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Caries prevention programs for children based on the current health care system in Poland

Abstract

Prevention is the most effective element of measures to promote oral health. The authors have conducted an analysis of the current health system in Poland with particular emphasis put on caries prevention focused on children. It is worth noting that in the first days of life a midwife introduces „the area of dental prophylaxis”. In subsequent years of life i.e. 2, 4, 6, 10, 13, 16, 19, both the dentist and the primary care doctor provide prophylactic services. More preventive actions are organized in primary school (grades I-VI), where group fluoride prophylaxis and education in oral health are carried out by a nurse/school hygienist. The effects of preventive measures, as measured by epidemiological studies presented among others in the reports from the Monitoring of Oral Health by the Ministry of Health, show that the adopted regulations are unsatisfactory. It is necessary to carry out a public information campaign on the negative consequences of neglecting disease prevention and the consequences of incorrect early treatment of oral cavity diseases and their influence over the proper development of children.

Keywords: dental caries, dental prophylaxis, health care.

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INTRODUCTION

Tooth decay, along with ischemic heart disease, cancer, type 2 diabetes or allergies is treated as a serious modern civilization disease, strongly conditioned by lifestyle, environmental and system factors. It is caused by local and systemic factors, four of which play a dominant role: susceptibility to tooth decay, dental plaque, substrate and time. Therefore, any preventive actions must be focused on these factors. Only multi-pronged prevention efforts conducted with dental treatment, can lead to reducing the frequency and intensity of dental caries in children and adolescents. Prevention is the most effective element of measures to promote health [1]. All major organizations/institutions dealing with issues of public health of the oral cavity (IADR- International Association for Dental Research, FDI – World Dental Federation, ADEE – Association for Dental Education in Europe, CECD – Council of European Chief Dental Officers, IAPD – International Association of Pediatric Dentistry, EADPH – European Association of Dental Public Health) accepted the objective proposed by WHO for the XXI century for implementation, by 2020 in all European countries the percentage of 6-year-old children without caries exceeding 80% [2,3]. These issues need special attention, especially of health care providers. In Poland since 1997 the Ministry of Health has been implementing the „Monitoring of Oral Health in Polish population” plan. It allows for observing and monitoring changes in oral health of populations during recent years [4-6].

The main directions of preventing tooth decay can include: maintaining proper oral hygiene, having a healthy diet, use of cariostatic action of fluoride, regular dental checks, protection of the tooth surface by sealing of grooves and advanced sealing of grooves. The plan of caries preventive action includes:

1. Primary prevention that is an essential prevention. It covers children and consists in reducing the number of new cases of the disease by eliminating the risk factors. It aims to prevent the colonization of the oral cavity by cariogenic microorganisms (infection usually occurs by the transfer of bacteria from closest people, e.g. licking the pacifier by the mother).
2. Early prevention, which covers children, adolescents, adults and aims to reduce the number of cariogenic microorganisms found in the mouth, through the use of antiseptics e.g. containing chlorhexidine (rinse).
3. Traditional prevention. It covers children, adolescents and adults. It aims at early diagnosis of existing lesions and preventing them from spreading.

Examples of preventive measures can include: a) regular checkups performed by dentists, b) maintaining good oral hygiene, c) adherence to proper diet, d) use of fluoride, e) protection of the tooth surface. Professional prevention is carried out by the dentist or dental hygienist in the dental office. It includes: identification of individual prevention program; instruction and motivation of the patient to observe oral hygiene; monitoring the effectiveness of hygiene procedures; periodic preventive care [7].

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AIM

The aim of the study was to analyze the issues related to the unsatisfactory state of dentition in children and adolescents based on the current health system in Poland, with particular emphasis placed on caries prevention.

MATERIAL AND METHODS

The methods included a comparison of dental preventive visits and procedures performed by the dentist in accordance with the Regulation of the Minister of Health of 6th November 2013 on guaranteed benefits in the field of dental treatment, by PHC doctor in accordance with the Regulation of the Minister of Health of 24th September 2013 on guaranteed benefits in the primary health care (Annex 1) for performing medical examinations, periodical health assessments, health screening, and by nurse, midwife or school nurse at the right age (Annex 4 of the abovementioned Regulation) [8-11].

RESULTS

The results of the findings are presented in a table 1 in form of a summary of all procedures.

The health care system for children and the youth is regulated by the Act on healthcare benefits and the implementing regulations to the Act. It is the dentist that provides preventive dental care to children and adolescents (at any place established by the agreement with the National Health Fund), as well as a nurse or a school hygienist, who collaborate with each other and with the primary care physician and the head teacher [8-11]. These care programs include health education and promoting oral health, preventive dental checkups, prevention of dental caries and orthodontic prevention and conducting of group fluoride prevention by the school nurse or hygienist, which is connected with education on proper tooth brushing. Individually targeted preventive care, i.e. varnishing and sealing of permanent teeth is described in the Regulation of the Minister of Health dated 6th November 2013 on guaranteed benefits in the field of dental treatment and is carried out by dentists as part of outpatient specialist care [8,9].

Table 1 shows the distribution of benefits to different age brackets. It is worth noting that in the first days of life a midwife introduces „the area of dental prophylaxis”. In subsequent years of life i.e. 2, 4, 6, 10, 13, 16, 19, both the dentist and the primary care doctor provide prophylactic services. Strengthening of preventive actions takes place in primary school (grades I-VI), where group fluoride prophylaxis and oral health education classes are provided by a nurse/school hygienist.

On 3 December 2015, the Act of 11 September 2015 on public health entered into force (Official Journal 1916). Thanks to its implementation, the public awareness of Poles concerning the need of taking healthy behaviors is expected to increase [12]. One of the main objectives of the Act is the adoption of the National Health Program (NHP), which is to be a strategic document for public health, and therefore the basis for activities in this field. The NHP goals are: extending the life expectancy of Poles, improving their quality of life related to health, reduction of social inequalities in health [13]. The Act on public health does not comment explicitly on the issue of dental prophylaxis. In addition, in the National Health Program for the years 2016-2020, there are no assumptions on caries prevention [14].

The non-profitable charitable organization which is lately engaged in active initiatives to stop the development and progression of tooth decay is Alliance for a Cavity-Free Future, leading by dental experts who have joined forces to help implement changes to dental health practices across the globe. The main goal is that every child born in Europe in 2026 and thereafter should stay cavity-free during their lifetime. By 2020, regional members (Poland included) of the Alliance for a Cavity-Free Future should have integrated, locally appropriate, comprehensive caries prevention and management systems and monitoring developed and in place [15].

CONCLUSIONS

The effects of preventive measures, as measured by epidemiological studies presented among others in the reports from the Monitoring of Oral Health by the Ministry of Health, show that the adopted regulations are unsatisfactory [16]. There is no comprehensive evaluation of the functioning of the system, including the dental prevention implemented by doctors. There is still little awareness of the responsibility for their own and children's health among parents. Dentists and other healthcare professionals are still too little involved in educating about the prevention of oral diseases. Public authorities – the Ministry of Health, Ministry of Education, President of National Health Fund and local government must be involved to a greater extent than before in solving this problem. The involvement of local governments and medical organizations is indispensable as well.

It is necessary to organize a huge information campaign (e.g. like lately provided in Poland “Childhood without caries”) on the negative consequences of neglect of prevention and early treatment of diseases of the oral cavity for the proper development of children. Its aim would be to increase the conscious activity of parents in the performance of their caring responsibilities. Health problems in this area affect to varying degrees majority of the population, regardless of age. It should be stressed that the sooner a dental care program is launched, the less health problems occur in the future, and the treatment costs will be lower.

TABLE 1. Comparison of preventive visits and procedures performed by the dentist, primary care physician and a nurse.

Age	The dentist – preventive dental benefits in a given period	PHC doctor	PHC nurse or school nurse, midwife
0-4 th day of life			Introduction of the proceedings to enable the creation mother-child relationships and the proper beginning of breastfeeding
1-6 th week of life			Evaluation of the newborn's reflexes, method and feeding techniques
3-4 th month of life			Patronage visit of primary health care nurse aimed at: 1) carrying out instruction concerning infant care, including breast feeding, oral care
2-6 th month of life	<ol style="list-style-type: none"> 1. Control visit aimed at introducing the mother into oral hygiene. 2. Dental examination with regard to the beginning and the state of teething and oral health. 	Determination of dental age	
9 th month of life	<ol style="list-style-type: none"> 1. Assessment of deciduous dentition along with instructing the mother concerning oral cavity hygiene. 2. Fluoride prevention (provided that there are no contraindications) 		
12 th month of life	<ol style="list-style-type: none"> 1. Adaptation visit along with the assessment of the deciduous dentition. 2. Control of oral hygiene (control examination, along with instructing the mother about oral hygiene). 3. Fluoride prevention (provided that there are no contraindications) 		
2 nd year of life	<ol style="list-style-type: none"> 1. Adaptation visit – due in case it is the child's first dental visit (if the benefits were not used previously). 2. Assessment of the teeth using dental caries index dmf* for deciduous teeth. 3. Control of oral hygiene (control examination, along with instructing the mother about oral hygiene). 4. Assessment of morphological and chewing function and the eruption of teeth include: 1) checking the number of homonymous upper and lower incisors on left and right side of the curve and the course of the midline; 2) the occlusion of the incisors; 3) checking the breathing pattern; 4) the manner of laying baby to sleep; 5) the feeding method; 6) checking the occurrence of habits like sucking of pacifiers or fingers. 5. Applying measures to prevent occlusal defects – orthodontic prevention. Instruction on breathing through the nose, with appropriate methods of laying baby to sleep, the need to wean from the bad habits. 6. Professionally applied topical fluoride for caries prevention when no contraindications exist. 		
4 th year of life	<ol style="list-style-type: none"> 1. Adaptation visit – due in the case of the first visit of the child (if the benefits were not used previously). 2. Control of oral hygiene (control examination along with oral hygiene instruction and oral and dental health assessment using dental caries index dmf* for deciduous teeth). 3. Assessment of morphological and chewing function and the eruption of teeth include: 1) checking the number of teeth and the course of the midline; 2) occlusion of the incisors; 3) checking the breathing pattern; 4) verifying the habits. 4. The application of measures to prevent occlusal defects – orthodontic prevention. Instruction on breathing through nose, with the introduction of solid foods, weaning of bad habits. 5. Professionally applied topical fluoride for caries prevention when no contraindications exist. 	Oral hygiene assessment	
5 th year of life	<ol style="list-style-type: none"> 1. Adaptation visit – due in case it is the first visit of the child (if the benefits were not used previously). 2. Control of oral hygiene (control examination with oral hygiene instruction and oral and dental health assessment using dental caries index dmf* for milk teeth). 3. Assessment of morphological and chewing function and the eruption of teeth include: 1) checking the number of teeth; 2) occlusion of the incisors and the course of midline and the course of line behind the rear surfaces of second milk molars; 3) checking the presence of bad habits. 4) attrition of occlusal surfaces of deciduous molars; 5) the pattern of canines contact. 4. The application of measures to prevent occlusal defects – orthodontic prevention. Instructing on elimination of sucking pacifiers and breathing with open mouth. Recommending consumption of solid foods. 5. Professional prevention of dental caries by topical fluoride when no contraindications exist. It concerns both deciduous and permanent teeth. 		

TABLE 1 (continued). Comparison of preventive visits and procedures performed by the dentist, primary care physician and a nurse.

Age	The dentist – preventive dental benefits in a given period	PHC doctor	PHC nurse or school nurse, midwife
6 th year of life	<ol style="list-style-type: none"> 1. Assessment of dentition using dental caries index dmf* for deciduous teeth and DMF* for the permanent teeth. 2. Control of oral hygiene (control examination with instruction on oral hygiene). 3. Assessment of morphological and chewing function and eruption of teeth include: 1) verification of the type of permanent teeth eruption (incisor or molar); 2) method of occlusion of the first permanent molars by Angle's classification; 3) the presence of oral habits; 4) attrition of occlusal surfaces of deciduous teeth. 4. The application of measures to prevent occlusal defects – orthodontic prevention. Learning how to eliminate the habits of pacifier sucking and breathing with an open mouth. The recommendation to administer solid foods. When necessary, the non-attrited surfaces of deciduous canines should be polished to prevent excessive rearwards position of lower dental arch. 5. Professional prevention of dental caries, by topical fluoride when no contraindications exist. It concerns both deciduous and permanent teeth. 	Preventive medical examination (evaluation of health) includes: physical examination with particular attention to the evaluation of oral cavity.	
7 th year of life	<ol style="list-style-type: none"> 1. Assessment of dentition using dental caries index dmf* for milk teeth and DMF* for the permanent teeth. 2. Separate provision of individual components of DMF* index for the permanent teeth and dmf* index for the deciduous teeth. 3. Qualification for particular dental care for the primary or specialized dental treatment. 4. Detecting occlusal anomalies (defects) according to IOTN index: 1) a clear malocclusion or 2) a significant reduction of masticatory function or biting and of teeth eruption. 5. Professionally applied topical fluoride for caries prevention. It concerns both deciduous and permanent teeth. 		Education with regard to oral health, at school carried out among the primary school students (grades I-VI) in areas where the level of fluoride in drinking water does not exceed 1 mg/L of fluoride, group prevention by supervised tooth brushing with fluoride preparations 6 times a year at intervals of 6 weeks.
10 th year of life	<ol style="list-style-type: none"> 1. Assessment of dentition using dental caries index DMF* for the permanent teeth and dmf* for deciduous teeth and assessment of the state of periodontal tissues by determining the periodontal pockets depth (PD), clinical attachment loss (CAL) and bleeding on probing (BOP). 2. Separate provision of individual components of DMF* index for the permanent teeth and dmf* index for the deciduous teeth. 3. Qualification for particular dental care for the primary or specialized dental treatment. 4. Detecting occlusal anomalies (defects) according to IOTN index: 1) a clear malocclusion or 2) a significant reduction of masticatory function or biting and of teeth eruption. 5. Professionally applied topical fluoride for caries prevention. It concerns both deciduous and permanent teeth. 	Preventive medical examination (evaluation of health) includes: physical examination with particular attention to the evaluation of oral cavity.	
12 th year of life	<ol style="list-style-type: none"> 1. Assessment of the dentition using the intensity of caries index DMF* for permanent teeth and assessment of the state of periodontal tissues by determining the periodontal pockets depth (PD), clinical attachment loss (CAL) and bleeding on probing index (BOP). 2. Separate provision of individual components of DMF* index for the permanent teeth. 3. Qualification for particular dental care for the primary or specialized dental treatment. 4. Detecting occlusal anomalies (defects) according to IOTN index: 1) a clear malocclusion or 2) a significant reduction of masticatory function or biting and of teeth eruption. 5. Professionally applied topical fluoride for caries prevention. It concerns both deciduous and permanent teeth. 		
13 th year of life	<ol style="list-style-type: none"> 1. Assessment of the dentition using the intensity of caries index DMF* for permanent teeth and assessment of the state of periodontal tissues by determining the periodontal pockets depth (PD), clinical attachment loss (CAL) and bleeding on probing index (BOP). 2. Separate provision of individual components of DMF* index for the permanent teeth. 3. Qualification for particular dental care for the primary or specialized dental treatment. 4. Detecting occlusal anomalies (defects) according to IOTN index: 1) a clear malocclusion or 2) a significant reduction of masticatory function or biting and of teeth eruption. 5. Professionally applied topical fluoride for caries prevention. It concerns both deciduous and permanent teeth. 	Preventive medical examination (evaluation of health) includes: physical examination with particular attention to the evaluation of oral cavity.	
16 th year of life	<ol style="list-style-type: none"> 1. Assessment of the dentition using the intensity of caries index DMF* for permanent teeth and assessment of the state of periodontal tissues by determining the periodontal pockets depth (PD), clinical attachment loss (CAL) and bleeding on probing index (BOP). 2. Separate provision of individual components of DMF* index for the permanent teeth. 3. Qualification for particular dental care for the primary or specialized dental treatment. 4. Detecting occlusal anomalies (defects) according to IOTN index: 1) a clear malocclusion or 2) a significant reduction of masticatory function or biting and of eruption of teeth. 5. Professionally applied topical fluoride for caries prevention. It concerns both deciduous and permanent teeth. 	Preventive medical examination (evaluation of health) includes: physical examination with particular attention to the evaluation of oral cavity.	
19 th year of life	<ol style="list-style-type: none"> 1. Assessment of the dentition using the intensity of caries index DMF* for permanent teeth. 2. Separate provision of individual components of DMF* index. 3. Assessment of oral health including periodontal dental health and oral mucosa. 4. Detecting occlusal anomalies (defects) according to IOTN index: 1) a clear malocclusion or 2) a significant reduction of masticatory function or biting and of eruption of teeth. 		

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