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# The attitude of polish dentists towards children treatment

## Stosunek polskich dentystów do leczenia dzieci

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### KEYWORDS

behavior management, dentist attitude, child's dental treatment

### SUMMARY

**Introduction.** The dentist's attitude towards treating children influences the success of dental treatment and can be shaped by the healthcare system, appropriate preparation for treating young patients, and the use of various methods of cooperation.

**Aim.** The aim of the study was to present the dentists' approach to the treatment of juvenile patients and to discuss treatment procedures and factors, which have an influence on communication and treatment planning.

**Material and methods.** The study included 736 dentists. The questionnaire consisted of 46 questions and covered topics related to socio-demographic data, number of treated children, pharmacological premedication, adaptation visits, treatment of deciduous and immature permanent teeth, behavioral methods of shaping the child's attitude, non-cooperative patients as well as dentophobia.

**Results.** Amount of 577 questionnaires were qualified for the final analysis, women: 85.4%, men: 14.6%. The mean age was  $33 \pm 8.2$  years. Only 17.9% of the respondents had a specialization, including 24.3% in pedodontics. Among the respondents, 85.1% treated young children up to the age of 6. Treatment of deciduous teeth without local anesthesia was performed by 18.5% of dentists. According to 84.9% of the respondents, it was possible to overcome the child's dentophobia thanks to adaptation visits. Prophylactic procedures were performed by 98.0% of physicians, while pharmacological premedication was used by 16.7%. As much as 93.5% of dentists used glass ionomer cement to restore deciduous teeth. Non-cooperative children were referred to treatment under general anesthesia by 71.5% of the respondents. Disabled patients were treated by 60.5%. Every fourth dentist used child immobilization and every sixth expressed an interest in pedodontics courses.

**Conclusions.** The vast majority of dentists treat children, including the youngest up to 6 years old, as well as disabled children. Almost every dentist performs preventive treatment. There is a strong correlation between the age of the dentist and the type of treatment used. Uncooperative children are referred for treatment under general anesthesia. It is possible to overcome dentophobia in young patients thanks to properly planned adaptation visits.

## SŁOWA KLUCZOWE

zarządzanie zachowaniem, podejście dentysty, leczenie stomatologiczne dziecka

## STRESZCZENIE

**Wstęp.** Stosunek dentysty do leczenia dzieci wpływa na powodzenie leczenia stomatologicznego i może być ukształtowany przez system opieki zdrowotnej, odpowiednie przygotowanie do leczenia młodych pacjentów oraz wykorzystanie różnych metod współpracy.

**Cel pracy.** Celem pracy było przedstawienie podejścia lekarzy dentystów do leczenia pacjentów nieletnich oraz omówienie wykonywanych procedur leczniczych i czynników wpływających na komunikację i planowanie leczenia.

**Materiał i metody.** Badaniem objęto 736 dentystów. Ankieta składała się z 46 pytań i poruszała tematy dotyczące: danych socjodemograficznych, ilości leczonych dzieci, premedykacji farmakologicznej, wizyt adaptacyjnych, leczenia zębów mlecznych i stałych niedojrzałych, metod behawioralnych kształtowania postawy dziecka, niewspółpracujących pacjentów oraz dentofobii.

**Wyniki.** Do ostatecznej analizy zakwalifikowano 577 ankiet. Kobiety stanowiły 85,4% badanych, mężczyźni – 14,6%. Średni wiek wynosił  $33 \pm 8,2$  roku. Jedynie 17,9% respondentów posiadało specjalizację, w tym 24,3% z pedodontji. Spośród ankietowanych 85,1% leczyło małe dzieci w wieku do lat 6. Leczenie zębów mlecznych bez znieczulenia miejscowego przeprowadzało 18,5% stomatologów. Według 84,9% respondentów możliwe było pokonanie dentofobii u dziecka dzięki wizytom adaptacyjnym. Zabiegi profilaktyczne wykonywało 98,0% lekarzy, premedykację farmakologiczną – 16,7%. Spośród dentystów 93,5% wykorzystywało cement szkło-jonomerowy do odbudowy zębów mlecznych. Dzieci niewspółpracujące kierowało na leczenie w znieczuleniu ogólnym 71,5% respondentów. Niepełnosprawnych pacjentów przyjmowało 60,5% ankietowanych. Z unieruchomienia dziecka korzystało 40,1%. Co szósty respondent wyrażał zainteresowanie kursami z zakresu pedodontji.

**Wnioski.** Przeważająca ilość dentystów leczy dzieci, również najmłodsze do 6. roku życia oraz dzieci niepełnosprawne. Prawie każdy lekarz wykonuje zabiegi z zakresu profilaktyki. Istnieje silna korelacja pomiędzy wiekiem lekarza dentysty a rodzajem stosowanych metod leczenia. Niewspółpracujące dzieci kierowane są do leczenia w znieczuleniu ogólnym. Możliwe jest pokonanie dentofobii u młodych pacjentów dzięki odpowiednio zaplanowanym wizytom adaptacyjnym.

## INTRODUCTION

Research conducted by the University of Warwick has shown that 81.0% of dentists see a child with neglected teeth at least once a week (1). The dentist's attitude determines not only the final result of the treatment, but also whether the young patient agrees to any preventive or therapeutic procedure during the visit. The influence of the dentist is so strong that child's memories and experiences from the office affect the frequency of brushing their teeth (2). According to Yamada et al. (3), there is a large group of cooperating patients with severe fear of visiting the office, as well as non-cooperative patients without dental anxiety. According to Swedish dentists, every second preschool patient cannot distinguish pain from discomfort (4). This shows the importance of dentist's positive attitude towards the child, talking to the patient and making him aware of the type of stimuli experienced during dental treatment.

There are large statistical differences in the behavioral methods used by dentist depending on their age and gender (5). The method of contact and building the trust is a paramount element in establishing cooperation between the dentist, patient and parents.

## AIM

The aim of the study was to present the attitude of dentists to the treatment of young patients, to discuss the way of performing dentals procedures and to point out the factors influencing methods of communication method and treatment planning.

## MATERIAL AND METHODS

The study included 736 dentists. A positive opinion was obtained from the Bioethics Committee of the Medical University of Warsaw, No. AKBE/74/2018. The responses were obtained voluntarily and anonymously on paper questionnaires and electronically within 8 months (April-November 2018). The survey consisted of 46 questions (3 open, 31 single choice, 12 multiple choice). The first part of the questionnaire included questions about socio-demographic data. The second part was only about dentists treating children and it discussed the topic of pharmacological premedication, adaptation and prophylactic visits, methods of dental treatment, influence on the child's behavior in the office, behavioral methods of shaping the child's attitude, working with a non-cooperative patient as well as dentophobia.

The criterion for qualifying the questionnaire for further analysis was all questions answered by the dentist.

The obtained data were analyzed using descriptive statistics and Spearman's correlation for pairwise comparison, as well as a t-test to compare two groups (significance level 0.05). The analysis was performed in the Statistica 13 program.

## RESULTS

Amount of 577 surveys were qualified for the final analysis. The socio-demographic data of the surveyed dentists is presented in table 1.

The surveyed dentists were aged from 23 to 72 years, the mean age was  $33 \pm 8.2$  years, and the average period of professional work was  $8.7 \pm 8.4$  years. Only 17.9% had specializations, including general dentistry (30.1%), pediatric dentistry (24.3%) and restorative dentistry with endodontics (17.5%).

Children up to 6 years old were treated by 85.1% of dentists. One of the most common reasons for treating children was a curative need for the treatment of children (66.6%) (tab. 2). Young children were not treated by 14.9% of dentists because: "they are difficult and non-cooperative patients" (69.8%), "children require more time" (50.0%) and because of "additional skills required in the treatment of children" (31.4%).

Dentists treated an average of  $14.2 \pm 13.6$  children per week. Dentists with specialization treated on average

more children per week ( $19.7 \pm 18.2$ ) than dentists without specialization ( $13.3 \pm 12.6$ ). Pedodontists admitted  $36.9 \pm 17.3$  children.

Among the respondents, 60.5% treated children with disabilities, 21.7% used nitrous oxide sedation, and 8.4% performed procedures under general anesthesia. The majority of dentists referred their patients to treat them under general anesthesia (69.8%). The correlation coefficient between these variables was 0.125 and was statistically significant. Pharmacological premedication was used by 16.7% of physicians who used hydroxyzine (74.4%) more often than midazolam (42.7%). Less than three-fourths of the respondents (70.5%) carried out independent adaptation visits. Almost all (98.0%) performed prophylactic procedures, more often together with treatment (59.5%) than as an independent preventive visit (40.5%).

Every second dentist assessed the risk of caries (47.3%), and 17.8% used additional caries risk assessment questionnaires, such as CAMBRA (Caries Management by Risk Assessment) and CAT (Caries-risk Assessment Tool). Every third dentist (34.6%) left deciduous teeth in the oral cavity with an open pulp chamber until the tooth was replaced. About 18.5% of the respondents did not anesthetize deciduous teeth for treatment, which was most often explained by the child's greater fear of anesthesia than procedure, no need for anesthesia of the deciduous tooth and the patient's lack of cooperation. Deciduous teeth were treated by root canal treatment in 41.3% of the subjects, and permanent teeth with incomplete root development by 65.4%. According to 42.8%, it took longer time for a child to perform the same procedure than for an adult.

The procedures with the highest frequency in children with primary dentition were extractions (96.9%), restorative treatment (97.6%) and prophylaxis (95.5%) (tab. 2). The most popular material for the reconstruction of deciduous teeth was glass-ionomer cement (93.5%). Amputation treatment was performed by almost all dentists (92.3%).

According to 12.4% of respondents, less interest in the specialization in pediatric dentistry was related to the limited number of places providing specialization courses. According to 10.8%, the number of trainings and courses which enable the development of knowledge in the field of pedodontics is insufficient, and 65.4% of dentists would be interested in such courses.

As many as 72.3% of dentists made their approach to children dependent on the parents' upbringing style and on this basis, they selected methods of shaping the dental attitude. The respondents admitted that a dentist who treat children should be patient (93.1%), calm (87.8%) and empathetic (82.5%).

About 65% of dentists used behavioral methods of shaping child's behavior, most often using the "tell-show-do" method (91.6%), then positive reinforcement (77.8%) and distraction (71.0%). The length of the dentist's work experience was negatively correlated with the use of behavioral

Tab. 1. Socio-demographic data of the surveyed dentists

Parameters	n = 577		
	Number	Percentage	
Gender	Female	493	85.4
	Male	84	14.6
Length of work (in years)	1-10	423	73.3
	11-20	83	14.4
	21-30	57	9.9
	> 30	14	2.4
Workplace	City	503	87.2
	Village	36	6.2
	Both	38	6.6
Labor sector	Private office	281	48.7
	Private office & National Health Service office	270	46.8
	National Health Service office	26	4.5

**Tab. 2.** Answers to selected survey questions

Parameters		n = 577				
		Number	Percentage			
Reason for treating children	Ability to work with children	237/491	48.3			
	Willingness to treat children	142/491	28.9			
	The curative need for treatment of children	327/491	66.6			
	Working with children was imposed to the dentist	166/491	33.8			
Treatments performed on children with deciduous teeth	Extractions	476/491	96.9			
	Pulpotomy	434/491	88.4			
	Post-traumatic treatment	336/491	68.4			
	Impregnation	270/491	55.0			
	Restorative treatment	480/491	97.6			
	Root canal treatment	211/491	43.0			
	Prophylaxis	469/491	95.5			
Prophylactic treatment	Hygiene instruction and recommendations	467/481	97.1			
	Fissure sealing	441/481	91.7			
	Scaling	371/481	77.1			
	Sandblasting	122/481	25.4			
	Fluoridation	466/481	96.9			
Activities performed during prophylactic visit	Prophylactic treatment	466/481	96.9			
	Assessing oral hygiene indexes	110/481	22.9			
	Hygiene instruction	417/481	86.7			
	Delegating dental assistant to provide patient with hygiene instruction	75/481	15.6			
	Recommending appropriate hygiene tools	344/481	71.5			
	Motivation	275/481	57.2			
Materials used for deciduous teeth reconstruction	Composite	377/491	76.8			
	Stainless steel crowns	15/419	3.1			
	Glass-ionomer cement	459/419	93.5			
	Others e.g. ormocer, zincum oxide with eugenol	4/419	0.8			
	Compomer	161/419	32.8			
	Amalgam	47/419	9.5			
Applying the amputation treatment	Yes	453/491	92.3	Vital pulpotomy	309/453	68.2
				After devitalization	291/453	64.2
	No	38/491	7.7			

methods of shaping the child's behavior, which was proved to be statistically significant.

Amount of 83.3% of dentists, including 52.0% of pediatric dentists, did not treat uncooperative young children and postponed the visit. When there was a need to immobilize the child, 4.5% of dentists asked for help from the dental assistant, and 35.6% from the parent. Instruments that prevent the child from closing mouth during the procedure were used by 28.5%. Non-cooperative children were referred for treatment under general anesthesia by 71.5% of dentists. The overwhelming majority (84.9%) considered

it possible to cease dentophobia in young patients due to adaptation visits.

The presence of a parent in the office reduces the level of child's anxiety according to 57.9% of respondents. Moreover, 84.6% of dentists confirmed the influence of a parent's traumatic dental experiences in the way of shaping a child's attitude towards a dentist. Among the respondents, 84.1% rewarded children after the visit, and 26.7% had medical outfits dedicated to pediatric patients. Selected correlations between the above data are presented in table 3.

**Tab. 3.** Correlations of Spearman's ranks between gender, age, working time in the profession, sector and workplace, as well as the specialization held and the selected parameters

	Gender (f = 1; m = 0)	Age	Professional work period	Workplace (city = 1, village = 0)	Labor sector (National Head Service office = 0; Private office = 1)	Specialization
Number of children treated weekly	0.132	0.095	0.074	-0.041	-0.208*	0.094
The use of pharmacological premedication in non-cooperative children	-0.003	0.095	0.128	0.084	-0.023	0.252*
Extractions (deciduous teeth)	-0.027	-0.092	-0.119	-0.003	-0.168*	-0.094
Restorative treatments (treatments – deciduous teeth)	0.072	-0.095	-0.154	-0.028	-0.065	-0.168*
Root canal treatment (deciduous teeth)	0.024	0.128	0.111	0.008	-0.042	0.062
Prophylaxis (deciduous teeth)	0.186*	0.017	-0.040	0.031	-0.087	-0.004
Performing preventive treatments	0.182*	0.041	-0.021	0.108	-0.015	0.015
Fluoride prophylaxis	0.158*	-0.036	-0.075	0.067	-0.092	-0.043
Fissure sealing	0.187*	0.004	0.003	0.118	0.005	0.056
Hygiene instruction and recommendations	0.195*	-0.005	-0.069	0.097	-0.005	0.008
Scaling	0.168*	-0.048	-0.032	0.064	-0.065	-0.105
Leaving deciduous teeth with the open pulp chamber until the dentition exchange	0.019	0.162*	0.134	-0.161*	0.003	-0.015
Anesthesia of primary teeth during treatment	-0.048	0.030	0.037	0.100	0.141	0.037
Amputation treatment in deciduous teeth	0.169*	0.013	-0.020	0.100	-0.054	0.026
Composite	0.104	0.124	0.093	0.029	0.156*	0.050
Amalgam	0.046	0.166*	0.192*	-0.133	-0.234	0.113
Stainless steel crowns	-0.091	0.067	0.076	0.072	-0.028	0.171*
Glass-ionomer cement	0.060	-0.113	-0.125	-0.017	-0.070	-0.055

\*marked statistically significant correlations (> 0.15 and < -0.15) at the significance level of 0.001

## DISCUSSION

Epidemiological studies conducted within the program “Monitoring of the Oral Health Status among the Polish population in the years 2016-2020” showed alarming data concerning children’s oral health: in 2018, caries occurred in 81.6% of children aged 6 and in 86.3% of 10-year-olds (6). This indicates the need for increasing public awareness of the prophylaxis and treatment of oral cavity diseases, reducing patients’ fear of dental treatment and the need for instruction in hygiene and dietary behavior.

Over 80% of Nigerian dentists declare treating disabled children (7). Almost all respondents in the study by Abraham et al. (8) were willing to provide care for children with developmental and/or intellectual disabilities and were confident with pharmacological and nonpharmacological treatment modalities. In the questionnaire, 60.5% of dentists confirmed admitting disabled children. Research shows that dentists who feel better prepared to cooperate with children are more likely to admit adolescent special needs patients (9). The studies by Kostopoulou and Duggal (10) proved that dentists who participated in the educational trainings were better prepared to treat tooth injuries in children. On the basis of research conducted in India, it was suggested to organize appropriate training in working with children both during studies and after obtaining a diploma (11).

The American Academy of Pediatric Dentistry (AAPD) and the Independent Panel of Polish Experts emphasize the importance of starting professional dental prophylaxis in the infancy (12, 13). In the study by Garg et al. (14), half of New York dentists admit children up to 2 years of age.

As many as 84.9% of the respondents believed that it is possible to overcome dentophobia in a young patient through adaptation visits. During an adaptation visit, no dental procedures should be performed in order to preserve the child’s memory of the first impression devoid of negative stimuli and to avoid associating visits to the dentist with pain and anxiety. Thorough such a visit, the dentist gains the child’s trust, which shortens the distance and creates a friendly relationship (15).

The frequency of prophylaxis visits depends on the estimated risk of caries and should be determined individually for each patient (12, 13). Savage et al. (16) showed that the younger the child came to the office for the first time, the more likely the next prophylaxis and less likely interventions related to toothache were, as well as the lower costs of dental treatment. All respondents performed preventive treatment, most often fluoride prophylaxis, fissure sealing and hygiene instruction. Japanese dentists spent 10% of their working time daily on hygiene instruction, dietary recommendations, patient education, and taking intraoral images (17).

The assessment of the risk of caries disease is a crucial element of a visit. Half of the respondents assess the risk of caries, most of them used the DMFT/dmft index. Every

fifth dentist (among dentists assessing the risk of caries) applied additional systems. Similar results were obtained by Kaczmarek et al. (18): 66.5% of respondents estimated the risk of caries based on a clinical trial. The CRA (Caries Risk Assessment) protocol was used by 73% of American and Scandinavian dentists, more often by young graduates than dentists with long-term employment (19). In this study, caries risk assessment was negatively correlated with the age of the dentist. According to Fellows et al. (20), the number of patients with occlusal enamel fillings was 50% higher among physicians assessing the risk of caries. Twetman (21) studied the accuracy of caries risk assessments and stated that such a study should be conducted at the child’s first visit and be systematically updated during childhood.

Safe and effective dental treatment of adolescents requires modification of their behavior and reduction of the fear level before the visit. The AAPD recommends the use of both basic and advanced behavioral methods, such as protective stabilization, sedation and general anesthesia (22). The usage of these modalities varies depending on the age and gender of the dentist (3). In this study, a statistically significant relationship was found only with the age of the dentist. The results of the study by Kaczmarek et al. (23), similarly to presented results, showed that the most frequently used methods were the positive reinforcement, tell-show-do (TSD) and communication with the child before treatment, while the least frequently were aversive conditioning and HOM (“hand over mouth”). British dentists much more often chose tell-show-do than the scattering and distraction method when treating children with dental anxiety (24). As they mentioned, this technique may prove ineffective and even have opposite effects if the child’s personality requires distraction and focus on something else to help overcome the fear of treatment. As many as 86% of the members of the Swedish Public Health Society use the TSD method (25).

It is proven that the way to alleviate the fear of dental treatment is the children’s reward system (26). The surveys confirm the possibility of reducing anxiety with the use of colorful medical uniforms of dentists (27) and covers to camouflage the syringe during anesthesia, especially in young children, while in older children it is not important, and even most of them lean towards a white coat (28).

Effective young patient’s care requires cooperation between the dentist, the patient and the parent (29). According to 77.2% of respondents, the relationship with both the child and the parent was equally important.

According to 99.4% of respondents, the parent’s traumatic dental experiences influenced the way the child’s attitude towards the dentist was shaped, which indicates a relationship between the child’s upbringing method and dental anxiety (30). Unpleasant experiences from a dental office in childhood affect the patient’s perception of anxiety in the following years, what is more, it has been shown



that children of parents with traumatic dental experiences repossess this fear and its level (28).

Parent's dental anxiety affects the level of anxiety in their child, the frequency of treatment and determines the method of dental treatment (2). As many as 50% of adolescents who assessed their childhood visits to the dentist as unpleasant and declared that their parents were afraid of visiting the dentist were classified as having a high level of anxiety (31). A barrier in the treatment of children is their limited ability to manage with difficult and stressful situations (32).

Nitrous oxide sedation may be a safe and effective method for patients with dental anxiety and low pain tolerance and for patients with intellectual disabilities (33). The results of the survey show that over 1/5 of respondents apply inhalation sedation.

Protective stabilization was used by 28.5% of respondents, with the consent of the parent. The child's safety during the procedure and obtaining the highest quality of the performed procedure should be the overall objective. Studies involving Japanese children have shown that 70% of dentists use the stabilization technique, regardless of gender or age (3). Similarly, in our study, the relationship between the child's immobilization and the age and gender of the dentist was not statistically significant. As many as 71.5% of respondents referred a non-cooperating child to treatment under general anesthesia. Treatment of advanced carious lesions and Molar Incisors Hypomineralization (MIH) under general anesthesia has an immediate effect of improving the health quality of the child's life and also has a positive effect on the family's situation (34).

According to the AAPD recommendations, it is suggested to use amalgam, composites, conventional and resin-modified glass-ionomer cements to fill carious cavities (35). Most British dentists applied glass ionomer cement to fill carious cavities in deciduous teeth (36), similarly to our study. In the research by Kaczmarek et al. (37), half of the dentists used glass-ionomer cements and compomers.

In conducted survey, almost 16% of dentists did not anesthetize deciduous teeth for conservative treatment,

most often arguing it with the lack of cooperation and the fear of the needle. A study measuring the stress felt by the dentist while treating children showed that they use local anesthesia less frequently in patients under 10 years old than in older age groups (38).

The result of the lack of cooperation with a young patient and the inability to conduct the treatment are deep carious lesions, which ultimately results in pulpotomy. According to the study by Olczak-Kowalczyk et al. (39), formocresol is proven to be more effective agent in vital pulp therapy than ferric sulfate in the two-appointment pulpotomy. The most recommended reconstruction after pulpotomy is stainless steel crown, but when it is not possible, the use a glass-ionomer cement instead of a composite is suggested (39). The research of Fukai et al. (40) showed that 74% of Japanese dentists performed treatment of deciduous teeth with the opening of the pulp chamber and leave the tooth until physiological replacement, while as many as 58.1% of British dentists perform only deciduous tooth extractions.

## CONCLUSIONS

The majority of dentists treat children, including the youngest up to the age of 6, as well as disabled children and perform prophylaxis treatments. However, a variety of premedication and sedation methods are used by a minority. Most of the dentists do not treat noncooperative children and postpone the visit. In the case of the need to "immobilize the child", the dentist usually asks for the parent's/legal guardian's help. Non-cooperative children are referred for treatment under general anesthesia. It is possible to overcome dentophobia in young patients through adaptation visits.

There is a strong correlation between the age of the dentist and the type of treatment used. The most popular material for deciduous teeth' reconstruction is glass-ionomer cement, followed by composites.

Every sixth respondent expresses interest in courses in the field of pedodontics, which means the need to disseminate knowledge both in the field of dental skills and the use of behavioral communication methods.

## CONFLICT OF INTEREST KONFLIKT INTERESÓW

None  
Brak konfliktu interesów

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