

## Determinants of the use of dental care of deciduous teeth in children – questionnaires

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### KEYWORD

dental care, children, deciduous teeth, questionnaires

### SUMMARY

**Introduction.** Nationwide epidemiological studies indicate that the need for tooth decay treatment is not sufficiently met despite the risk of multiple complications. Limited access to paediatric dental care and improper parental attitude towards deciduous teeth treatment may be the causes of neglect.

**Aim.** To define factors determining the use of dental care of deciduous teeth in children.

**Material and methods.** Parents of 4- to 10-year-old children attending a randomly selected primary school and kindergarten in Warsaw participated in the study. The respondents answered 21 questions concerning their socio-economic situation, the oral health of their children and previous use of dental care by their children. Descriptive statistics and Spearman's correlation coefficients were calculated for the analysed quantitative variables. Logistic regression analysis of statistically relevant correlations was performed (Statistica 13, statistical significance  $p < 0.05$ ).

The study was approved by the Bioethics Committee of the Medical University of Warsaw (no. AKBE 171/16).

**Results.** The analysis included 295 questionnaires. The majority of respondents (87.1%) were women with mean age of  $36.73 \pm 5.44$  years, who had children with mean age of  $7.31 \pm 1.96$  years. Nearly all respondents answered correctly to the questions concerning health awareness. A total of 74.2% of children had positive attitude towards dental appointments. It is more likely that parents will visit a dentist regularly if their child's first dental visit is before the age of 3 years (OR = 2.77), and the child is not afraid of doctors due to previous medical experience (OR = 0.24).

**Conclusions.** First dental visit before the age of 3 years, a lack of fear of doctors and positive attitude towards dentists have a significant impact on the frequency of dental visits.

### INTRODUCTION

Maintaining healthy deciduous dentition is necessary for the proper development of the masticatory system and healthy permanent dentition. Untreated deciduous caries may cause pain, difficulty chewing, malocclusions, speech disorders and infections (1-3). Periodontal infections in

deciduous pulpopathies may spread locally, causing e.g. osteitis, facial phlegmon or orbital tissue inflammation. They may also lead to recurrent pyrexia, brain abscess, bacterial endocarditis and even sepsis (1).

Nationwide epidemiological studies conducted as part of the project: "Monitoring of the Oral Health and Its

Determinants in the Polish population” have shown very poor health of deciduous dentition in preschool children. The incidence of caries in 3-year-olds was 53.8% in 2015 and 41.1% in 2017; up to 76.9% in 5-year-olds (2016), 81.6% in 6-year-olds (2018), and 89.4% in 7-year-olds (2016) (4-7). Early Childhood Caries (ECC) is still a pandemic disease with varying rates in different continents and countries. Data from the USA show higher caries rates compared to European countries. Tooth decay affects 40% of preschool children in the USA and only 12% in the UK. A number of publications point to high rates of dental caries in 3-4-year-old children: 36-85% in Asia, 38-45% in Africa and 22-61% in the Middle East (8).

Therapeutic and preventive dental needs are still very high in our country. Despite access to free paediatric dental care, the needs associated with caries treatment in primary teeth are met in only 7% of 3-year-olds and 15% of 5-year-olds (6, 7).

## AIM

The aim of the study was to identify factors determining the use of dental care in children with primary dentition.

## MATERIAL AND METHODS

Parents of 4-10-year-old children attending a randomly selected primary school (grades 0-3) and kindergarten in Warsaw participated in the study. The questionnaire included 23 questions to characterise the socio-economic status of respondents (gender, age, education, financial status), and their oral health knowledge (the relationship between caries of primary and permanent teeth, the necessary care of the primary dentition, the role of fluorides in prevention), as well as questions on the assessment of child's dentition and previous use of dental care (the child's first dental visit and its reason, the frequency of dental visits, the type of dental facility, referrals for dental appointments, avoiding dental visits and its reason, attitudes of dentists, dental pain experienced by the child, extractions). A pilot study to evaluate the questionnaire with the participation of parents reporting to the Department of Paediatric Dentistry of the Medical University of Warsaw was conducted before the study. This was, the final version of the questionnaire including 21 questions was developed.

Correctly filled questionnaires were included in statistical analysis. Descriptive statistics (means and standard deviations) and Spearman's correlation coefficients between the selected pairs of characteristics were calculated for the evaluated quantitative variables. Logistic regression analysis of statistically significant correlations was performed. Statistica 13 was used for the analyses; a significance level of  $p < 0.05$  was assumed.

The study was approved by the Bioethics Committee of the Medical University of Warsaw (no. AKBE 171/16).

## RESULTS

A total of 295 of 334 questionnaires completed by parents were included in the study. The characteristics of respondents are shown in table 1.

Table 2 shows health awareness of respondents and their attitude to dental treatment.

The study showed that the parents were aware of the need for dental appointments and the treatment of primary teeth, as well as of the role of fluoride in caries prevention (tab. 2). The majority (64.1%) of parents described the oral health of their children as good. According to respondents, dental pain was experienced at least 3 times in the previous year by 14 (4.7%) children. A total of 13 (4.4%) children have never been to a dental appointment (tab. 3). A total of 176 (59.7%) children attended their first dental visit during their first 3 years of life, including only 39 (13.2%) children who attended their first visit at the age of 6-12 months.

The use of dental care in children is summarised in table 3.

Oral health was assessed by family doctors and paediatricians in 173 (58.6%) patients. They referred 86 (29.2%) children to the dentist, with only 1 child missing the appointment. A total of 34 (11.5%) respondents met with dentist's refusal to treat their child due to the lack of experience in treating paediatric patients (3.5%), dentist's opinion on the unnecessary treatment of primary dentition (2.4%); uncooperative child (5.1%), or the lack of available appointment dates (0.7%). Most parents (84.1%) reported that if there was a need to report to the dentist,

Tab. 1. Characteristics of respondents

Age	
- Respondents (mean $\pm$ SD in years)	36.73 $\pm$ 5.44
- Children (mean $\pm$ SD in years)	7.31 $\pm$ 1.96
Gender	
- male	38/295 (12.9%)
- female	257/295 (87.1%)
Education (respondents)	
- primary	16/295 (5.4%)
- secondary	134/295 (45.4%)
- higher	145/295 (49.2%)
Family financial status	
- low	17/295 (5.8%)
- average	207/295 (70.2%)
- high	71/295 (24%)

**Tab. 2.** Health awareness and attitude to dental treatment among respondents

Health awareness of respondents (correct answers):	N /295 (%)
– a child should regularly visit the dentist	290/295 (98.3%)
– caries of deciduous teeth increases the risk of caries in permanent dentition	251/295 (85.1%)
– treatment of deciduous teeth is just as important as treatment of permanent teeth	257/295 (87.1%)
– fluoride protects teeth from caries	254/295 (86.1%)
Dental pain experienced by the child	90/295 (30.6%)
Tooth extraction experienced by the child	47/295 (15.9%)
Child's attitude to the dentist:	
– positive – willing to attend visits	219/295 (74.2%)
– negative – avoiding visits	76/295 (25.8%)
Fear of doctors resulting from previous medical experiences	24/295 (8.1%)
Child prejudiced against the dentist by others	4/295 (1.4%)

they never postponed the visit; 30 (10.2%) and 13 (4.4%) patients postponed the appointments for financial reasons and due to child's anxiety, respectively.

Simple logistic regression analysis showed that the first dental visit before the age of 3 years doubles the chance of developing a positive child's attitude to the dentist (OR = 1.97). Check-up visits every 3-6 months, the lack of check-ups or check-ups less frequent than once a year were considered in the analysis. Dental appointments every 12 months were not statistically significantly correlated with the compared variables. The probability of reporting the child for dental appointments every 3-6 months is greater if the child has a positive attitude to the dentist (OR = 2.24), the child shows no anxiety related to previous medical experiences (OR = 0.24), the parents have a higher educational level (OR = 2.15), and the first visit was scheduled before the age of 3 years (OR = 2.77). The risk of developing child's negative attitude increases if the child is afraid of dentists due to previous medical experiences (OR = 122.48), the dentist is unpleasant (OR = 24.36), or the child experienced pain during previous dental treatment (OR = 965.49). If the dentist is unpleasant, it is more likely that the parents will attend dental visits less frequently than once a year or at all (OR = 14.91). There was no significant correlation between dental pain experienced by the child in the previous year or paediatrician's referral to the dentist and child's attitude to dental appointments or the frequency of appointments (Table 4).

**Tab. 3.** The use of dental care among children with deciduous dentition

Parameters	N (%)
<b>Previous dental appointments</b>	<b>282/295 (95.6%)</b>
First dental appointment before the age of 3 years	76/295 (59.7%)
<b>The reason for the first visit:</b>	
– check-up	41/225 (62.7%)
– prevention	73/225 (32.4%)
– dental pain	11/225 (4.9%)
<b>Frequency of dental visits:</b>	
– 3-6 months	192/282 (68.1%)
– 12 months	55/282 (19.5%)
– > 12 months	35/282 (12.4%)
<b>Type of medical centre used by the child:</b>	
– contract with the National Health Fund (free)	52/282 (18.4%)
– private care (charged)	161/282 (57.1%)
– contract with the National Health Fund and private care	68/282 (24.1%)
<b>Child's experiences during dental visits:</b>	
– deciduous tooth extraction	47/282 (16.7%)
– painful treatment procedure	45/282 (16%)
– painless treatment procedures, prophylaxis, check-ups	92/282 (32.6%)
<b>Doctor's attitude to the child:</b>	
– unfriendly	3/282 (1.1%)
– friendly	117/282 (41.5%)
– doctor's refusal to treat the child	34/295 (11.5%)

## DISCUSSION

Although the questionnaire demonstrated parental awareness of the need for dental care, 4.4% of respondents have never reported with their child for the first dental visit, and 11.9% of children attended their last visit more than a year before. Although the majority of parents estimated their child's oral health as good, 1/3 of children experienced dental pain at least once a year. Grzesiak and Kaczmarek (9) showed that mothers are unable to identify carious lesions in their children, and the differences between maternal assessment and dental appointment were statistically significant. Other studies show that according

**Tab. 4.** Logistic regression analysis indicating factors determining the use of dental care in children and their attitude to dental appointments

		Reporting for dental visits		Child's attitude to dental visits	
		every 3-6 months	< every 12 months or at all	negative	positive
higher education (N = 145)	N/%	107/73.8%	10/6.9%	31/21.4%	114/78.6%
less than higher education level (N = 150)	N/%	85/56.7%	38/25.3%	45/30.0%	105/70.0%
	OR	OR = 2.15 (1.32;3.52)	OR = 0.22 (0.10;0.46)	OR = 0.63 (0.37;1.08)	OR = 1.58 (0.93;2.67)
	P	P = 0.002*	P < 0.001*	P = 0.092	P = 0.092
first visit before the age of 3 years (N = 176)	N/%	131/74.4%	16/9.1%	36/20.5%	140/79.5%
no visit before the age of 3 years (N = 119)	N/%	61/51.3%	32/26.9%	40/33.6%	79/66.4%
	OR	OR = 2.77 (1.69;4.54)	OR = 0.27 (0.14;0.52)	OR = 0.51 (0.30;0.86)	OR = 1.97 (1.16;3.34)
	P	P < 0.001*	P < 0.001*	P = 0.012*	P = 0.012*
fear of doctors (N = 14)	N/%	5/35.7%	3/21.4%	14/100%	0/0%
no fear (N = 268)	N/%	187/69.8%	32/11.9%	51/19.0%	217/81.0%
	OR	OR = 0.24 (0.08;0.74)	OR = 2.01 (0.53;7.60)	OR = 122.48 (7.19;2086.98)	OR = 0.008 (0.001;0.14)
	P	P = 0.013*	P = 0.303	P < 0.001*	P < 0.001*
painful dental treatment (N = 45)	N/%	27/60.0%	9/20.0%	45/100%	0/0%
no pain and no treatment (N = 237)	N/%	165/69.6%	26/11.0%	20/8.4%	217/91.6%
	OR	OR = 0.65 (0.34;1.26)	OR = 2.03 (0.88;4.68)	OR = 965.49 (57.34;16256.18)	OR = 0.001 (0.0001;0.017)
	P	P = 0.206	P = 0.097	P < 0.001*	P < 0.001*
unfriendly doctor (N = 3)	N/%	1/33.3%	2/66.7%	3/100%	0/0%
friendly doctor (N = 279)	N/%	191/68.5%	33/11.8%	62/22.2%	217/77.8%
	OR	OR = 0.23 (0.02;2.57)	OR = 14.91 (1.32;168.98)	OR = 24.36 (1.24;477.95)	OR = 0.04 (0.002;0.81)
	P	P = 0.233	P = 0.029*	P = 0.036*	P = 0.036*
positive child's attitude to dental visit (N = 217)	N/%	157/72.4%	21/9.7%		
negative child's attitude to dental visit (N = 65)	N/%	35/53.8%	14/21.7%		
	OR	OR = 2.24 (1.27;3.97)	OR = 0.39 (0.19;0.82)		
	P	P = 0.006*	P = 0.013*		

\*statistical significance p < 0.05

to 80% of mothers, their children have healthy dentition, with 50% and only 36% of maternal assessments corresponding to dentist's assessment in the case of healthy teeth and carious teeth, respectively (10). This confirms findings presented by other authors regarding the discrepancy between the declared maternal awareness and the actual state of dentition (4-7, 11).

Furthermore, parental ideas about teeth are in contrast with current epidemiological data. The nationwide Monitoring of the Oral Health showed that 41.1% of 3-year-olds have an average of 3 carious teeth; the same number is  $3.54 \pm 3.53$  in 81.6% of 6-year-olds, as well as 68% of 10-year-olds with primary dentition and 60.7% with permanent dentition (4, 5).

Parental attitude to dental treatment in children and parental health awareness are associated with the level of education (12).

Our study confirms the statistically significant relationship between educational level and previous attendance of the child for the first dental visit, which is in line with the findings presented by other authors and monitoring research (4-7, 13, 14). The probability of behaviours that promote maintaining oral health increased with increasing educational level (12).

Nearly half of children had their first dental appointment at the age of 1-3 years, and only a small proportion of children (13%) had their first appointment at the age of 6-12 months. The American Academy of Pediatric Dentistry (AAPD) recommends that a child should visit the dentist within six months of the eruption of the first primary tooth or by age one (15). Wdowiak et al. (14) showed that only 32% of children were reported for a dental visit before the age of 4 years. The remaining children have their first appointment at a later age. A study among Polish 5-year-olds showed that 13.2% have never been to the dentist; 2.9% of children had their first appointment at the age of 6-12 months, 19.9 and 53.9% of children had their first appointment at the age of 1-2 and 2-3 years, respectively. More than half of 3-year-olds (52.4%), 10% of 6-year-olds and 4.7% of 7-year-olds did not use dental care (4-6).

The study showed that first dental appointment before the age of 3 years increases the chance of a child developing a positive attitude to the dentist, which in turn increases the chances of regular visits to monitor oral health.

Check-up visits should be scheduled every 6 or 3 months, depending on the caries risk group.

The questionnaire study showed that 68.1% of children reported for check-up appointments every 3-6 months, which corresponds to the findings presented by Iwanicka-Grzegorek et al. (63.3%) (11). A lower percentage (42.59%) was reported by Bruzda-Zwiech et al. (16).

Most respondents (86.1%) were aware of the role of fluoride in caries prevention, which corresponds to the questionnaire conducted among the mothers of preschool children (96.2%) (11).

The more positive the parental attitude to dental treatment, the greater their knowledge and more intense their care of the oral health of their children (17).

Sporniak-Tutak demonstrated that unpleasant experiences associated with dental visits in childhood have a significant impact (75%) on anxiety in later years (18). Rauch et al. concluded, based on their questionnaire in 6-year-olds and their parents, that higher parental anxiety levels translate into higher anxiety levels in their children (19). Therefore, children sense their parents' attitude towards treatment and are likely to adopt it, as confirmed by other authors (20, 21).

The questionnaire showed that pain experienced during treatment has a significant impact on whether the child will be willing to attend future dental appointments. Therefore, every effort should be made to ensure that children do not feel pain during dental visits. Studies show that the use of premedication during dental procedures reduces anxiety in children. Therefore, the important role of premedication in controlling anxiety should be emphasised (22, 23). Child's attitude is also influenced by the friendly attitude of the doctor. The doctor's clothes and the manner of administering anaesthesia also affect the level of anxiety in children. Young patients prefer colourful aprons and a camouflaged syringe for anaesthesia; however, these aspects are unimportant for older children, some of whom even prefer white aprons (12, 24).

It is alarming that children reporting to dental offices meet with dentist's refusal to treat them, claiming that they do not treat children or misleading parents that primary teeth do not require treatment. Delayed caries treatment in children increases the risk of complications and pain, which leads to anxiety, problems with cooperation and child's reluctance to attend dental visits (25-28).

In the early years of life, children regularly visits paediatricians, but only some of them inspect oral health. More than half of respondents reported that family doctors and paediatricians assessed oral health in children, and one in three children were referred for dental treatment. A total of 99% of parents whose children were referred to the dentist's actually reported for the visit. This shows that medical personnel are an effective source of information, as confirmed by other authors (29-31). Individual education of parents by dental staff is most effective, especially during the first child's dental visits (9).

## CONCLUSIONS

First dental visit before the age of 3 years, a lack of fear of doctors, and child's positive attitude to the dentist, as well as doctor's attitude have a significant impact on the frequency of dental appointments. Pain during treatment is the main cause of child's reluctance to attend dental visits. Higher level of parental education is a factor promoting healthy behaviours and positive child's attitude.

#### CONFLICT OF INTEREST

None

#### CORRESPONDENCE

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