

Oral prophylaxis and hygiene in school children – the parents' knowledge

Joanna Szybajło¹, Magdalena Szalewska¹, Alicja Szybajło², Michał Wielicki³, Elżbieta Pietryka-Michałowska⁴, Andrzej Bożyk⁵, Dorota Wójcik⁶, Artur Wdowiak⁷, Agnieszka Anusiewicz⁸, Leszek Szalewski⁵

¹ Student Research Group at the Dept. of Prosthodontics, Medical University of Lublin, Poland

² MD Student, Medical University of Gdansk, Poland

³ MD Student, Medical University of Lublin, Poland

⁴ Dept. of Mathematics and Medical Biostatistics, Medical University of Lublin, Poland

⁵ Dept. of Prosthodontics, Medical University of Lublin, Poland

⁶ Chair and Department of Paedodontics, Medical University of Lublin, Poland

⁷ Diagnostic Techniques Unit, Faculty of Health Sciences, Medical University in Lublin, Poland

⁸ Independent Public Clinical Hospital No. 4 in Lublin, Poland

Abstract

Introduction: Despite the parents' awareness concerning the aetiology of caries and its prophylaxis in children, the incidence of the disease in children remains high. According to the data by the Ministry of Health¹ concerning the period between 2013 and 2015, the main problems concerning oral health in Poland include: high incidence and severity of early caries, as over 50% of all 3-year-old children are affected by caries, and approximately 5 teeth are affected by caries in 5-year-old children.

Aim of the study: The aim of the study was to evaluate the knowledge of oral prophylaxis and hygiene among the parents of early school-age children.

Material and methods: The Authors conducted a questionnaire study on 61 parents of children aged 6-9 from the Pomeranian Voivodship.

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Corresponding address:

Andrzej Bożyk
Department of Dental
Prosthetics of Medical
University of Lublin
ul. Karmelicka 7
20-081 Lublin
drandzejbozyk@gmail.com

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Dental caries, dental prophylaxis, school age population, oral hygiene

Results: All parents believe that maintaining oral hygiene is important. The parents come to see a dentist: due to toothache – 60.66% (n=37), for a check-up appointment – 34.43% (n=21), in cases of doubts concerning the child's oral health – 4.915 (n=3). The procedures performed most frequently in children include: fissure sealing – 45.90% (n=28), fluoride varnish application – 19.67% (n=12). The remaining group of parents did not come for oral prophylaxis procedures – 34.43% (n=21).

Conclusions: Mandatory counselling concerning oral hygiene, professional oral prophylaxis, and dietary habits should be provided to the parents in order to prevent caries development.

Introduction

Even though the parents' knowledge on the reasons for caries development and caries prophylaxis becomes higher, the incidence of caries in children remains high. According to the data provided by the Ministry of Health¹ concerning the period between 2013 and 2015, the main oral health issues in Poland include: high incidence and severity of early caries, as over 50% of all 3-year-old children are affected by caries, and approximately 5 teeth are affected by caries in 5-year-old children. The percentage of children aged 5 without caries does not exceed 20%. That is why educating the parents constantly by dentists, paediatricians, nurses on how important it is to maintain appropriate oral hygiene, to keep good dietary habits, and to come to the dentist on a regular basis, is vital. It may seem unnerving, however, that, according to the Ministry of Health, [1] questionnaire studies showed that over 60% of mothers of 3-year-old children reported that they had never been to see a dentist with the child. Such data is alarming and should motivate the organs responsible for paediatric health to make more effort and seek ways of getting to young parents. It is important to talk about neonatal oral health in antenatal classes by midwives, gynaecologists, and paediatricians, and to introduce health education in schools as early as possible, as, according to the study by Hooley et al. [2] the incidence of Early Childhood Caries (ECC) is influenced by: parental child feeding practices (such as breastfeeding and bottle-feeding), the behaviour of the parents (tooth brushing, dental appointments), oral health of the parents, their characteristics (age, mental state, smoking), and their knowledge.

Material and methods

The authors conducted a questionnaire study among 61 parents of children aged 6-9 from the Pomeranian Voivodship.

The age of the parents of the studied children was 25.0-57.0 years, and 50% of the parents were 36.0 years old or younger (Me=36.0). Mean value for age was 36.23 ± 6.21 years. The questionnaire was filled in by 54 (88.52%) females and 7 (11.48%) males. The structure of education in the parents was, as follows: 49.18% (n=30) had secondary education; 32.79% (n=20) – higher education; 13.11% (n=8) vocational education; 4.92% (n=3) elementary education.

The majority of parents (80.33%; n=49) inhabited towns with less than 20 000 inhabitants, 11.48% i.e. n=7 inhabited cities of up to 100 000 inhabitants, and 8.20% (n=5) of them – villages.

The majority of parents had two children – 67.21% (n=41), 19.67% (n=12) had one child, 9.84% (n=6) had three children, whereas 1.64% (n=1) had four children, and 1.64% (n=1) had five children.

The age of the eldest children was 6.0-31.0 years, whereas 50% of them was max. 11.0 years old (Me=11.0). Mean value for the age of the eldest child was 11.93 ± 5.22 years.

Results

All parents believe that maintaining oral health is important. Definitely yes – such a statement was given by 80.33% (n=49) participants, and “yes” – by 19.67% (n=12) of the parents.

The statement of “definitely yes” was chosen by 100.0% of males and 77.78% of females. The differences are not significant statistically (Pearson’s $\chi^2 = 1.94$; $df=1$; $p=0.16$).

Neither the level of education of the parent (Pearson’s $\chi^2 = 0.68$; $df=2$; $p=0.71$), nor the place of residence (Pearson’s $\chi^2 = 2.73$; $df=2$; $p=0.25$) influenced the answer in a statistically significant way.

The methods of maintaining oral hygiene include: 100% ($n=61$) – tooth brushing; 34.43% ($n=21$) flossing; 39.34% ($n=24$) – using a mouth rinse; 29.51% ($n=18$) chewing gum after meals.

Oral hygiene maintenance methods were related neither to the sex (Pearson’s $\chi^2 = 1.43$; $df=2$; $p=0.49$), level of education (Pearson’s $\chi^2 = 6.31$; $df=4$; $p=0.18$), nor to the place of residence (Pearson’s $\chi^2 = 4.71$; $df=4$; $p=0.32$).

The parents come to see the dentist due to: toothache – 60.66% ($n=37$), for a check-up appointment – 34.43% ($n=21$), in cases of doubts concerning the child’s oral health – 4.915 ($n=3$).

Along with an increase in the level of education, a decrease is observed in the number of children who come to see a dentist due to toothache (from 72.73% to 50.0%), and an increase is observed in the number of children who came for check-up appointments (from 27.27% to 40.05). The observed differences are not statistically significant (Pearson’s $\chi^2 = 2.14$; $df=3$; $p=0.54$).

The reasons for coming to the dentist are influenced neither by the sex of the parent (Pearson’s $\chi^2 = 2.14$; $df=2$; $p=0.34$) nor by the place of residence (Pearson’s $\chi^2 = 1.02$; $df=4$; $p=0.91$).

Most frequently, the children use manual toothbrushes – 67.21% ($n=41$), the remaining group use electric toothbrushes – 37.79% ($n=20$).

The choice of the toothbrush is influenced neither by the sex of the parent (Pearson’s $\chi^2 = 0.06$; $df=1$; $p=0.80$), nor by the place of residence ($\chi^2 = 1.84$; $df=2$; $p=0.40$).

However, the parent’s level of education is a significant variable. Among the children whose parents have elementary or vocational education, the patients use manual toothbrushes to brush the teeth, whereas the frequency of electrical toothbrush usage increases along with an increase in the parent’s level of education from 36.67% to 45.00%. The observed differences are statistically significant (Pearson’s $\chi^2 = 6.92$; $df=2$; $p=0.03$).

According to the parents, the most frequently performed procedures include fissure sealing – 45.90% ($n=28$) followed by fluoride varnish application – 19.67% ($n=12$). The remaining parents do not come for oral prophylaxis procedures – 34.43% ($n=21$).

The choice of oral prophylaxis procedure was related neither to the parent’s sex (Pearson’s $\chi^2 = 2.76$; $df=2$; $p=0.25$) nor to the place of residence (Pearson’s

Fig. 1.

Reasons for coming to see a dentist, classified according to the parents’ education

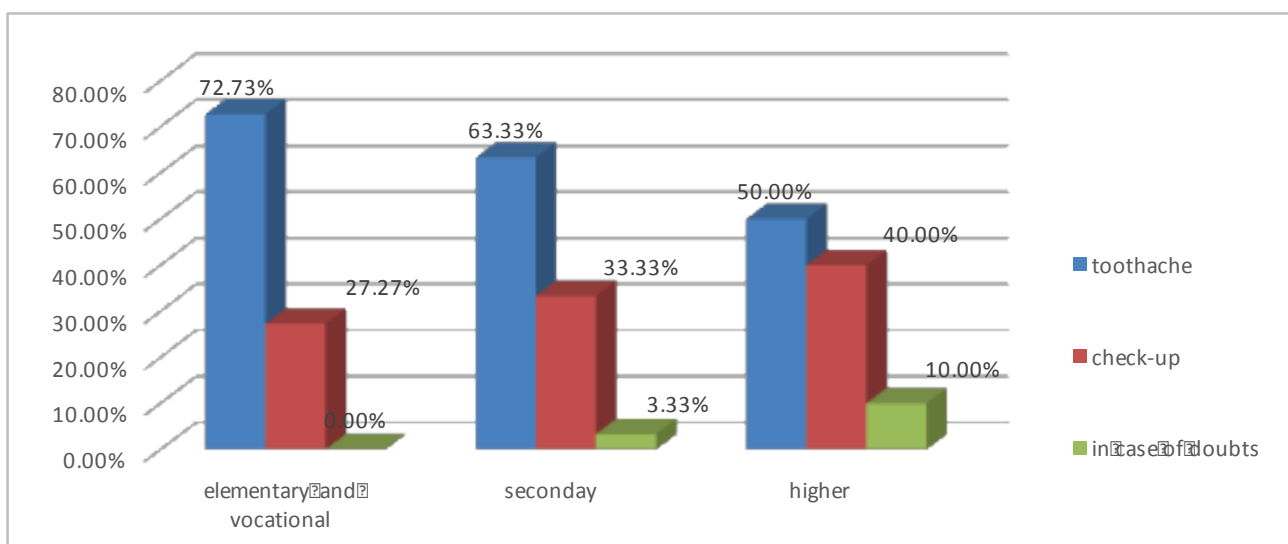
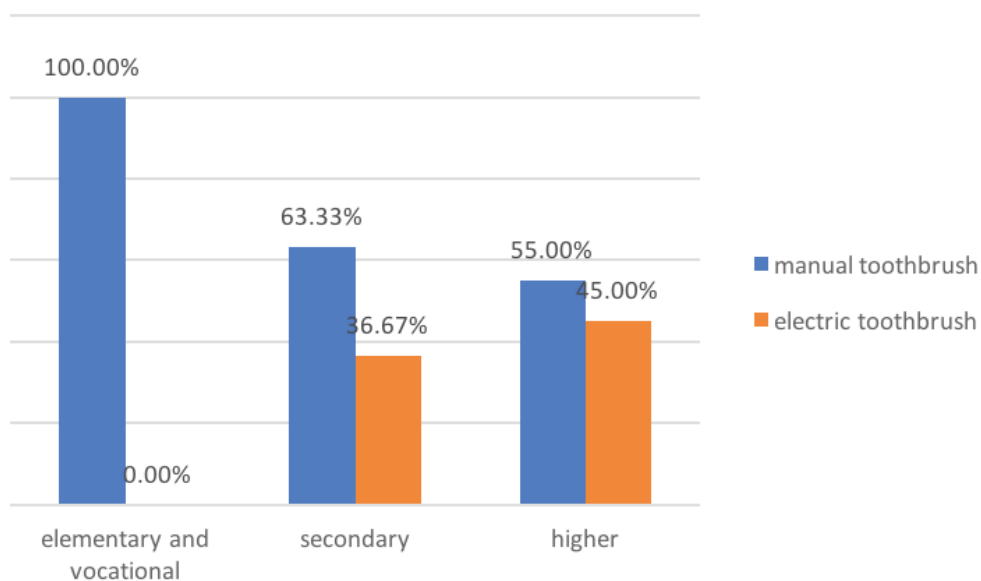


Fig. 2.

The relationship between the type of the toothbrush used and the parents' education.



$\chi^2=5.66$; $df=4$; $p=0.23$) or the level of education (Pearson's $\chi^2=3.11$; $df=4$; $p=0.54$).

According to 55.74% ($n=34$) of the parents, the child brushes the teeth three times a day or more, 36.07% ($n=22$) of the children brush their teeth twice daily, and 8.20% ($n=5$) of children brush once daily or even less frequently.

The frequency of tooth brushing was influenced neither by the parent's sex (Pearson's $\chi^2=2.38$; $df=2$; $p=0.30$) nor by the level of education (Pearson's $\chi^2=4.42$; $df=4$; $p=0.35$) or by the place of residence (Pearson's $\chi^2=2.51$; $df=4$; $p=0.64$).

Children brush their teeth to maintain health – such a response was given by 85.25% ($n=52$) of the patients. The remaining 14.75% ($n=9$) believed that the children do so because they feel that it is their duty.

The choice of response was influenced neither by the parent's sex (Pearson's $\chi^2=1.37$; $df=1$; $p=0.24$) nor by the level of education (Pearson's $\chi^2=0.37$; $df=2$; $p=0.83$) or by the place of residence (Pearson's $\chi^2=0.96$; $df=2$; $p=0.62$).

The majority of children brush their teeth on their own – 90.17% ($n=55$), whereas 9.84% ($n=6$) of children were helped by the parents.

Following responses to the question: „How often does the child come to see a dentist?“ were acquired: in 18.03% ($n=11$) of cases – the child does not come

to see a dentist; 42.62% ($n=26$) – the child comes once every 6 months; 27.87% ($n=17$) – the child comes once a year or less frequently; 11.48% ($n=7$) the child comes to see a dentist in case of a toothache.

The frequency of dental appointments was influenced by the level of education in a statistically significant way (Pearson's $\chi^2=18.10$; $df=3$; $p=0.006$)

Children whose parents have higher and secondary education come to see a dentist more frequently, and the difference is statistically significant. On the other hand, a large percentage of children whose parents have elementary or vocational education do not come to see a dentist.

The frequency of dental appointments is influenced neither by the sex (Pearson's $\chi^2=3.65$; $df=3$; $p=0.30$) nor by the place of residence (Pearson's $\chi^2=2.54$; $df=6$; $p=0.86$).

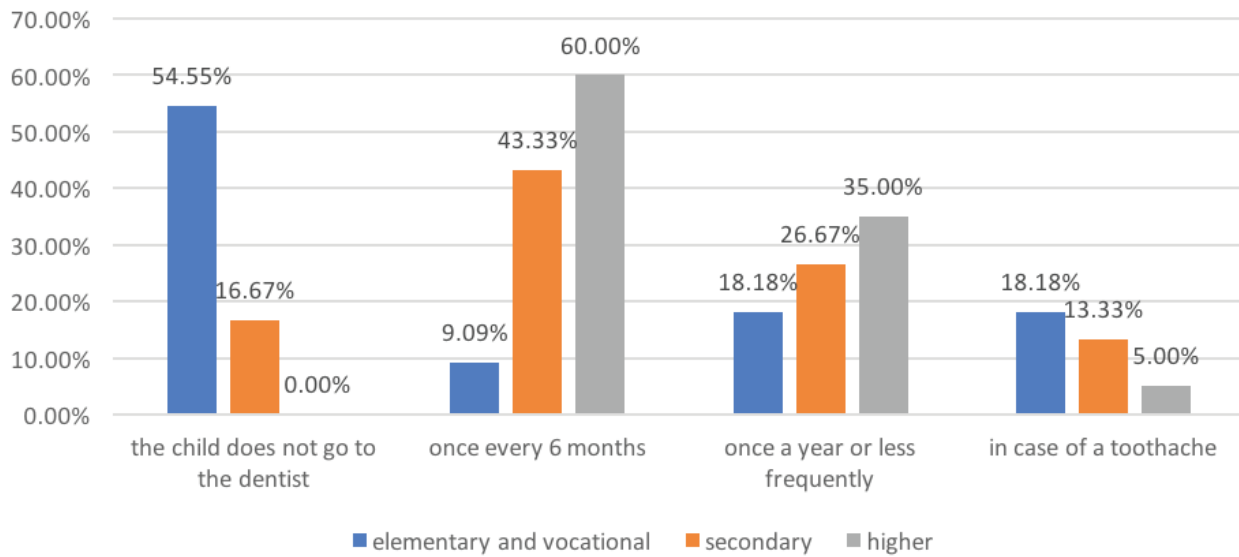
The parents attempt to influence oral prophylaxis in the children by: keeping appropriate diet – 54.10% ($n=33$); avoiding sweets – 31.15% ($n=19$); limiting the intake of fruit juices – 6.56% ($n=4$); or in that the child eats tooth cleansing foods – 5.

Three categories were selected for further analysis: keeping diet, avoiding sweets, and other methods.

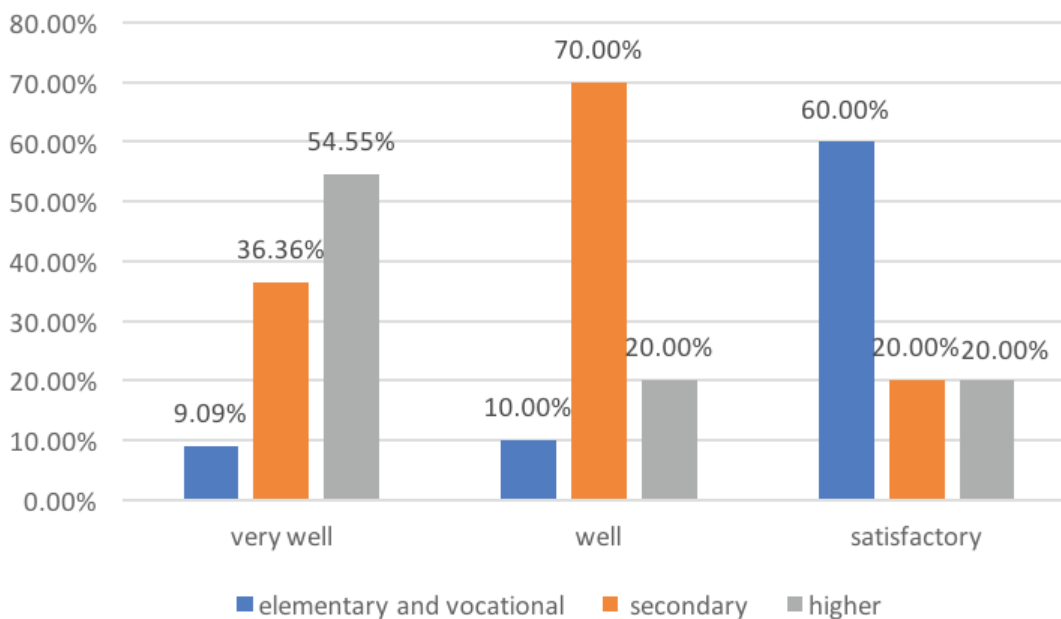
Statistical analysis that was performed showed that oral prophylaxis in the child is influenced neither by the parent's sex (Pearson's $\chi^2=3.35$; $df=2$; $p=0.19$)

Fig. 3.

The frequency of coming for dental appointments

**Fig. 4.**

The assessment of the child's dentition



nor by the level of education (Pearson's $\chi^2=7.61$; $df=4$; $p=0.11$) or by the place of residence (Pearson's $\chi^2=1.56$; $df=4$; $p=0.82$).

According to the parents, the state of their child's dentition is: very good in 26.23% ($n=16$) of the cases; good in 47.54% ($n=29$) of the cases; satisfactory in 26.23% ($n=16$) of the cases.

There was a statistically significant influence of the level of education on the evaluation of the child's dentition (Pearson's $\chi^2=23.71$; $df=4$; $p=0.00009$). There was a statistically significant difference in the

assessment of the child's dentition, i.e. the parents with higher and secondary education assessed the child's dentition better.

The assessment of the child's dentition was influenced neither by the sex of the parent who filled in the questionnaire (Pearson's $\chi^2=0.60$; $df=2$; $p=0.74$), nor by the place of residence (Pearson's $\chi^2=3.36$; $df=4$; $p=0.50$).

Fear of dental appointments was felt by 27.87% ($n=17$) of all participants. The remaining 72.13% ($n=44$) did not experience the feeling.

No statistically significant correlation between the children's and parents' fear of dental appointments was observed (Pearson's $\chi^2=0.28$; $df=1$; $p=0.87$).

Discussion

Awareness of the parents concerning dental caries prophylaxis is extremely important, and dental professionals should provide detailed information to the parents and older children concerning caries prophylaxis and encourage them to have professional and domestic oral prophylaxis procedures performed. Tooth brushing is one of the most important methods of caries prophylaxis. According to Cameron, [3] children should brush their teeth twice daily using fluoride containing toothpaste, and should be supervised by the parents until the age of 8-10. Cameron also underlines that tooth brushing should be performed at least once daily in order to reduce caries risk. Prakabar J. et al. [4] in their study performed on Indian children aged 3-17 showed that 60.3 % of children brushed their teeth only once daily, and 39.7% – twice daily. As much as 100% of the subjects, irrespective of sex, used toothpaste, all girls used toothbrush, and 99.8% of boys used toothbrushes, and 0.2% used their fingers to cleanse the teeth.

Östberg et al. [5] conducted a study on children aged 3, 4, 5, and 6 years (± 2 months), and, in total, 271 children aged 3 and their parents took part in the study, as they filled in the questionnaire: – 52 parents (19%) reported that they brushed their child's teeth less frequently than twice daily, as many as 77 parents (29%) began tooth brushing at the age of 1 or more, and 36 patients (14%) said they gave their children sugary foods/drinks every day.

On the other hand, in our own study, more than half, i.e. 55.74% of the parents reported that their child brushed teeth three or even more times daily, 36.07% ($n=22$) reported brushing twice daily, and 8.20% ($n=5$) of participants reported brushing once daily or less frequently. The majority of children use a manual toothbrush – 67.21% ($n=41$), the remaining group uses an electric toothbrush – 37.79% ($n=20$). However, there may be some risk related to the fact that the parents who filled in the questionnaires

might not have given truthful responses because they would like to be seen as people who care for their children's oral health in an appropriate way.

It is very important in paediatric dentistry for the parents not to pass the fear of dental appointments on to the children. Nevertheless, in many cases it is difficult to achieve. Cameron³ underlines that the feelings of the parents and the siblings, as well as the dentist and the dental assistants, are conveyed to the child, and that is why it is so important to make the parents aware of their huge role that they play in preparing the child to the planned dental procedures. Paediatric dentists may use a variety of behavioural stress relieving methods, e.g. the modelling method in which the young patient's parent or the siblings may take part.

Coric et al. [6] conducted a study on children and their parents, in which the participants filled in the Corah Dental Anxiety Questionnaire (CDAS). They showed a statistically significant correlation between children's CDAS scores and both CDAS scores of the mothers ($r=0.32$, $P,0.001$) and the fathers ($r=0.19$, $P,0.05$). The use of multiple regression analysis showed a correlation only between the mother's CDAS Score and the child's CDAS Score. This may be attributed to the fact that the mothers' influence on the child's upbringing is more significant than the one of the fathers'. The mother's score ($\beta=0.34$, $P,0.001$) made it possible to predict (Regression analysis showed that only mother's results were predictive ($\beta=0.34$, $P,0.001$) of children's CDAS score ($F[2.106]=8.08$, $P,0.01$, $R^2=0.13$) the child's CDAS score ($F(2.106)=8.08$, $P,0.01$, $R^2=0.13$).

The author's own research showed that fear of the dentist was experienced by 27.87% ($n=17$) of the parents, whereas the remaining 72.13% ($n=44$) of the parents did not experience it. No statistically significant correlation between the parents' fear and the children's fear of dental appointment was observed (Pearson's $\chi^2=0.28$; $df=1$; $p=0.87$). This may be attributed to the fact that the study group was too small.

However, the study by D'Alessandro et al. [7] showed that the parent's fear of experiencing pain at the dentist's is the best tool for predicting the child's fear of the dentist, irrespective of the age and the sex.

Hooley et al. [2] in their systematic review wanted to describe e.g. what variables concerning the parents had been studied in relation to caries in children aged 0-6. Such behaviour patterns as tooth brushing and frequency of dental appointments may influence dental caries in children. The influence of tooth brushing frequency on the incidence of Early Childhood Caries was confirmed in 6 studies. However, such relationship could not be drawn from 13 other studies. Scientific reports may find a confirmation that the parents of children with high values of caries index exhibit fear of the dentist more frequently. Moreover, the authors also took the influence of diet into account, as the parents are responsible for it since the earliest age. The influence of frequent intake of sweet foods and beverages on the incidence of ECC was shown in as much as 21 studies.

The authors' own research showed that the parents' awareness concerning the influence of diet on the child's oral health is not satisfactory. More than 50% of the parents try to influence the child's oral prophylaxis by keeping appropriate diet. However, avoiding sweets was reported by 31.15% of participants who filled in the questionnaire. The smallest percentage of the parents enforces limitations on the intake of fruit juices.

Conclusions:

1. Children of parents with higher education come to dental appointments more frequently, come to see a dentist less frequently due to toothache, and use electric toothbrushes more frequently.

2. Mandatory counselling concerning oral hygiene, dietary habits should be provided to the parents in order to prevent caries development in early school children.

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