

THE MOTHERS' ROLE IN EFFECTING AND SUPERVISING THE EARLY CHILDHOOD ORO-DENTAL HYGIENE

Marinela Păsăreanu, Dana Rotaru, Adriana Balan

Faculty of Dental Medicine, "Gr. T. Popa" University of Medicine and Pharmacy, Iași, România

Abstract. Aim. Tooth brushing twice daily is a recommended component of oral self-care soon after the eruption of primary dentition. This study was aiming to investigate oral hygiene and frequency of oral cleaning in children up to 6 year old, in relation to mother-related factors. **Material and methods.** The study was carried out on a number of 157 children aged between 2.6-5.5 y.o. from Iasi. Mothers answered to questions about their own oral self-care and their activity in their children's oral hygiene. The child's oral hygiene was assessed on the basis of visible dental plaque on the labial surface of the upper central incisors. **Results.** Twice daily oral cleaning was reported by 7% of all children. Once daily cleaning was reported by 2.6 - 3.5 year old children as 8.3%, by 3.6 and 4.5 aged children as 21.7% and by 4.6 to 5.5 year old children as 34.4%. 49.7% from mothers lacked the skill to clean their children's teeth, according to their answers. Dental plaque was observed in 55%-76% of the children. Clean teeth were more likely in children of mothers who themselves had a higher tooth brushing frequency. **Conclusions.** More emphasis should be placed on mothers own tooth brushing and their skill to their children's cleaning in order to improve oral hygiene in early childhood.

Key words: oral hygiene, frequency of oral cleaning, mother, early childhood

Rezumat. Scop. Periajul de două ori pe zi este recomandat ca o componentă a autoigienizării, imediat după erupția dinților temporari. Acest studiu are ca scop investigarea igienei orale și frecvența igienizării, la copii până la șase ani, relaționată cu factori ce țin de mamă. **Material și metodă.** Studiul a fost efectuat pe un lot de 157 copii, cu vârste între 2,6 și 5,5 ani, din Iași. Mamele au răspuns la întrebări legate de igiena orală și implicarea lor în activitatea de igienizare orală a copiilor lor. Igiena orală a fost analizată din punct de vedere al plăcii vizibile de pe fețele vestibulare ale incisivilor centrali superiori. **Rezultate.** Periajul de două ori pe zi a fost prezent la 7% dintre copii. Periajul a fost raportat de copiii de 2,6 - 3,5 ani, în proporție de 8,3%, de cei din grupa 3,6 - 4,5 ani, în proporție de 21,7% și de cei din grupa 4,6 - 5,5 ani, în proporție de 34,4%. 49,7% din mame au afirmat că le lipsește abilitatea de a peria dinții copilului. Placa dentară s-a observat la 55% - 76% din cazuri. Dinții curați au fost mai ales întâlniți la copiii ai căror mame se spală mai des pe dinți. **Concluzie.** Pentru a îmbunătăți igiena orală la copiii mici ar trebui să se pună mai mult accent pe igiena orală a mamelor și pe capacitatea acestora de a-și spăla copiii pe dinți.

Cuvinte cheie: igiena orodentară, frecvență periaj, mamă, copil mic

INTRODUCTION

Toothbrushing twice daily is a part of recommended oral self-care and should start as soon as an infant's teeth erupt (1). This standard is met for the majority of

children in several European Union countries (2, 3, 4, 5) and in the USA.

As young children lack the ability to clean their own teeth effectively, parents are recommended to clean their children's teeth at least until they

THE MOTHERS' ROLE IN ORO-DENTAL HYGIENE

reach 6 years old (6,7,8). Insufficient oral hygiene in terms of presence of visible plaque on anterior teeth of children has been identified as a major risk marker for dental caries among young children.

Because parents play a key role in the family in transferring health-related habits to the children, their tooth brushing has been added with oral cleaning frequency of the children. Oral hygiene quality is higher in families with higher socio-economic status.

This study was aiming to investigate oral hygiene in early childhood in relation to mother -related factors.

MATERIALS AND METHODS

The study was carried out on a number of 157 children aged between 2.6-5.5 years, from Iași preschool community and their mothers.

The survey was performed by age groups (2.6-3.5; 3.6-4.5 and 4.6-5.5 aged), gender and social status.

The questionnaires included question for children and mother separately.

Oral cleaning for the child

This was covered by three questions on frequency of oral cleaning for the child, cleaning device, and adult's role in oral cleaning for the child. Each mother was asked to the question 'How often are your child's teeth cleaned?' with four response alternatives, categorized as: 'More than once a day', 'Once a day', 'Less than once a day', and 'No cleaning'. Ultimately, to facilitate the final analyse, two separate dichotomies were formed: 'Twice daily' or 'Less' and 'Daily' or 'Less', to reveal factors

related to oral cleaning for the child on twice-daily basis and daily basis.

The answers to the question about the cleaning device were categorized into 'Toothbrush', 'Washcloth, gauze, etc.', and 'Nothing'. Information about the adults' role in the oral care of the children was elicited by asking: 'Who performs the child's toothbrushing?' The responses were categorized as: 'The child alone', 'The child with supervision or help by adults', and 'The adults solely'.

Mothers-related factors

Mother's own oral cleaning was assessed in terms of the frequency of her own toothbrushing. The answers to the question 'How often do you brush your teeth?' were categorized into: 'More than once a day', 'Once a day', and 'Less than once a day'.

Mothers' perceptions of their ability to maintain their children's oral hygiene was measured by three items.

The responses were given on a 5-point Likert scale: Strongly agree (1), Agree (2), No opinion (3), Disagree (4) and Strongly disagree (5).

Socio-demographic information

Level of education was recorded separately for father and mother with a 7-point scale ranging from illiterate to doctoral degree. Parental education was defined as the highest level of either parent's education and then categorized into three levels: low (primary school or illiterate). Moderate (diploma or high school education) and high (university education).

Clinical examinations

The dental examination was carried out by an experienced paediatric

dentist, in natural light, with the help of plaque reveals. Visible dental plaque was assessed on the labial surfaces of the upper central incisors and recorded as 'No visible plaque', 'Plaque present at gingival margin only', and 'Abundant dental plaque covering more than gingival margin of the tooth'.

The child's oral hygiene was determined as the maximum finding of dental plaque and later dichotomized as 'Good' (absence of visible plaque) or 'Poor' (presence of visible plaque).

Statistics applied

Evaluation of the statistical significance of the differences between the subgroups included the analysis of variance (ANOVA) for comparison of mean values and the Chi-square test

for frequencies. A logistic regression model served for multivariable assessment, separately for factors related to the oral cleaning of the child on (a) twice-daily basis,(b) and good oral hygiene. The corresponding odds ratios (OR) and their 95% confidence intervals (95% CI) were determined. A p-value < 0.05 denoted statistical significance.

RESULTS AND DISCUSSIONS

51% of children were represented by girls gender (fig.1).

The weight of children from urban area was 54.1% (fig.1).

Middle age showed almost no difference between age group and gender (tab.1, fig.2).

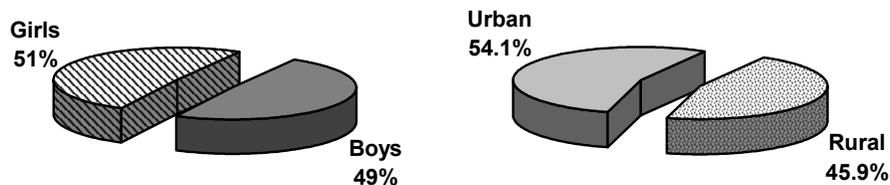


Fig. 1. Children distribution by sex and residence

Table 1. Mean age values

Sex	Age groups		
	2.6-3.5	3.6-4.5	4.6-5.5
Male	3.08±0.29	3.97±0.26	5.05±0.26
Female	3.05±0.28	3.96±0.25	5.01±0.26
t-Student	t=0.29	t=0.14	t=0.67
p	p>0.05	p>0.05	p>0.05

THE MOTHERS' ROLE IN ORO-DENTAL HYGIENE

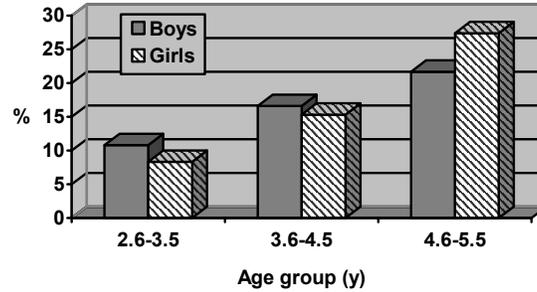


Fig.2. Age and sex distribution of children

The distributions of the mothers responses to the statements regarding perceptions of ability to maintain their children's oral hygiene were presented in table 2.

Distribution of the children by parental moderate level of education is higher (49.7%) (fig.3).

Table 2. Distributions (%) of the mothers responses to the statements regarding perceptions of ability to maintain their children's oral hygiene

Questions	Responses (%)				
	Strongly agree	Agree	No opinion	Disagree	Strongly disagree
1.I don't know to brush or clean our child's teeth twice propely	13.4	36.3	1.9	41.4	7.0
2.We don't have time to brush or clean our child's teeth twice a day	3.2	25.5	1.3	60.5	9.6
3.We cannot make our child brush or clean his or her teeth twice a day	6.4	28.7	6.4	51.0	7.6

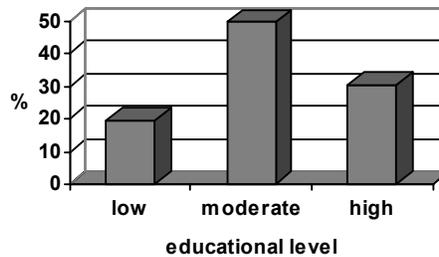


Fig. 3. The Frequency of children by parent educational level

Visible dental plaque appeared on at least one upper central incisor of 70% of the 2.6- 3.5 years-old children, 62% of the 3.6-4.5years-old children and 75% of the 4.6-5.5 years-old children ($p < 0.001$), with no gender difference. For the two older age groups, no relationship was found between the

presence of visible plaque and level of parental education.

63.1% of mothers reported brushing their own teeth once a day and 22.9% more than once a day. 64.3% of children has been brushed once a day and more than once a day 7% (fig.4).

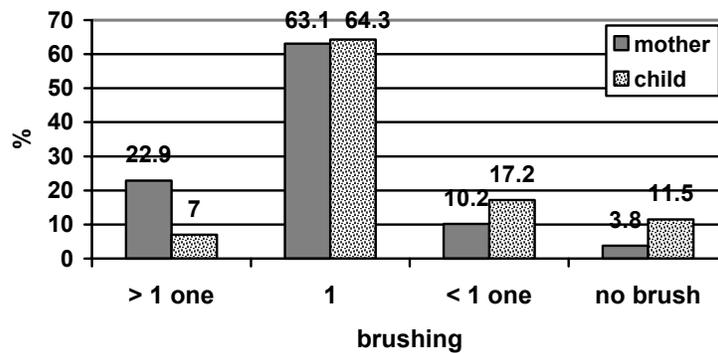


Fig. 4. Correlation between mother's and children's tooth brushing

Distribution of the children by age group according to tooth brushing is showed in figure 5. The most children

(34.4%) who brushed once a day are of 4.5 - 5.5 years old.

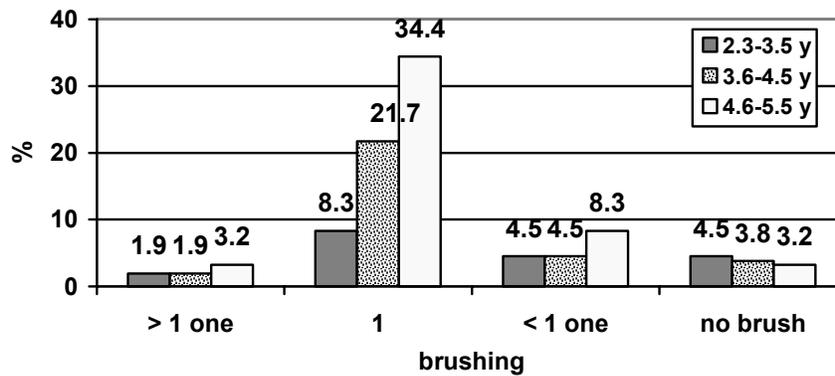


Fig. 5. Correlation between toothbrushing and age group

THE MOTHERS' ROLE IN ORO-DENTAL HYGIENE

To the question 'Who brush the childs teeth?' the answeres revealed that the

most children were supervised by their mothers (71.3%) (fig.6).

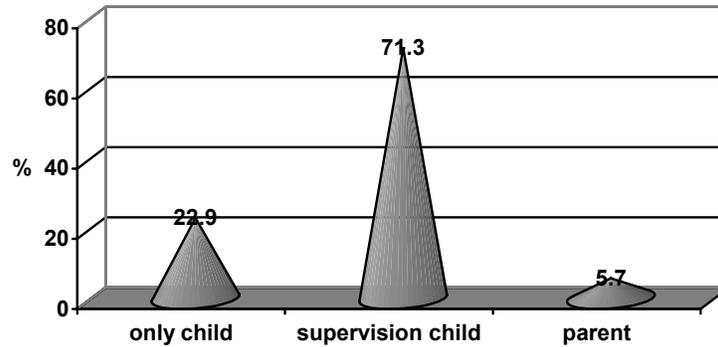


Fig. 6. 'Who brush the childs teeth?'

The most used cleaning device by the children with clean teeth, were: tooth brush 70%, gauze 19%, and 11% other cleaning device.

More higher the educational level of the family, more the frequency of oral cleaning for the child ($p=0.05$).

Table 3 shows the answers of the mothers to three questions which describes their effort to maintain oral hygiene of their child.

Correlation between mothers and childrens tooth brushing emphasize that mothers which brush own teeth one a day will brush the child too (47.8%). The mothers who did not brush the children's teeth were 3.8%.

Evaluation of the statistical significance of the differences between the subgroups included the analysis of variance (ANOVA) for comparison of mean values and the Chi-square test for frequencies.

No statistical difference was found at the children of those mothers indicating the fact that they know how to brush their child's teeth and that they are able to make the child's teeth brush twice a day.

The frequency of oral cleaning for the child was higher for the children of those mothers indicating that they know how to brush the child's teeth and that they are able to make the child brush his or her teeth twice a day ($p=0.026$).

At the question: "Do you have time to wash your child teeth twice a day?" 53.5% of the mothers are concerned with their child oral hygiene.

A separate logistic regression model showed that the frequency of oral cleaning for the child on twice daily basis was directly proportional to the mother's own tooth brushing frequency. For the child, the oral cleaning frequency was directly proportional to the mother's oral cleaning frequency.

Table 3. The frequency of oral cleaning(%) among 2.5-5.5 year old children

Mother related factors	Frequency of oral cleaning for child				ANOVA
	>1/day	1/day	<1/day	none	
Mothers' own toothbrushing:					
>1/day	6.4	16.6	-	-	F=57.21 GL=3 p<0.001
1/day	0.6	47.6	12.1	2.5	
<1/day	-	-	5.1	5.1	
None	-	-	-	3.8	
I don't know how to brush or clean my child's teeth propely					
Strongly agree	1.9	6.4	4.5	0.6	F=0.097 GL=3
Agree	3.2	24.2	4.5	4.5	
No opinion	-	-	0.6	1.3	p=0.962
Disagree	1.9	28.7	7.0	3.8	
Strongly disagree	-	5.1	0.6	1.3	
We don't know how to brush or clean my child's teeth 2/day					
Strongly agree	-	19	1.3	-	F=3.158 GL=3
Agree	2.5	13.4	7.0	2.5	
No opinion	-	-	1.3	-	p=0.026
Disagree	3.2	43.3	7.0	7.0	
Strongly disagree	1.3	5.7	0.6	1.9	
We cannot make our child brush or clean his or her teeth 2/day					
Strongly agree	-	3.8	0.6	1.3	F=0.324 GL=3
Agree	3.2	19.1	3.8	2.5	
No opinion	0.6	4.5	0.6	0.6	p=0.808
Disagree	1.9	33.1	11.5	5.1	
Strongly disagree	1.3	3.8	0.6	1.9	

Mothers who have a poor oral cleaning or have no cleaning, probably will take no care of their child tooth brushing by 18 times higher than mothers who practice oral cleaning once or twice a day (RR = 18.25) (tab.4).

For the other parameters there were not registered any significant differences (tab.4).

There were excluded those answers of mothers who had no opinion.

THE MOTHERS' ROLE IN ORO-DENTAL HYGIENE

Table 4. Factors related to regular oral cleaning for 2.5-5.5 year old children, explained by logistic regression model

Parameters	RR	95%CI	Test λ^2
Mother's toothbrushing frequency	18.25	2.69-124.06	$\lambda^2=53.85$ p<0.001
We don't know how to brush or clean my child's teeth propely	0.97	0.80-1.18	$\lambda^2=0.01$ p=0.934
We don't have time to brush or clean our child's teeth 2/day	0.81	0.63-1.05	$\lambda^2=2.52$ p=0.11
We cannot make our child brush or clean his or her teeth 2/day	1.12	0.91-1.38	$\lambda^2=0.75$ p=0.388

From the collected data, there can be concluded that the frequency of the mother's tooth brushing have an essential influence on the frequency and consistency of the child's tooth brushing and on her/his oral dental hygiene at early age stages.

The values that we obtained are lower in comparison with the ones from in the developed countries (2).

In our study sample, tooth brushing twice per day was rare, in comparison with the developed countries as USA or Northern countries.

Other study results could be compared with the values from Poland or Hong Kong where the frequency of tooth brushing between 1 and 3 years old was 66% and 75% respectively (2).

It is recommended that the first visit to dental office to be done as early as possible and to teach the children to brush their teeth at the same time with the first stages of socialization (9).

As a consequence, the parent's methods of oro-dental hygiene have an influence on the child's future dental hygiene pattern (10).

CONCLUSIONS

Oro-dental hygiene – done initially exclusive by the parent and gradually completed with the assisted tooth brushing – is the best method for the first and second stage of childhood, motivated by the psycho-behavioural specific of this age stage.

Cultural and educational model offered by the parent and especially by the mother in close relation with the dental care team, has a decisive significance in the sanogenic modulation of the child.

In order to improve little child oral hygiene is necessary to promote sanitary education programs for general population, mothers especially.

More strategic health prevention, targeting parents and children as well, will improve child oral health.

More actions are necessary in order to change behaviours related to dental hygiene.

REFERENCES

1. Gussy MG, Waters EG, Wals O, Kilpatrick NM: *Early childhood caries. Current evidence for aetiology and prevention*. J Paediatr Child Health 2006; 42: 37-43.
2. Pine CM, Adair PM, Nicoll AD, et al: *International comparisons of health inequalities in childhood dental caries*. Community Dent Health 2004; 21: 121-130.
3. McDonald RE, Avery DR, Dean JA: *Dentistry for the Child and Adolescent*, 8th edn. St Louis, MO: Mosby, 2004.
4. American Association For Paediatric Dentistry. *Dental Care for Your Baby*. <http://www.aapd.org/publications/brochures/babycare.asp> (accessed: 23 January 2007)
5. Kiwanuka SN, Amstron AN, Trovik TA: *Dental caries experience and its relationship to social and behavioural factors among 3-5-year-old children in Uganda*. Int J Paediatr Dent 2004; 14: 336-346.
6. Okada M, Kawamura M, Kaihara Y, et al: *Influence of parents' oral health behavior on oral health status of their school children: an exploratory study employing a casual modeling technique*. Int J Paediatr Dent 2002; 12: 101-108.
7. Szatko F, Wierzbicka M, Dybizbanska E, Struzycki I, Twanicka-Frankowska E: *Oral health of Polish three-year-olds and mothers' oral health-related knowledge*. Community Dent Health 2004; 21: 175-180.
8. Adair PM, Pine CM, Burnside G, et al: *Familial and cultural perceptions and beliefs of oral hygiene and dietary practices among ethnically and socio-economical diverse groups*. Community Dental Health 2004; 21: 102-111.
9. Chan SC, Tsai JS, King NM: *Feeding and oral hygiene habits of preschool children in Hong Kong and their caregivers' dental knowledge and attitudes*. Int J Paediatr Dent 2002; 12: 322-331.
10. Finlayson TL, Siefert K, Ismail AI, Delva J, Sohn W: *Reliability and validity of brief measures of oral health-related knowledge, fatalism, and self-efficacy in mothers of African American Children*. Pediatr Dent 2005; 27: 422-428.