted. The oral cavities of the infants were also examined regarding: level of plaque, gingival bleeding, and dental caries. Then, educational lectures were ministered and, after a year of follow-up, new interviews and clinical examination were performed. For statistical analysis, the chi-square and Fisher exact tests were applied, being significant $p < 0.05$.

Results: Before the educational lectures, 93% of the mothers performed oral hygiene of their babies and 57.3% performed it at daytime and nighttime. After the lectures, all mothers performed the oral hygiene ($p > 0.02$) and 74.7% performed it at daytime and nighttime ($p = 0.01$). There were no differences regarding the consumption of cariogenic food in the initial and final questionnaires ($p > 0.05$). Initially, 5.6% of dental surfaces had caries; 29.7%, plaques; and 11.9%, gingival bleeding. After the lectures, only 0.4%

of the dental surfaces had caries ($p < 0.0001$); 2.4%, plaque ($p < 0.0001$); and 10.61%, gingival bleeding ($p < 0.0001$).

Conclusions: Knowledge acquisition is essential to improve oral health conditions.

Key-words: dental care for children; health programs and plans; maternal and child health; oral health.

RESUMO

Objetivo: Avaliar o conhecimento sobre saúde bucal de mães participantes de um programa educativo-preventivo para lactentes.

Métodos: Estudo de coorte com 112 mães e seus bebês de 0 a 18 meses, cadastrados no projeto "Promoção de Saúde Bucal na Primeira Infância", da Universidade Federal do Maranhão. Inicialmente, entrevistas semiestruturadas que contemplavam o nível de conhecimento das mães sobre a saúde bucal dos bebês foram realizadas. Também foi examinada a cavidade bucal dos bebês a fim de detectar o nível de placa bacteriana, sangramento gengival e presença de cárie. Em seguida, palestras educativo-preventivas foram ministradas e, após um ano de acompanhamento, novas entrevistas foram realizadas, bem como o exame clínico. Para analisar os dados, foram utilizados os testes de qui-quadrado e exato de Fisher com nível de significância de 5%.

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Resultados: Antes das palestras educativas, 93% das mães executavam a higiene bucal de seus bebês e 57,3% a realizavam nos períodos diurno e noturno. Após as palestras, todas responderam executar os cuidados ($p=0,02$), sendo 74,7% nos períodos diurno e noturno ($p=0,01$). Não houve diferença quanto ao consumo de alimentos cariogênicos nos questionários inicial e final. Notou-se que, inicialmente, 5,6% das faces dentais apresentaram cárie; 29,7%, placa bacteriana; e 11,9%, sangramento gengival. Após as palestras, apenas 0,4% das faces dentais apresentaram cárie ($p<0,0001$); 2,4%, placa bacteriana ($p<0,0001$); e 10,6%, sangramento gengival ($p<0,0001$).

Conclusões: A aquisição de conhecimentos é fundamental para melhorar as condições de saúde.

Palavras-chave: assistência odontológica para crianças; planos e programas de saúde; saúde materno-infantil; saúde bucal.

RESUMEN

Objetivo: Evaluar el conocimiento sobre salud bucal de madres participantes de un programa educativo-preventivo para lactantes.

Métodos: Se realizó un estudio caso-control anidado a una cohorte. Se evaluaron a 112 madres y a sus bebés con edades de 0 a 18 meses, registrados en el proyecto «Promoción de Salud Bucal en la Primera Infancia», de la Universidad Federal de Maranhão. Inicialmente, se realizaron entrevistas semiestructuradas que contemplaban el nivel de conocimiento de las madres sobre la salud bucal de los bebés. También se examinó la cavidad bucal de los bebés a fin de detectar el nivel de la placa bacteriana, sangrado gingival y presencia de caries. Enseguida, se realizaron charlas educativo-preventivas y, tras un año de seguimiento, se realizaron nuevas entrevistas, así como el examen clínico. Para analizar los datos, se utilizaron las pruebas de chi-cuadrado y Exacto de Fisher, con nivel de significancia de 5%.

Resultados: Antes de las charlas educativas, el 93% de las madres ejecutaba la higiene bucal de sus bebés, y el 57,3% la realizaban en los periodos diurno y nocturno. Después de las charlas, todas contestaron ejecutar los cuidados ($p=0,02$), siendo el 74,7% en los periodos diurno y nocturno ($p=0,01$). No hubo diferencia respecto al consumo de alimentos cariogénicos en los cuestionarios inicial y final. Se notó que, inicialmente, el 5,6% de las caras dentales presentaba caries; el 29,7%, placa bacteriana; y el 11,9% sangrado gingival. Después de las charlas, solamente el 0,4% de las caras dentales presentó caries ($p<0,0001$); 2,4%, placa bacteriana ($p<0,0001$); y el 10,6%, sangrado gingival ($p<0,0001$).

Conclusiones: La adquisición de conocimientos es fundamental para mejorar las condiciones de salud.

Palabras clave: asistencia odontológica a niños; planes y programas de salud; salud materno-infantil; salud bucal.

Introduction

Modern Dentistry has been developing new concepts on early care and on health maintenance, contributing to the decrease in the prevalence of dental caries^(1,2). However, the same decrease has not been observed in the deciduous dentition, showing that the implementation of preventive measures for children below five years of age has not been effective in reducing caries in this age group^(3,4).

Thus, new concepts were developed based on the principle that education generates healthy lifestyle habits, arising thereby the need of early intervention in order to maintain health even before preventing disease. Awakening the interest of the family to care for the health of its members and educating them to adopt an appropriate lifestyle have a great impact on their lives, promoting good general and oral health^(5,6).

There is a close relationship between health level and cultural and socioeconomic disadvantage, and it was observed that caries affects mainly children from families of less favored social classes, with lower education level and greater difficulty in accessing education in health care⁽⁷⁻⁹⁾. To prevent the development of caries in infants, there is a need to implement programs aimed at promoting health in early childhood⁽⁶⁾, because it was demonstrated that there was an important decrease in caries incidence among groups of children benefited from preventive programs⁽¹⁰⁻¹³⁾. This decrease is obtained when dental care occurs during pregnancy and in the first years of life^(14,15).

It is widely known that the mother has an important role in the caring for her children, and that the main risk factors for several diseases are related to lifestyle habits. These considerations lead to the proposal of this work, which was to evaluate knowledge and oral health practices of mothers who participated in an educational and preventive program for babies aged 0 to 18 months, from the Extension Project "Promotion of Oral Health in Early Childhood", developed at the Federal University of Maranhão (UFMA), which aimed to improve the oral health of these developing children.

Methods

To comply with the essential ethical and scientific requirements of Resolution 196/96 (Regulations for Research

Involving Human Beings) of the Brazilian National Council of Health, the project was approved by the Research Ethics Committee of Hospital Presidente Dutra from UFMA, according to opinion 346/06, in November 17, 2006. Before the beginning of the research, mothers were fully informed about the work and only those who signed a free and informed consent form were included in the research.

A nested case-control study was performed. Sample size was calculated using Epi-Info software, version 3.4.3, for case-control studies, considering a confidence level of 95%, a power of 80%, and an Odds Ratio (OR) of 4.18⁽¹⁶⁾. The sample comprised 112 mothers and their babies, of both genders, aged from 0 to 18 months and in good general health. They were registered in the Extension Project “Promotion of Oral Health in Early Childhood”, from the UFMA. The choice for this age group was motivated by the fact that this stage of life is characterized by a period of eruption of deciduous teeth and by the addition of new dietary habits for the baby, factors that may or may not pose risk for the occurrence of caries and gingivitis, if mothers were or were not educated on their babies’ oral health.

Initially, semi-structured interviews were conducted using standardized questionnaires including objective questions and answers, in understandable language. The questionnaires addressed baby’s oral health care and hygiene. In the same occasion, a clinical examination of infants’ oral cavities was performed. For this purpose, a chart was designed to keep individual records on identification data, medical history, oral hygiene, diet, type of carious lesion, visible plaque index, and gingival bleeding index.

The examination of babies’ oral cavity was done with the child in the supine position, under artificial light, by a single duly calibrated examiner (intra-examiner calibration, Kappa=0.75). Oral cavities were examined by visual and tactile inspection, using dental mirror, clinical tweezers, exploratory probe, dental floss and gauze as auxiliary instruments, all of them duly sterilized. When deciduous teeth were erupted, they were analyzed by visual inspection. Before performing teeth cleaning, the presence of visible plaque and gingival bleeding was assessed. With tooth already clean and dry, the clinical aspect of the existing carious lesions was observed. Non-cavitated carious lesions were considered inactive (inactive white spot) when clinically presented as shiny lesions with a superficially smooth surface and varying from white to brown in color; and active (active white spot) when showing enamel opacity, white discoloration and irregular texture on probing⁽¹⁵⁾.

Children with no active or inactive cavities or with no active white spots and gingival bleeding were considered free of caries

and gingivitis, respectively. Otherwise, those who required dental treatment during the research period were referred to and treated at the Children’s Clinic of the School of Dentistry of UFMA, where they underwent therapeutic curative procedures.

After the application of the initial questionnaire and the clinical examination, mothers attended educational and preventive lectures. During six months, bimonthly lectures on oral health and hygiene were delivered to the mothers gathered as a group, with the presentation of posters, macromodels and toothbrushes. After the period of lectures, mothers were followed-up monthly during one year, in order to give individual instructions on specific needs of baby’s oral health and reinforce the guidance provided earlier. In the last two months of follow-up, the same standardized questionnaire was applied to evaluate the level of knowledge acquired during the study period. In order to minimize research bias, the order of the answer choices of the final questionnaire was changed in relation to that of the initial questionnaire, in an attempt to avoid influencing the answers. At this moment, a new clinical examination of the oral cavities was performed, considering the above mentioned parameters.

After data collection, data were tabulated and analyzed with the Statistical Package for the Social Sciences (SPSS) for Windows 10.0 (1999) software, using the chi-square for independence and Fisher’s exact test for the different variables under investigation, considering a significance level of 5%.

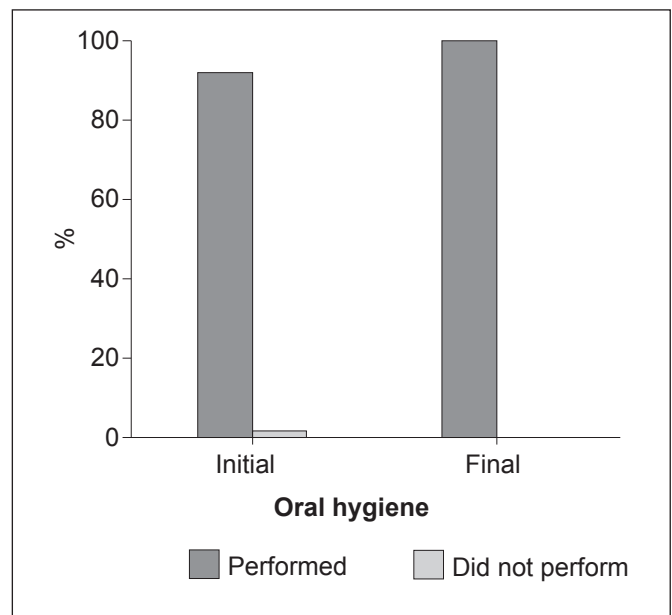


Figure 1 - Distribution of the number of mothers who performed oral hygiene of their babies, according to the responses from initial and final questionnaires

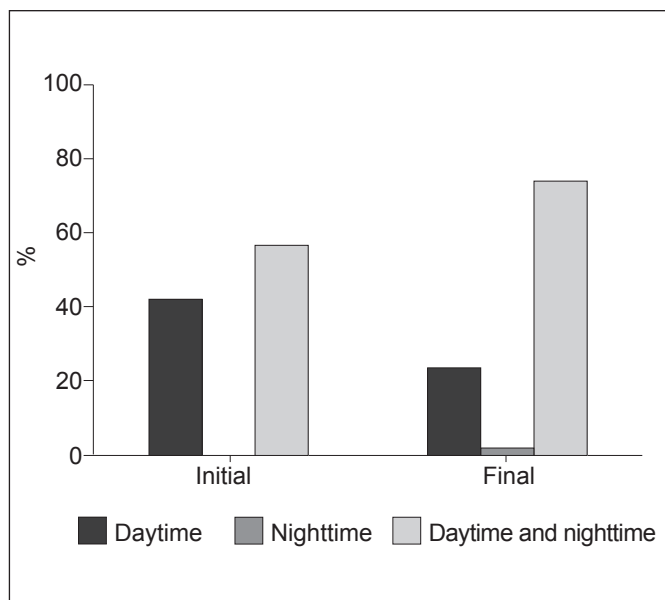


Figure 2 - Distribution of the number of mothers who performed oral hygiene of their babies at daytime, at nighttime, or at daytime and nighttime, according to the responses from initial and final questionnaires

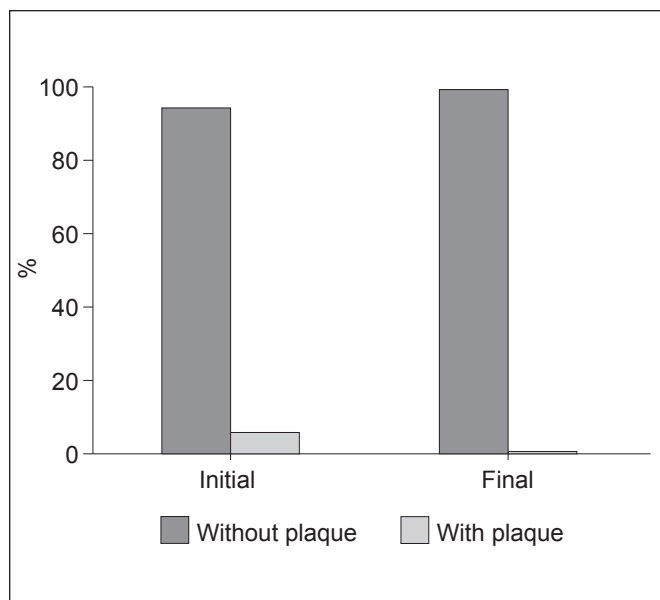


Figure 4 - Percentage of dental surfaces with active white spots and/or caries observed during initial and final examinations

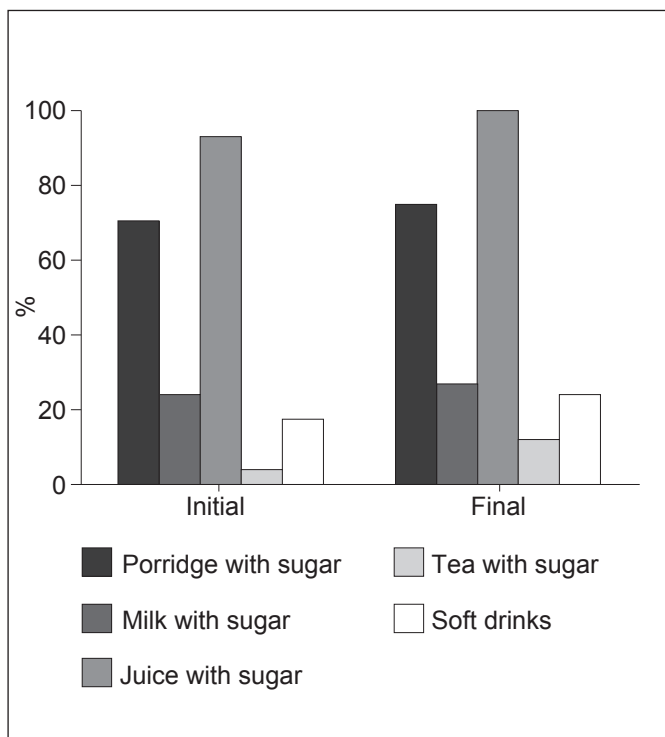


Figure 3 - Distribution of the number of mothers who used porridge with sugar, milk, juice with sugar, tea or soft drinks in their babies' diet, according to the responses from initial and final questionnaires

Results

The analysis of the questionnaires demonstrated that of the 112 mothers initially interviewed, 93% performed oral hygiene of their babies. When the final questionnaire was applied, mothers showed to be informed and aware of the need of oral hygiene care for their babies ($p=0.0215$), as observed in Figure 1.

Data from the initial questionnaire showed that 57.3% of the mothers performed oral hygiene of their children at daytime and nighttime, a percentage that increased to 74.7% after the lectures and the educational and preventive follow-up. Before follow-up, 42.7% of the mothers performed the hygiene only at daytime, a value that decreased to 24.1% in the final questionnaire. Only one mother (1.2%) reported performing this hygiene exclusively at nighttime after the educational and preventive follow-up. When comparing mothers' responses to the first questionnaire with those of the final questionnaire, a statistically significant difference ($p=0.01$) was observed, as seen in Figure 2.

When it comes to the use of cariogenic food in babies' diet, the following frequencies were observed in initial and final questionnaires, in descending order: porridge with sugar (70.5 and 74.7%), milk with sugar (24.1 and 26.5%), soft

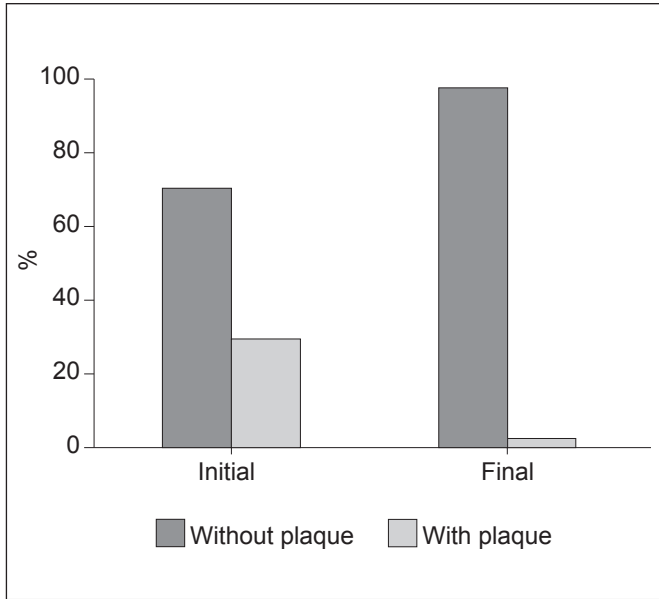


Figure 5 - Percentage of dental surfaces with plaque observed during initial and final examinations

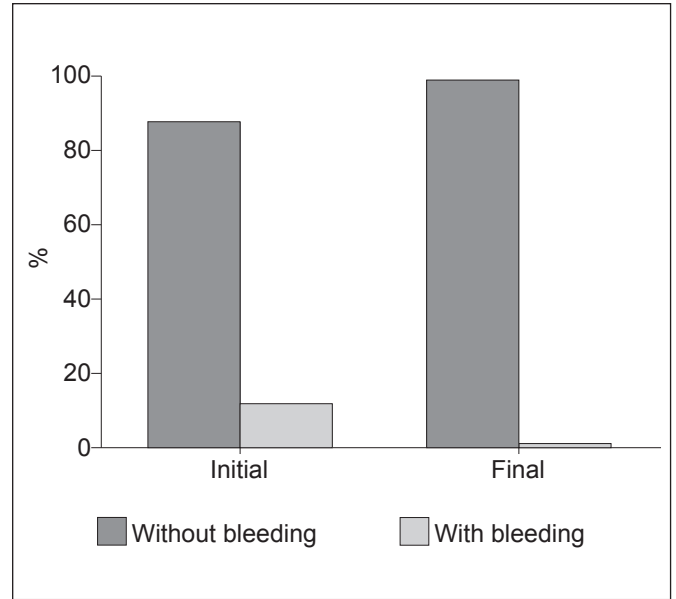


Figure 6 - Percentage of dental surfaces with gingival bleeding observed during initial and final examinations

drinks (17 and 24.1%), and tea with sugar (3.6 and 12%), with no statistically significant difference ($p > 0.05$) between initial and final responses (Figure 3).

As for the results from the examination of babies' oral cavity, it was observed that initially 5.6% of dental surfaces were compromised by the presence of active white spots and caries, a percentage that dropped to 0.4% on final examination. When comparing the foregoing percentages of surfaces compromised by caries, it can be noticed that the initial percentage was much higher than the final one, although the children had initially less teeth and therefore less surfaces ($p < 0.0001$), see Figure 4. As for the presence of plaque, the comparison of data from first and second examinations showed that there was a reduction in its rate, from 29.7 to 2.4%, and therefore an increase in the percentage of surfaces without plaque (from 70.3 to 97.6%), with $p < 0.0001$ (Figure 5). When examining the presence of gingival bleeding, it was evident that there was a decrease in comparison to the initial evaluation, as observed in Figure 6 ($p < 0.05$).

Discussion

Based on the fact that early childhood caries has been affecting children below three years, the disease is currently considered a public health problem⁽¹⁶⁻¹⁹⁾. Its etiology is complex and results from the interaction of several factors, such

as: high consumption of fermentable carbohydrates, negligence in oral hygiene, low family socioeconomic status, and mother's limited educational level⁽²⁰⁻²³⁾. This work showed that, when it comes to babies' oral hygiene, the education interventions of the above mentioned program were able to generate self-care skills in the mothers involved in the study and to stimulate healthy habits in their children⁽¹³⁾.

The positive association of oral hygiene with the frequency and consumption of sugar in the diet is a very relevant aspect in the etiology of early childhood caries⁽²⁴⁻²⁶⁾. This work showed that the interviewed mothers gave cariogenic food to their babies. This reality did not change after the application of the final questionnaire. Thus, it was observed that the adoption of healthy dietary habits, with appropriate nutritional pattern and restricted consumption of sweetened food, is a goal difficult to achieve. However, parents should be convinced of the benefit of this preventive measure in the maintenance and acquisition of oral health⁽⁶⁾.

It should be observed that the initial presence of white and/or cavitated lesions detected in 5.6% of the children in this study indicates disease and predisposes to the development of more lesions and to the worsening of those already existing⁽²⁰⁾. It is also worth to emphasize that the risk for the development of oral diseases changes among the different age groups⁽⁷⁾. Thus, the anatomy of the occlusal surface, with retentive grooves, by hampering the access of the brush, makes

this surface susceptible to the development of carious lesions. In smooth non-retentive surfaces, the simple disorganization of the dental biofilm determined by masticatory action and 'brief' oral hygiene (performed not meticulously) were not enough to hinder bacterial colonization, which is compounded by the easy access of saliva and of fluorinated products, such as toothpastes⁽²⁷⁾. Under this perspective, in the dental unit, buccal and lingual surfaces could be considered of lower cariogenic risk. As for occlusal and proximal surfaces, their retentive site would favor bacterial colonization, making them susceptible. However, in early childhood surfaces are at risk in the presence of inadequate habits. Additionally, the routine use of feeding bottle prevents the positive effects of mastication, a situation that is worsened when sugar is added to the liquids offered to the baby and when oral hygiene is poor, as described in the results obtained by this study.

Babies' oral health depends on the quality and access of mothers to educational and preventive measures, as well as on the constant reinforcement of the knowledge acquired⁽²⁸⁾. It is necessary to invest in education and in the improvement of socioeconomic conditions, besides stimulating collective solidarity and self-esteem so as to improve health status⁽²⁹⁾. It is worth stressing that the adoption of healthy oral habits should be established early among the mothers, which will be transmitted to their child as a form of continued

education⁽³⁰⁾. When mothers participate in an oral health care program, they become well-informed and are motivated to adopt health habits, a fact that contributes to the reduction in caries incidence^(28,31).

Even considering the small number of children included in the study and their young age, the results from the educational and preventive program are promising. There was a reduction in the percentage of caries in dental surfaces, in the level of plaque and in gingival bleeding. Such situation may reflect the positive influence of the educational and preventive actions implemented in this program. Education aimed at preventing oral problems should begin as early as possible and should occur systematically^(32,33). It is believed that more investments in health education interventions are necessary, as well as the implementation of programs to promote babies' oral health, preferably together with pediatric services, in order to improve children's care.

Thus, it is concluded that knowledge acquisition is essential to improve oral health conditions. Mothers who received information on appropriate oral health care will acquire good oral hygiene habits of their babies. It is worth emphasizing the importance of reinforcing healthy eating habits, because the adherence to changes is still a challenge, thereby needing a broader intervention.

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