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## The analysis of the oral hygiene habits among Polish children

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### ABSTRACT

**Introduction:** The frequency of dental caries among Polish children is higher than in surrounding high development countries at comparable latitude. To reduce the prevalence of the carries required is sufficient level knowledge and oral regimen maintaining habits among both - children and their parents. This article is a questionnaire-based analysis of oral hygiene practice among school-aged children.

**Material and methods:** The single-choice survey was performed on 76 children between 7 and 16 years old, living in the Upper Silesia region of Silesian Voivodeship in Poland. Responders have been divided into three groups (group A - 7-9 years old children, group B - 10-12 years old, group C - over 13 years old). Questionnaire for groups A and B contained 14 questions, while one for children from group C - 12.

**Results:** The results of the survey indicate insufficient intentness of children in processes of keeping proper hygiene in the oral cavity and lacking involvement of parents in the control of oral hygiene of children. The overhead translates into in the future for increased caries presence among Polish children.

**KEYWORDS:** oral hygiene, habits, children oral hygiene behavior, toothbrushing, parents involvement, prophylaxis

## INTRODUCTION

Dental caries is a common transmission, chronic disease of the oral cavity, widespread globally among children and adults (1). This disease leads to the destruction of hard tissues of teeth, even cause their loss. The development of caries is multi-factorial and requires adequate predispositions of the host, microbes, diet rich in fermentable sugars and time. (1,2,3)

The oral cavity is a complex ecosystem in which there exist over 250 microbial species. Tooth surfaces are a specific environment to which bacteria can adhere and create a functionally-organized biofilm - the dental plaque. (2,3) Acidogenic bacterias, during fermentation dietary carbohydrates, produce acids that cause dissolution and loss of dental hard tissues. However, if there is a balance between the process of demineralization and remineralization - no carious change occurs. Imbalance in these processes leads to the formation of a cavity. (3,4) The oral cavity's bacteria, which produce acids and initiate caries, including *Streptococcus mutans*, while *Lactobacillus spp.* rather participate in the progression of the existing lesion (5,6).

The magnitude of the problem with caries prevalence among the Pole is huge, what is proven in the available researches. *Olczak-Kowalczyk et al.*, examined respectively 1,836 subjects (2008) and 615 (2015) 15-years-old subjects living in Poland. In both years 94% of the patients were qualified as caries-affected. The alarming is the lack of reduction of the prevalence of caries in those 7 years among Polish adolescents. (7) *Staszczuk et al.*, also studied the prevalence of caries in Polish children from the Małopolska province. Among 5-years-old children 74.9% of them were diagnosed with caries. Even worse results were obtained 7-year-old and 12-years-old with the caries frequency of 84.9 and 81.8%, respectively. (8) Research conducted by the Polish Ministry of Health shows that decay has up to 90.1% of children aged 7 years and 99.1% adolescents up to 18 years of age. The above obtained data shifts into the condition of the oral cavity amongst adults - according to studies up to 99.9% adults between 34 and 44 years, now or in the past experienced caries, and only 5.4% of them have their own full dentition. (9,10)

## AIM OF THE STUDY

Aim of the study was analysis of oral hygiene habits among children between 7 and 16 years old, based on the author's questionnaire.

## MATERIAL AND METHODS

The group of respondents included 76 school-age children. The questionnaire took place in a primary school in the Upper Silesia region of Silesian Voivodeship in Poland. The study involved 30 children between 7 and 9 years old (group A), 23 between 10 and 12 years old (group B) and 22

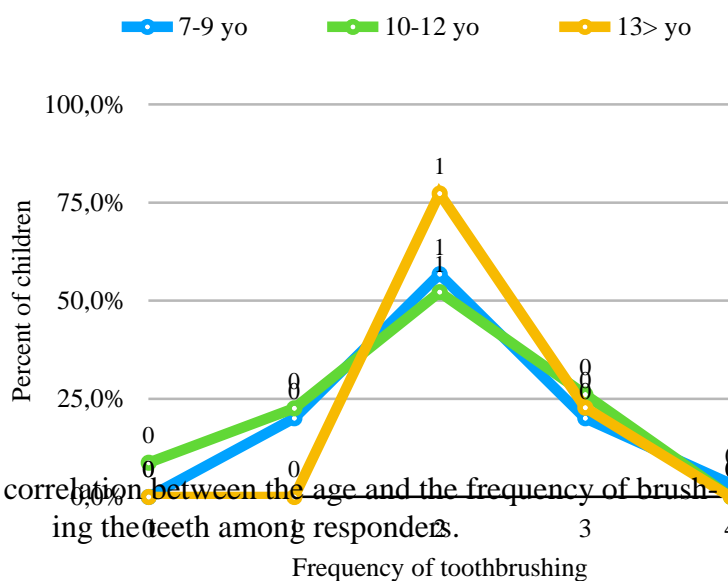


Diagram 1. The correlation between the age and the frequency of brushing the teeth among responders.

children over 13 years old (group C).

The questionnaire consisted of 14 questions for children between 7 and 12 years of age and 12 questions for children over 13 years of age. The results of the survey are summarized in the tables (Tab.1,2,3,4)

## SUVERY ANALYSIS

Due to caries widespread, a lot of effort is still put in the prevention of dental caries. (1,11) A common method of preventing tooth decay is toothbrushing - according to recommendations - 2 minutes, 2 twice a day - with the use of adequate pastes. (11,12) Most, as many as 96.2% of questionnaire responders brush their teeth every day with varying frequency. In the group of children between 10 and 12 years old, as the only one, there were children who did not brush their teeth at all. In children between 7 and 12 years, over 50% of children brush their teeth at least twice a day. The highest percentage of children brushing teeth twice a day was observed in group C, also the least of all children do not brush their teeth anytime or wash them once a day.

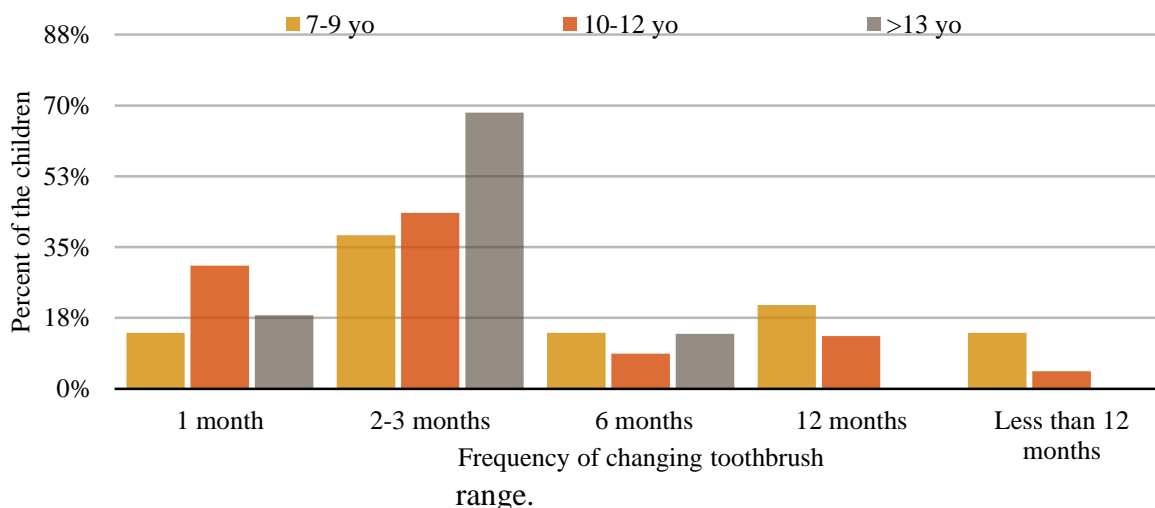
Most, as many as 86.8% of children, brush their teeth in the morning as regularly. It is worth noting that with increasing age, children more often remember to brush their teeth in the morning - among 7-9 years old 66.7% of children remember to brush their teeth in the morning, while in the group of children over 13 - up to 95,5 %! However, with regard to evening teeth brushing, fewer children over the age of 13 always remember to brush their teeth than younger children.

Questions	All	Children between 7-9 yo (group A)	Children between 10-12 yo (group B)	Children up to 13 yo (group C)
Do you brush your teeth in the morning?				
Always	76,3%	66,7%	73,9%	95,5%
I rarely forget (1-2 times a week) about it	10,5%	23,3%	4,3%	0,0%
I often forget about it	7,9%	10,0%	13,0%	0,0%
I never brush my teeth in the morning	5,3%	0,0%	8,7%	4,5%
Do you brush your teeth before going to bed?				
Always	62,7%	69,0%	60,9%	59,1%
I rarely forget (1-2 times a week) about iy	20,0%	13,8%	17,4%	31,8%
I often forget about it	13,3%	13,8%	17,4%	9,1%
I never brush my teeth before going to bed	4,0%	3,4%	4,3%	0,0%

Table 1. Correlation of age with the frequency of brushing teeth.

To clean teeth precisely, the right toothbrush should be used - according to the literature it has to be changed every 3-4 months. Flossing and rinsing the mouth with special liquid is also used so removing dental plaque and preventing its formation could be more efficient (13,14). According to the survey, also with the age of the children increases knowledge about how often should they change their toothbrush. Each 2-3 month's used toothbrush should be replaced with a new one. Most of the children from the C group do it. Children between 7 and 12 years old change brush less frequently than eldest children.

Figure 1. The relationship between the frequency of toothbrush changes depending on the age



According to the outcomes of the survey, significantly more children over 13 years old use mouthwash than children between 7 and 9 years old. On the other hand, plaque staining preparations are slightly more popular among children between 7 and 9 years of age than older ones. Most of the children know that after evening toothbrushing, should not eat or drink sweetened drinks. Interestingly, the older children, more often response in the survey that they can eat something after evening toothbrushing. 100% of children between 7 and 9 years old, participating in the questionnaire, knew that after brushing their teeth they cannot eat anything, whereas only 13.8% of children from the group above 13 years of age. While asking if you can drink sweet drinks after evening cleaning there was a reverse tendency and older children showed the greatest awareness. As many as 96.1% of children realize that the flavored water contains sugar.

Question	All	Group A	Group B	Group C
Do you use mouthwash?				
Yes	44,7%	40,0%	43,5%	59,1%
No	55,3%	60,0%	56,5%	40,9%
Do you use plaque staining preparats?				
Yes	14,5%	21,7%	13,0%	13,6%
No	85,5%	78,3%	87,0%	40,9%
Can you eat something after the evening toothbrushing?				
Yes	7,9%	0,0%	13,0%	18,2%
No	92,1%	100,0%	87,0%	81,8%
Can you drink sweet beverage after the evening toothbrushing?				
Yes	10,5%	6,7%	13,0%	18,2%
No	89,5%	93,3%	87,0%	81,8%
Does the flavored water contain sugar?				
Yes	96,1%	93,3%	95,7%	100,0%
No	3,9%	6,7%	4,3%	0,0%

Table 2. The use of additional hygiene accessories and knowledge of dietary habits in individual groups.

The role of parents in introducing and propagating the correct behavior of children, including oral hygiene habits, is undeniable. In over 60% of children, who took the part in the survey, parents do not remind to brush their teeth. The parents were the least likely to reminding about brushing teeth to the oldest children - from group C. Parents more often mention about toothbrushing in children between 10 and 12 years of age, than those between 7 and 9 years of age. Over 95% of parents set up dental visits for their children between 7 and 9 years old, while only 68.2% of children over 13 years of age. Fear of dentists concerns 26.1-27.6% of children between 7 and 12 years of age, and up to 41% of children over 13 years of age.

Question	Group A	Group B
Does an adult help you in cleaning your teeth?		
Yes	7,1%	5,6%
No	92,9%	94,4%
Does any adult check if you have cleaned your teeth well after toothbrushing?		
Yes	37,9%	31,6%
No	62,1%	68,4%

Table 3. Involvement of parents in hygienic practices of children depending on children's age.

Throughout the survey, 2 questions were addressed only to children between 7 and 12 years of age. The vast majority of parents of children aged 7 to 12 do not help their children in brushing their teeth. 37.9% of parents of children between from group C check if teeth are clean after toothbrushing, in children between 10 and 12 years of age this percentage is even smaller and amounts to 31.6%.

Question	All	Group A	Group B	Group C
Do parents remind you about brushing your teeth?				
Yes	39,5%	46,7%	60,9%	9,1%
No	60,5%	53,3%	39,1%	90,9%
Do the visiting dentist scare you?				
Yes	30,3%	27,6%	26,1%	40,9%
No	69,7%	72,4%	73,9%	59,1%
Do parents arrange dental check-ups for you?				
Yes	81,6%	96,7%	82,6%	68,2%
No	18,4%	3,3%	17,4%	31,8%

Table 4. Involvement of parents in controlling tooth cleanliness of children depending on children's age.

## DISCUSSION

According to the recommendation of ADA (The American Dental Association), every child should brush teeth twice a day. Toothbrushing is a basic activity in oral hygiene, 96,2% children, who response our survey do it at least once a day. Similar results obtain *Ozbek et al.*, in Turkey, while study children (n=126), in primary school, and their parent's hygienic behavior - 96,8% are brushing their teeth (11,15).

In the opposite to results *Ozbek et al.*, in who research only 3.2% of children in primary school use mouthwash additionally - in our study, the proportion of children of the same age using

mouthwash is between 40-43.5%. (15,16) Among children between 10 and 12 years old - 43.5% of them use mouthwash. Similar to our results obtain *Mielnik-Błaszczak et al.*, who examined 13-year-olds from cities, obtaining presented results - 32% boys 32%, and 36% of girls use mouthwash. (19)

Cleanliness of teeth after brushing was controlled by the parents in 37.9% of children between 7 and 9 years of age, and 31.6% of children between 10 and 12 years - this is covered by the results of *Ozbek et al.*, (37.5%) (15).

Almost 40% of questionnaire responding children show fear of the dentist. The least fear shows the eldest children from group C. In the group of children between 10 and 12 years of age, and almost 61% of children manifest fear of visiting a dentist. According to research by *Kakkar et al.* the incidence of dental anxiety was 42% in 10-14 years old children, while *Wu et al.*, identified dental fear among 33.1% of children examined between 9 and 13 years old. (18,19)

On average, only 50.7% of the children who completed the survey, change toothbrush every 3 months. In children between 10 and 12 years, it was only 43.5% of the subjects. Similar results obtain *Mielnik-Błaszczak et al.*, - when studying the frequency of changing toothbrush among 12-years-old children - depending on the sex and place of residence, the result fluctuated between 43-69%. (17)

Only 7.1% children between 7 to 9 years, experienced support in brushing teeth from adults. *Sandström et al.* Studied the effectiveness of plaque removing during toothbrushing among children and found that most children do not remove the plaque properly - up to 10 years parents should help children brush their teeth. (14) Control after tooth brushing is carried out by 37.9% of parents of children from group A and 31.6% of parents of children from group B.

#### CONCLUSION

Oral hygiene habits among Polish children between 7 and 16 years, unfortunately, cannot be considered as an example. Among the youngest children occurs lack of parents control during everyday hygiene practices, which results in uneducated or incorrect hygienic habits in the oldest children. Very disturbing is the fact that in children over 13 years old, only less than 70% of children, parents arrange a dental appointment. The result is one of the highest rates of caries in Europe. It is necessary to reform and intensify dental preventive programs among Polish children, leading to a better knowledge of children and parents.

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