

Oral Health and Children Attitudes Among Mothers and Schoolteachers in Belarus

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SUMMARY

The aims of the present study were 1) to collect basic data of dental status of 6 and 12 years old in Belarussian urban and rural areas and monitoring of dental status 2) to analyse oral health habits of schoolchildren and mothers according to urbanization 3) to find out the relation between mother's educational background and children's oral health habits and also impact on their own dental knowledge, attitudes and practices 4) to reveal the differences of teacher's dental knowledge level in comparison with mother's.

Epidemiological survey was performed at all 6 areas of Belarus. It included as urban as rural areas participation, the subjects for the study were chosen at random. According to the objects of this study, investigation comprised: 1) dental status examination of 2054 6-years old and 1988 12-years old children assessed by DMFT, OHI-S, GI indexes 2) self-administered questioning of 1666 mothers and 244 primary school teachers 3) statistical processing and analyzing of conducted data using ANOVA.

The family is responsible for children life style behavior and habits and represents the primary information about oral health. One way to contribute increasing of oral health awareness of children would provide the up-to-date oral health information, education and motivation of parents. At the same time, the primary schools have great potential for children oral health habits formation due to considerable time are spent in school by children. Results of present investigation show that adult's oral health habits and level of dental knowledge are key information in realization of children oral health programme.

Key words: preventive programme, caries, periodontal diseases, oral health education.

INTRODUCTION

Over the past two decades data of reduction in prevalence of oral disease have been observed in several Western industrialized countries (Downer, 1991; O'Mullane, 1994; Marthaler et al., 1996, Kaivusilta L. et al. 2003). This trend is explained by considerable progress in preventive dentistry (sensible approach to sugar consumption, improved oral hygiene practices, using of fluoridated toothpastes, mouthrinses or topical application of fluoride) and establishment of community-based preventive programmes.

Data of comprehensive oral health survey conducted in 1996 in Belarus demonstrated that about 100% of adult and 85% of children had experience of caries and periodontal disease. Nowadays the main dental thoughts are directed towards finding effective and economically available ways to prevent these oral diseases. School-based oral health programme is conducting in seven regions of Belarus (6 areas and Minsk-city). This preventive programme is based on providing the up-to-date oral health information, education and motivation of adults - primary school teachers and parents - those are responsible for children life style behavior and habits.

The objectives of the present study were 1) to collect basic data of dental status of 6 and 12 years old in Belarussian urban and rural areas and monitoring of dental status 2) to analyse oral health habits of schoolchildren and mothers according to urbanization 3) to find out the relation between mother's educational background and children's oral health habits and also impact on their own dental knowledge, attitudes and practices 4) to reveal the differences of teacher's dental knowledge level in comparison with mother's.

MATERIAL AND METHODS

Epidemiological survey was performed at all 6 areas of Belarus. It included as urban as rural areas participation, the subjects for the study were chosen at random. According to the objects of this study, investigation comprised: 1) dental status examination of 2054 6-years old and 1988 12-years old children assessed by DMFT, OHI-S, GI indexes 2) self-administered questioning of 1666 mothers and 244 primary school teachers 3) statistical processing and analyzing of conducted data using ANOVA. Over the period of investigation, data of dental status were collected by clinical examinations according to the World Health Organization (1987, 1997, 1999) recommendations and criteria. Trained and well-calibrated epidemiologists conducted the examinations in each area. The rate of agreement of at least 85% was obtained for the recording dental caries (WHO, 1993). The examinations were performed using artificial light, mouth mirrors and dental standard explorers. All data were recorded in personal dental status sheets (medical history).

The structured questionnaire used for collection of sociological data. The mother's questionnaire included following variables: oral health knowledge, attitudes towards prevention of oral disease, oral health practices of child and mothers, dietary habits of child, parental support in oral health, self-assessment of oral health and need for care of the child, sources of dental health information, number of children in family and level of mother's education. Wording of questionnaire was identical to compare responses given by mothers and schoolteachers. The variables for teachers additionally included involvement in oral health education of children and assessment of oral health status of children. The number of participating mothers of 6-years old children was 1666 (response rate 91%) and primary school teachers - 244 (response rate - 95%).

The data were processing and analyzed by statistical program ANOVA. The Guttman scale model has also been used for developing of measure scale. Based on empirical distribution the scores of variables were subsequently categorized into three levels (low, moderate and high) to be used in the bivariate analyses.

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RESULTS

Based on data of the epidemiological survey which was conducted in six areas and Minsk-city of Republic Belarus, the rates of prevalence of dental caries among 6 and 12-years old schoolchildren were 93% and 85% accordingly. The Table 1 demonstrates the mean caries experience and percentage of Belarusian schoolchildren free of dental caries by location. Inconsiderably lower D-component of DMFT and higher percentage of caries-free 12-years old schoolchildren was found in urban areas, whereas such difference was less prominent for children at age 6. Nevertheless there was lower d- component of dmft in 6-years old urban schoolchildren than in rural. Table 2 presents high levels of OHI-S and GI scores for children in both age groups. No significant differences were found by location.

Dental knowledge and attitudes of mothers

In general 47% of the mothers indicated that complex of "bacteria+sugar" was a cause of tooth decay, 35% answered that it was "bacteria", 27% linked caries with "sugar". However, on question about possible harmful influence of some food products, negative effect of sugar was reported

Table 3. Percentages of mothers and schoolteachers who indicated that "the following items can harm your natural teeth.

	Mothers n =1666	Teachers n =244
Milk with sugar	41.8	53.7
Milk without sugar	1.2	2.9
Sugar	83.4	88.9
Coffee without sugar	20.0	28.7
Coffee with sugar	50.9	66.0
Tea without sugar	5.7	6.6
Tea with sugar	41.6	60.3
Sweets/candy	85.0	91.0
Smoking	77.8	88.5
Apple	1.2	2.5

Table 5. Percentages of mothers and schoolteachers who answered positively the statement about the dental diseases prevention in children.

Statement	Mothers n =1666	Teachers n =244
Children teeth should be checked regularly by dentist	96.4	99.2
Children under than 10-years old need help from adults in toothbrushing	66.6	76.6
Toothbrushing prevents tooth decay	91.6	93.0
Toothbrushing prevents gingival bleeding	71.9	73.0
Inadequate sugar consumption can cause tooth decay	78.6	88.9
Parents should restrict consumption of sweets by children	90.4	93.4
Fluoride protects teeth against decay	84.7	87.7

Table 1. The mean dmft (6 years old schoolchildren) and DMFT (12 years old schoolchildren), and percentage of Belarusian schoolchildren free of dental caries.

Location	6-years old (n=2054)			12- years old (n=1988)		
	% of caries free	dmft	d	% of caries free	DMFT	D
Urban	7	4.8	2.6	17	2.7	0.8
Rural	6	4.6	3.5	10	2.6	1.0
Total	7	4.7	2.9	15	2.7	0.9

Table 2. The mean OHI-S and GI indexes by age of schoolchildren and location.

Location	6-years old (n=2054)			12- years old (n=1988)		
	OHI-S	DI-S	GI	OHI-S	DI-S	GI
Urban	1.5	1.5	0.4	1.5	1.4	0.4
Rural	1.4	1.4	0.5	1.2	1.1	0.5
Total	1.5	1.5	0.5	1.4	1.3	0.5

in 83% and sugar as candy – in 85% of mothers. Nevertheless, the mothers reported the sugary drinks as caries-risk product less often. There were just 1.2% of mothers considered that fruits (apples) could be harmful for tooth (Table 3). Other causes of tooth decay were suggested, e.g. heredity (38%), general diseases (28%), pregnancy (24%), by nature (11%). 4.2% of mothers couldn't define in answer.

As to the question of what are the causes of bleeding gums, the following causal factors were reported: incorrect

Table 4. Percentages of mothers and schoolteachers who reported some sources of dental health information (more than one response permitted).

	Mothers n =1666	Teachers n =244
Dentist	72.6	71.7
Physician	2.4	9.0
Schoolteachers	10.8	7.4
Books	29.3	58.2
Television	47.5	63.1
Radio	10.3	17.6
Newspapers	30.4	34.8
Magazines	30.0	42.2
Relatives / friends	9.1	16.0
Mother	27.9	42.6
Other	7.7	7.8

Table 6. Percentages of mothers who reported high level of dental knowledge and attitudes, and perceived need of dental treatment in relation to location.

Statement	Rural n = 186	Urban n = 176	Total n = 362
	%	%	%
"Bacteria+sugar" are causes of tooth decay	53.2	82.9	62.3
Bacteria/dental plaque is cause of gingival bleeding	54.3	74.4	60.5
My child have high frequency of sweets consumption	18.3	11.9	15.2
It is possible to prevent the tooth lost	74.7	79.0	76.8
I need dental treatment a lot of teeth	37.6	30.1	34.0
My child need dental treatment a lot of teeth	37.1	31.8	34.5

toothbrushing (49%), dental plaque (44%), unhealthy diet (35%), general diseases (30%), heredity (9%) and 9 % of mothers didn't know of any causes of gingival bleeding. Table 4 demonstrates the sources of dental health information and the mother's attitudes towards prevention of dental diseases in children are shown in Table 5. It was revealed that the level of dental knowledge and attitudes to prevention was significantly higher for urban than for rural respondents (Table 6).

Self- assessment of oral health status.

In general, just 1.5% of mothers were sure that condition of their child's teeth was very good, 17% stated that the teeth were good, 47% remarked the satisfactory condition, 19% claimed that their child had poor or very bad teeth, and 4% of mothers couldn't define in answer. Concerning need of dental care, 66% of mothers perceived that their child needed much or at least some treatment against 28% reported no necessity in dental care, and 5% of mothers didn't answer. In additional self-assessment of oral health status 24% of mothers mentioned that their own teeth were in a good condition there was and no need of dental care, and 57% stated that their teeth were in a poor or bad condition and needed at treatment. The self-assessment of dental care need among children and mothers was higher in rural than in urban areas (Table 6).

Oral health practices.

Table 7 summarizes the dental care practices of children and their mothers from Minsk-city and Minsk area. In general, 45% of 6 years old children and 57% of their mothers answered that they brushed their teeth at least twice a day. Toothbrushing after breakfast was noticed just for 38% of children and 48% of mothers. Oral hygiene practices tended to be more positive in urban than rural areas. (Table 7). In Minsk-city and Minsk area, 78% of 6-years old children и 63% of mothers visited the dentists over the past

Table 7. Percentages of children and their mothers with certain oral health habits according to location (urban 176, rural 186, total 362)

Statement	Location	Children	Mothers
		%	%
Toothbrushing at least twice a day	Urban	56.8	59.7
	Rural	33.9	54.8
	Total	45.0	57.2
Toothbrushing after breakfast	Urban	56.8	58.5
	Rural	20.4	37.6
	Total	38.1	47.8
Dental visit within the past 12 months	Urban	76.7	60.8
	Rural	80.7	65.1
	Total	78.7	35.4

Table 9. Percentages of 6-years old schoolchildren by frequency of sugary foods/drinks consumption (as their mothers reported).

Foods/drinks	At least once a day	Several times a week	seldom/never
	%	%	%
Milk with sugar	7.8	8.2	83.9
Soft drinks	3.1	15.9	81.0
Fruit sugary drinks	23.0	31.3	45.9
Sweet fast breakfast (corn)	5.2	12.2	82.4
Candy	15.8	31.8	51.2
Chocolate	4.0	19.2	76.7
Chewing gum with sugar	1.8	9.7	88.4
Ice cream	8.1	33.9	57.9

twelve months. In republican level these data present as 74% and 62% respectively. Table 8 demonstrates the results of bivariate analyses of dental knowledge and attitudes, self-assessment need of dental care and oral health practices of children in relation to dental visiting habits of the mothers. Data of carbohydrate food consumption frequency of 6-years old schoolchildren (based on their mothers reports) presents in Table 9. The results of bivariate analyses of dental knowledge, positive dental attitudes and practices of mothers according to educational level are presented in Table 10. It was dedicated that mothers with background of high education tended to have more positive dental knowledge and attitudes, performed regular own oral health practices, helped their children toothbrush, tried to restrict of sugar use and made for oral health habits formation in general (Oable 10).

Dental knowledge and attitudes of primary school teachers

There were no significant differences in answers given by teachers according to urbanization. In total, 59% of schoolteachers considered that complex of "bacteria+sugar" was a cause of tooth decay, 55% stated that it was "bacteria", 36% related caries with "sugar". However, negative effect of sugar was reported in 89% and sugar as candy – in 91% of teacher's answers (Table 3). Nevertheless, just 2.5% of teachers stated any possible harmful influence of sugary fruits (apples), the same tendency was found out in response to question about soft drinks (Table 3). Other causes of tooth decay were mentioned, e.g. heredity (48%), pregnancy (27%), general diseases (27%), by nature (11%). 1% of teachers were not aware in factors related to caries.

With respect to the question about gingival bleeding, the following risk factors were given: incorrect toothbrushing (66%), dental plaque (61%), general diseases (51%), unhealthy diet (45%), heredity (20%), mixing hot and cold foods (16%), and 3.3% of teachers didn't know of any causes of gingival bleeding. Table 4 demonstrates the

Table 8. Percentages of mothers who reported positive attitudes in relation to frequency of dental visits.

Statement	Regular dental visit of mothers	Irregular dental visit of mothers
	n = 1431 %	n = 235 %
"Bacteria+sugar" are causes of tooth decay	48.5	37.9
Bacteria/dental plaque is cause of gingival bleeding	44.6	38.7
My child have high frequency of sweets consumption	6.4	7.2
I brush my child's teeth each day	4.2	3.8
I check my child's teeth after brushing	14.3	8.9
I teach my child the toothbrushing	16.6	13.6
I know how many teeth need for dental treatment	69.6	63.4
Healthy teeth are very important for general health	87.6	63.0
It is possible to prevent the teeth lost	76.0	57.0
I brush my teeth every day	89.4	68.9
I use dental brush, paste and floss for oral hygiene	17.5	8.5

Table 10. Percentages of mothers who reported positive attitudes and high dental knowledge in relation to level of education.

Statement	Low	Medium	High	Total
	n = 31	n = 1054	n = 577	n = 1661
	%	%	%	%
"Bacteria+sugar" are causes of tooth decay	43.3	45.0	51.5	46.9
Bacteria/dental plaque is cause of gingival bleeding	46.7	43.2	45.1	43.8
My child have high frequency of sweets consumption	16.0	5.8	7.2	6.5
I brush my child's teeth each day	10.0	4.3	3.8	4.1
I check my child's teeth after brushing	10.0	12.7	15.3	13.6
I teach my child the toothbrushing	0	17.7	14.9	16.2
I know how many teeth need dental treatment	70.0	71.7	66.2	68.7
Healthy teeth are very important for general health	46.7	84.0	90.1	84.1
It is possible to prevent the teeth lost	53.3	72.2	77.0	73.3
I brush my teeth every day	50.0	86.2	90.0	86.5
I use dental brush, paste and floss for oral hygiene	13.3	12.3	24.6	16.3

sources of dental health information. The teacher's attitudes towards prevention of dental diseases in children are showed in Table 5. Accordingly, 88% of teachers had high knowledge about sugar and caries, 93% had positive attitudes towards oral hygiene practices, 88% were aware on profit of fluoride using. Furthermore, 73% of primary school teachers emphasized that teachers should instruct children in dental health practice, 88% remarked positively on the statement that teachers should explain the causes of tooth decay and bleeding gums to children. In average, each school-teacher declared the implementation at least 2 dental health lessons over the past year.

DISCUSSION

Based on structure of survey, sampling design and high rate of participants the results of the present epidemiological study may be considered representative of Belarus. According to WHO European goals, at least 50% of 6 years old children should be free of dental caries and average DMFT should be no more than 2 for 12 years old children. The actual level of caries experience in 12-years old children in Belarus (DMFT=2.7) is higher than the WHO EURO goal to be attained by the year 2000 (Peterson et al., 1994; World Health Organization, 1991). The need of dental care was demonstrated by distribution of D-component (0.9) that consisted 1/3 of total caries index (DMFT) in age group of 12-years old children. Furthermore, the proportion of children free of dental caries is remarkably low, 7% for age 6 and 15% for age 12. Thus, the results of epidemiological study demonstrate that prevalence and intensity of dental caries experience in Belarus are enough high. It could be explained by many factors, i.e. changing lifestyles of population, inadequate use of dental health services, lack of family support in dental health care and oral health habits formation in children, high frequency of carbohydrates food consumption (nutrition patterns), incomplete awareness about posi-

tive effect of fluoride toothpaste using.

In present study the interrogation of adults - primary school teachers and parents - those are responsible for children life style behavior and habits was performed for assessment of the social factors with relation to children dental health. It was found the traditional incorrect explanations of oral diseases, e.g. pregnancy, general diseases, inheritance, by nature, mixing of hot and cold food. As to the question about prevention of dental caries, the majority of mothers stated the necessity of toothbrushing whereas such practice was less often noticed for prevention of gingival bleeding. The level of knowledge about harmful effect of hidden sugar was significantly low among the mothers. The results showed disparity between dental knowledge and oral health practices.

Furthermore, it was detected that mother's dental attendance pattern may influence their children's dental health and attendance and such relation was confirmed by other reports on child oral health behavior in other countries [Petersen et al., 1995; WHO, 2000; Kaivusilta L. et al. 2003; Rajab L.D. et al. 2002; Taani D.S. et al. 2003]

In the light of high prevalence of dental caries observed in children, mothers gave the enough realistic self-assessment of own and their children dental status.

CONCLUSIONS

The family is responsible for children life style behavior and habits and represents the primary information about oral health. One way to contribute increasing of oral health awareness of children would provide the up-to-date oral health information, education and motivation of parents. At the same time, the primary schools have great potential for children oral health habits formation due to considerable time are spent in school by children. Results of present investigation show that adult's oral health habits and level of dental knowledge are key information in realization of children oral health programme.

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Received: 15 03 2004
Accepted for publishing: 25 05 2004