



Pesquisa Brasileira em Odontopediatria e
Clínica Integrada

ISSN: 1519-0501

apesb@terra.com.br

Universidade Federal da Paraíba
Brasil

Querobim Ionta, Franciny; Santana Pinto Gonçalves, Priscilla; Ribeiro Barros de Alencar, Catarina; de Oliveira, Gabriela Cristina; Fantoni Garcia, Mariana; Rios, Daniela
Changes in Oral Health - related Behavior of Infants following a Preventive Program of Continuing Education Directed to their Parents
Pesquisa Brasileira em Odontopediatria e Clínica Integrada, vol. 15, núm. 1, 2015
Universidade Federal da Paraíba
Paraíba, Brasil

Available in: <http://www.redalyc.org/articulo.oa?id=63741065004>

- How to cite
- Complete issue
- More information about this article
- Journal's homepage in redalyc.org

redalyc.org

Scientific Information System

Network of Scientific Journals from Latin America, the Caribbean, Spain and Portugal

Non-profit academic project, developed under the open access initiative

Original Article

Changes in Oral Health-related Behavior of Infants following a Preventive Program of Continuing Education Directed to their Parents

Franciny Querebim Ionta¹, Priscilla Santana Pinto Gonçalves¹, Catarina Ribeiro Barros de Alencar¹, Gabriela Cristina de Oliveira¹, Mariana Fantoni Garcia², Daniela Rios³

¹PhD Student in Pediatric Dentistry, Department of Pediatric Dentistry, Orthodontics and Collective Health, School of Dentistry of Bauru, University of São Paulo, Bauru, São Paulo, Brazil.

²Undergraduate student, School of Dentistry of Bauru, University of São Paulo, Bauru, São Paulo, Brazil.

³Associate Professor, Department of Pediatric Dentistry, Orthodontics and Collective Health, School of Dentistry of Bauru, University of São Paulo, Bauru, São Paulo, Brazil.

Author to whom correspondence should be addressed: Daniela Rios, Alameda Octávio Pinheiro Brisolla, 9-75, Vila Universitária, Bauru, 17012-910, Brazil. E-mail: daniriosop@yahoo.com.br.

Academic Editors: Alessandro Leite Cavalcanti and Wilton Wilney Nascimento Padilha

Received: 18 November 2013 / Accepted: 04 September 2014 / Published: 03 April 2015

Abstract

Objective: To evaluate changes in oral health-related behavior of infants following preventive program of continuing education directed to their parents. **Material and Methods:** We analyzed 53 dental files of infants aged up to 36 months, who participated in the Prevention and Education Program of the Infants Clinic, School of Dentistry of Bauru (USP), and attended at least 2 visits with a maximum of 4 missing appointments. Initially an educational lecture was conducted, pointing issues related to diet and oral hygiene. At the following visit, the professional filled in a form with questions about diet and hygiene performed at home. The following information was extracted from dental files: reason of the first visit, age, number of teeth, number of visits, missing appointments, and dietary and oral hygiene risk factors. The data were tabulated and analyzed using descriptive statistics comparing the information obtained from the first visit to that of the last one. **Results:** The reason for the first visit was dental caries prevention (88.68%) followed by dental trauma (7.55%), and needed of curative treatment (3.77%). The mean age of the sample was 14.85 months, the tooth number mean was 12.64 at first visit, the mean number of visits was 7 and the mean missing appointments was 0.83. The percentage of infants with inadequate diet and hygiene habits was 88.68% and 62.26%, and only 12.76% and 57.57% of these have changed their habits, respectively. **Conclusion:** After the preventive program of continuing education, the dietary habits showed were more difficult to change in relation to hygiene ones.

Keywords: Health education; Dental caries; Primary dentition.

Introduction

Children at 12-36 month age range have a particular caries pattern, so-called early childhood caries (ECC) [1]. The ECC primary etiologic factors are fermentable carbohydrates, oral bacteria with cariogenic potential, and host susceptibility. Currently, social factors as family's low socioeconomic level and cultural factors and the lack of knowledge of the parents on oral health have also been related to ECC etiology [2-5]. Although the disease can be prevented and caries lesions are potentially reverted at initial stages, frequently the adequate treatment is not provided and the disease develops with the consequent progression of the lesions up to total destruction of the teeth [6,7]. The management of ECC by restorative procedures admittedly does not cure the disease [8], and actions on the process and not on the final result (caries lesion) are necessary [9].

Aiming at preventing ECC development, it has been recommended that the infants attend an initial dental appointment within the first 6 months after the eruption of the first deciduous tooth, or at most within one year of the infant's age [10]. The oral health care of the infant is the cornerstone on which a lifetime preventive education and dental care is constructed aiming to assure optimum oral health. Thus, the education in dental care at primary infancy requires the active participation of the parents/legal guardians. As the factors causing oral diseases are recognized, adequate preventive measures can be adopted [11] to adapt the behaviors and habits.

The results of many studies conducted with different models based on strategy implementations aiming at improving the knowledge, attitudes, and behaviors towards children's oral health indicate that, in general, knowledge can be improved and the attitudes can be modified [12-14]. However, the literature lacks consensus on the change in the parents' behavior after the instruction and information provided at the clinical routine. Therefore, it is appropriate to evaluate whether infants' oral health-related information is effective to improve the knowledge and practice of the parents/legal guardians.

Thus, this study aimed to evaluate the changes in oral hygiene and diet of infants after a preventive program of continuing education directed to the parents/legal guardians.

Material and Methods

This present study was conducted at the Infant Clinics of the School of Dentistry of Bauru, of the University of São Paulo, and approved by the Institutional Ethical Committee (n. 230.644).

All dental files of the infants aged up to 36 months, who participated in the Education and Prevention Program of the Infant Clinics of the School of Dentistry of Bauru (USP) during the year of 2013 were analyzed (n=72). To evaluate the efficacy of the care provided to the community, only the dental files of the infants attending at least two appointments (initial and final) who had not missed (over all treatment period) more than 4 appointments were assessed. The aforementioned inclusion criteria were considered to exclude eventual patients seeking care because of a given problem and did not return and those who did not follow the routine of appointments required by continuing education. Thereat, 53 dental files were included in the study.

At the Infant Clinics, preferably caries-free infants are treated. However, infants with caries experience attended the preventive care after oral rehabilitation. To participate in the program, the parents/legal guardians must attend a 50-minute educative lecture on the main points related to healthy dietary and hygiene habits. After one week, the parents/legal guardians returned for the infant's first appointment. At that moment, an interview was performed and a questionnaire on the dietary and hygiene habits of the infant is filled in. If the infant showed one risk factor for both diet (overnight breastfeeding and/or bottle feeding with fermentable carbohydrates), and hygiene (lack of oral hygiene after overnight breast/bottle feeding and/or oral hygiene performed at least once per day), he/she is considered at caries risk (Table 1).

Table 1. Information on risk factors collected from the infants' dental files.

Risk factors			
Overnight breast/bottle feeding	Addition of fermentable carbohydrates to baby bottle	Lack of oral hygiene after overnight bottle feeding	Lack of oral hygiene during the day

Moreover, at each following-up appointment, this questionnaire was reapplied to evaluate whether changes in both the infants' dietary and oral hygiene habits had occurred. A positive reinforcement was executed when these were properly conducted by complimenting and encouraging the parents, and acting as motivation resource so that adequate habits are maintained. Otherwise, the parent was again instructed on modifying dietary and oral hygiene habits to become adequate. Next, the infant was examined and the oral hygiene instruction and training was again carried out aiming at 1) dealing with the infant's crying and refusal regarding the procedure; 2) showing the best positions and methods to make easy to perform oral hygiene at home. The appointment was ended with a professional prophylaxis.

The initial information extracted from the dental files were: reason for the first visit; age; number of teeth in mouth; number of appointments/absences; and risk factors related to diet and hygiene. Although the questionnaire related to risk factors is applied at every following-up appointment, a resource used to recognize the hygiene and dietary practices adopted by the parents and to guide the instructions by the dentists, in this present study, only the responses at the first and last visit attended by the infant were considered (Table 1), so that the obtained data represented the changes in the dietary and hygiene habits after attending the continuing education program.

These data were tabulated and analyzed through descriptive statistics. The percentage of improvement in the parents' behavior was calculated separately for the diet and hygiene through the following formula:

$$\% \text{ behavior improvement} = \frac{\text{n}^{\circ} \text{ infants changing the habit} \times 100}{\text{n}^{\circ} \text{ infants at risk}}$$

(diet or hygiene)

Results

Of the analyzed 53 dental files, the reasons for the first appointment respectively were prevention of caries disease, dental trauma, and curative care (Figure 1).

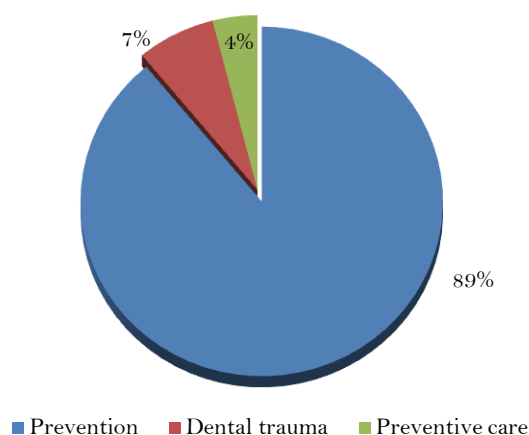


Figure 1. Main reason of the first appointment at the Infant Clinics of the School of Dentistry of Bauru-USP.

The main characteristics of the infants included in the study sample are seen in Table 2. The infants aged 06 to 35 months (mean of 14.85 months) at the first appointment of the education and prevention program. The number of teeth ranged from 0 to 20 (mean of 12.64). The number of appointments varied 2 to 17, (mean of 7). The number of missing appointments ranged from 0 to 4 (mean of 0.83)

Table 2. Mean and standard deviation of the data collected from the dental files of infants participating in the education and prevention program of the Infant Clinics of the School of Dentistry of Bauru-USP (Bauru, SP) in 2013.

	Age (months)	Number of teeth inside the mouth	Number of appointments	Number of missing appointments
Mean	14.85 ± 7.76	12.64 ± 6.29	7 ± 3.60	0.83 ± 1.05

With regard to dietary risk to dental caries, 47 (88.68%) of the 53 infants were at risk of developing the disease. After the prevention and education program, 6 (12.76%) infants changed the diet to a less cariogenic one (Figure 2).

Taking into consideration the factors related to oral hygiene, 33 (62.26%) of the 53 infants were at risk to dental caries. After the prevention and education program, 19 (57.57%) showed positive change in oral hygiene habits (Figure 3).

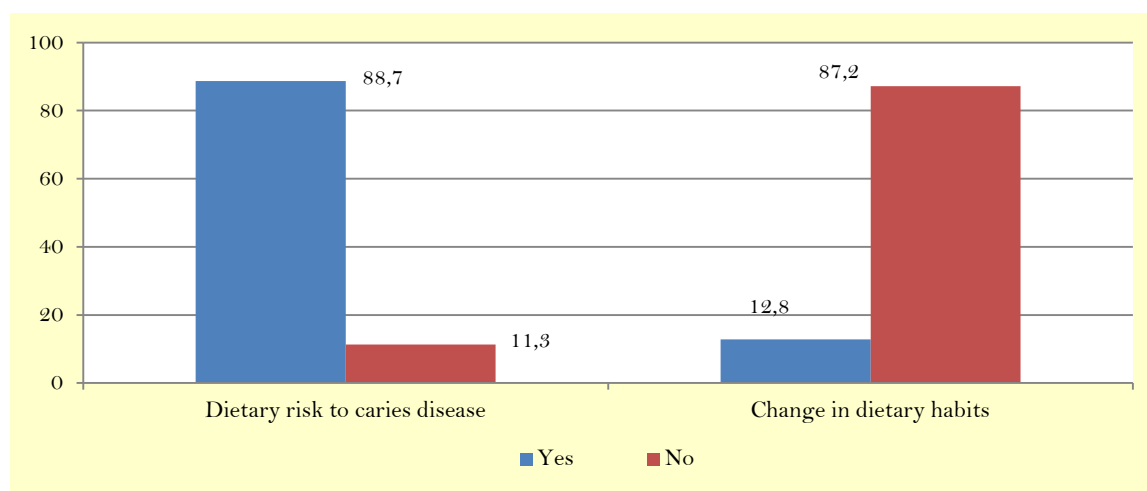


Figure 2. Percentage of infants at dietary risk for caries disease who after the education and prevention program changed the dietary habits.

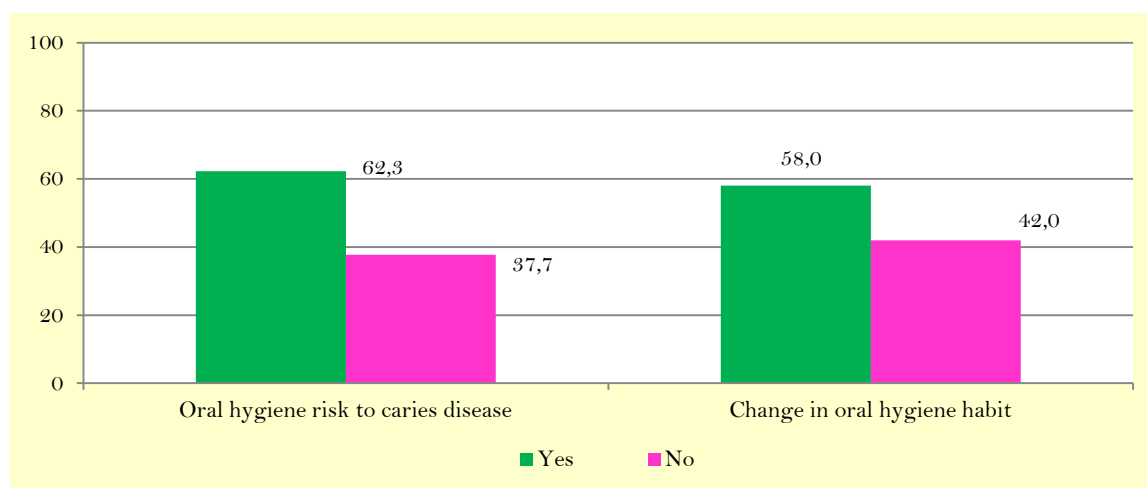


Figure 3. Percentage of infants at oral hygiene risk for caries disease who after the education and prevention program changed the oral hygiene habits.

Discussion

Aiming at dental caries prevention, the educative programs should be initiated as early as possible [15], because ideally, adequate oral hygiene and dietary habits should be introduced prior to tooth eruption. Studies demonstrate that the instructions provided to the mother on the oral hygiene and diet of the infant helped in decreasing the incidence and severity of early childhood caries as well as ECC damaging effects on the children at long term [16, 17]. Thus, the evaluation of the habits change because of the instructions received in prevention and education programs are important.

In this present study, the main reason for the first dental appointment was caries prevention, reaching 88.68% (n=47) of the cases. In 2008, a study conducted aiming at providing theoretical-practical knowledge on education, prevention, and curative treatment of infants found that of the 303 children, 72.87% searched treatment to maintain oral health while 14.83% needed curative

procedures [13]. These data are in agreement with those of this present study. The rationale behind these results is the paradigm shift in Dentistry from curative treatment to the inclusion and disclosure of preventive programs [18]. Still regarding to the reason for the first appointment, a greater demand was observed related to tooth trauma over caries lesion treatment. The possible motives for this could be the great impact on the quality of life of children caused by tooth trauma [19] and the parents' concern on situations of accidents and falls with loss of oral-dental physical integrity, leading to the search for immediate treatment.

Concerning to the amount of teeth inside the infants' mouth, of the dental files analyzed in this study, a mean of 12.64 teeth was found ranging from zero to all deciduous teeth erupted in the mouth. According to other studies, the first dental appointment should ideally be performed before 12 months of age [10,20]. In this present study, the mean age of the infants (14.85 months) was a little higher than the ideal period and only 39.62% of the treated infants had 12 months-old at the first appointment. This fact demonstrates the lack of knowledge and awareness of the parents on the ideal age of the first appointment, so that this information must be disclosed to the population. Although the moment of the first appointment was not ideal in this present study, after attending the preventive program, the parents were instructed regarding the importance of taking care of the infants' oral health.

Such fact can be demonstrated by the high attendance to the appointments that the present prevention and education program obtained because the mean number of appointments was of 7. This mean can be considered as high because the preventive procedures and parents' instructions at the dental office are generally restricted to a smaller number of appointments. The minimum number of appointments was of 2, for the younger infants who had started the program little time ago; and the maximum number of appointments was of 17, for the older infants who were close to complete 36 months-old. The great diversity in the number of appointments is a limiting factor of this study because the infants attending a greater number of appointments had the greater chance of changing the behavior because the parents were instructed at every appointment. Further studies with a limit of the maximum number of appointments as inclusion criterion should be conducted.

Moreover, regarding to the missing appointments (0.83), a number below the expected figure was found, since many times, the infants are sick or the parents have other commitments and cannot attend the appointments. In this study, this low number of missing appointments demonstrated the interest in the preventive program and concern of the parents.

At the moment of the first appointment, 47 (88.68%) of the 53 infants were at risk of caries based on the frequency of sugar ingestion. These data are very worrying because the association of lack of oral hygiene and high frequency of sugar consumption are determining factors for the establishment of ECC [21], demonstrating the importance of the parents' instructions. Notwithstanding, even after the education and prevention program, this fact did not change because only 6 (12.76%) infants changed their diet by ingesting foods and beverages with smaller cariogenic potential. These data are similar to those of a recent study that also did not observe changing in

dietary habits after educative-preventive following-up [22]. Based on these results, the shift to a healthy diet is a difficult goal to be reached because dietary habits are related to cultural values and socioeconomic level of the family, as well as the education level of the parents [2,23], making difficult the changing in the behavior. It is of paramount importance that the parents are instructed and convinced that the changing in the dietary habit favors to obtain and maintain good oral health [24], because it has been demonstrated that higher sucrose consumption of children with the same socioeconomic and health levels increases the risk of developing ECC [25]. Also, the high attendance to the appointments observed in this present study can be the result of an erroneous assumption by the parents regarding the preventive program. Even that the parents are instructed that oral health is the result of home care (regarding to diet and hygiene) associated with the professional control of the bacterial biofilm (tooth prophylaxis), the parents/legal guardians might erroneously believe that the preventive program itself is capable of maintaining the oral health of the infant without the need of modifying the inadequate dietary habits.

Taking into consideration the factors related to oral hygiene, 33 (62.26%) of the 53 infants were at risk of caries at the beginning of the program. After the program, 19 (57.57%) infants changed oral hygiene habits. A similar study observed that firstly 57.3% of the mother performed the oral hygiene of the children twice per day and 42.7% once per day; after the educative-preventive advice the percentage changed to 74.7% and 24.1%, respectively [22]. These data supported the hypothesis that educative activities can be effective in the consciousness and instruction of the parents by encouraging them to greater dedication to the oral health of their children [26], especially when these stimuli do not require substantial changes, such as diet.

The quality, access, and the constant intensification of educative-preventive methods are important to achieve the parents' knowledge aiming at improving the infants' oral health [27]. It is important highlighting that the sooner the adoption of healthy oral habits are encouraged, the better, because these will be transferred to the children, acting as continuing education [15]. Through an oral health educative-preventive program, the parents are able to increase their level of knowledge and motivated to adopt healthier habits, which is an important measure to reduce the caries disease [15,27].

Other facts that seem to influence on oral health care of the child is related to the education level and lack of parental time, which were not analyzed in this present study. Further studies should consider the inclusion of these factors in the methodology. Moreover, the educative-preventive programs should include these aforementioned factors in order to empower the parents to take care of the oral health of their children [28].

Because this is a retrospective study that analyzed the files of the infants, factors as the treatment performed by many dentists (even previously treated to perform the parents' instructions) might have influenced the results due to the interpersonal variation in communicating and approaching which may interfere in parents' motivation. Thus, in further studies, the instructions should be performed by the same dental professional.

Considering the methodology applied and the study samples, the results of the evaluated preventive program of continuing education can be considered as positive. This study shows great clinical relevance because it demonstrates that the time spent in providing the instructions to the parents is valid and capable of enabling the change in inadequate habits at early childhood, mainly regarding to oral hygiene habits.

Conclusion

In conclusion, after the preventive program of continuing education directed to the parents/legal guardians, it was noted a greater acceptance and improvement in the oral health-related behavior of infants regarding the establishment of adequate oral hygiene habits compared with the implementation of a diet with smaller sugar consumption.

Acknowledgements

The authors especially thank the parents and infants who participated in this study; the scientific initiation grant provided by RUSP (institutional); and Lilian Rosana Candida who helped in scheduling and treating the infants.

References

1. Fejerskov O, Kidd EAM. Dental caries: The disease and its clinical management. 2nd. ed. Oxford: Blackwell Munksgaard; 2008.
2. Vachirarojpisan T, Shinada K, Kawaguchi Y, Laungwechakan P, Somkote T, Detsomboonrat P. Early childhood caries in children aged 6-19 months. *Community Dent Oral Epidemiol* 2004; 32(2):133-42.
3. Corrêa-Faria P, Martins-Júnior PA, Vieira-Andrade RG, Marques LS, Ramos-Jorge ML. Factors associated with the development of early childhood caries among Brazilian preschoolers. *Braz Oral Res* 2013; 27(4):356-62.
4. dos Santos Junior VE, de Sousa RM, Oliveira MC, de Caldas Junior AF, Rosenblatt A. Early childhood caries and its relationship with perinatal, socioeconomic and nutritional risks: a cross-sectional study. *BMC Oral Health* 2014; 14:47.
5. Wulaerhan J, Abudureyimu A, Bao XL, Zhao J. Risk determinants associated with early childhood caries in Uygur children: a preschool-based cross-sectional study. *BMC Oral Health* 2014;14:136.
6. Dye BA, Arevalo O, Vargas CM. Trends in paediatric dental caries by poverty status in the United States, 1988-1994 and 1999-2004. *Int J Paediatr Dent* 2010; 20(2):132-43.
7. Kawashita Y, Kitamura M, Saito T. Early childhood caries. *Int J Dent* 2011; 2011:725320.
8. Raadal ME, Mejare I. The caries lesion and its management in children and adolescents. In: Koch G. *Pediatric dentistry: A clinical approach*. Copenhagen, Denmark: Munksgaard; 2001.
9. Tinanoff N, Douglass JM. Clinical decision making for caries management in children. *Pediatr Dent* 2002; 24(5):386-92.
10. American Academy on Pediatric Dentistry Clinical Affairs Committee-Infant Oral Health Subcommittee; American Academy on Pediatric Dentistry Council on Clinical Affairs. Guideline on infant oral health care. *Pediatr Dent* 2008-2009; 30(7 Suppl):90-3.
11. Horowitz HS. Research issues in early childhood caries. *Community Dent Oral Epidemiol* 1998; 26(1 Suppl):67-81.
12. Weber-Gasparoni K, Reeve J, Ghosheh N, Warren JJ, Drake DR, Kramer KW, Dawson DV. An effective psychoeducational intervention for early childhood caries prevention: part I. *Pediatr Dent* 2013; 35(3):241-6.

13. Figueiredo MC, Guarienti CA, Michel JA, Sampaio MS. Comprehensive attention to oral health in early childhood: a longitudinal evaluation of the Infant Clinic Program of the Federal University of Rio Grande do Sul, Brazil. *Acta Odontol Latinoam* 2008; 21(2):181-7.
14. Kay E, Locker D. A systematic review of the effectiveness of health promotion aimed at improving oral health. *Community Dent Health* 1998; 15(3):132-44.
15. Wigen TI, Wang NJ. Maternal health and lifestyle, and caries experience in preschool children. A longitudinal study from pregnancy to age 5 yr. *Eur J Oral Sci* 2011; 119(6):463-8.
16. Plutzer K, Spencer AJ, Keirse MJ. Reassessment at 6-7 years of age of a randomized controlled trial initiated before birth to prevent early childhood caries. *Community Dent Oral Epidemiol* 2012; 40(2):116-24.
17. Feldens CA, Giugliani ER, Duncan BB, Drachler Mde L, Vítolo MR. Long-term effectiveness of a nutritional program in reducing early childhood caries: a randomized trial. *Community Dent Oral Epidemiol* 2010; 38(4):324-32.
18. Bönecker M, Tenuta LM, Pucca Junior GA, Costa PB, Pitts N. A social movement to reduce caries prevalence in the world. *Braz Oral Res* 2013; 27(1):5-6.
19. Ramos-Jorge J, Paiva SM, Tataounoff J, Pordeus IA, Marques LS, Ramos-Jorge ML. Impact of treated/untreated traumatic dental injuries on quality of life among Brazilian schoolchildren. *Dent Traumatol* 2014; 30(1):27-31.
20. Nainar SM, Straffon LH. Targeting of the year one dental visit for United States children. *Int J Paediatr Dent* 2003; 13(4):258-63.
21. Bankel M, Eriksson UC, Robertson A, Köhler B. Caries and associated factors in a group of Swedish children 2-3 years of age. *Swed Dent J* 2006; 30(4):137-46.
22. Silva RA, Nóia NB, Gonçalves LM, Pinho JRO, Cruz MCFN. Avaliação da participação de mães em um programa de prevenção e controle de cáries e doenças periodontais para lactentes. *Rev Paul Pediatr* 2013; 31(1):83-9.
23. Kutsch VK, Young DA. New directions in the etiology of dental caries disease. *J Calif Dent Assoc* 2011; 39(10):716-21.
24. Vitolo MR, Bortolini GA, Feldens GA, Drachler ML. [Impacts of the 10 Steps to Healthy Feeding in Infants: a randomized field trial]. *Cad Saúde Pública* 2005; 21(5):1448-57.
25. Nunes AM, da Silva AA, Alves CM, Hugo FN, Ribeiro CC. Factors underlying the polarization of early childhood caries within a high-risk population. *BMC Public Health*. 2014; 14:988
26. Gomez SS, Weber AA. Effectiveness of a caries preventive program in pregnant women and new mothers on their offspring. *Int J Paediatr Dent* 2001; 11(2):117-22.
27. Feldens CA, Kramer PF, Sequeira MC, Rodrigues PH, Vitolo MR. Maternal education is an independent determinant of cariogenic feeding practices in the first year of life. *Eur Arch Paediatr Dent* 2012; 13(2):70-5.
28. Mitakul K, Laovoravit V, Vanichanuwat V, Charatchaiwanna A, Charatchaiwanna A, Bunpradit W, Arunakul M. Factors associated with parent capability on child's oral health care. *Southeast Asian J Trop Med Public Health* 2012; 43(1):249-55.