Professional Article

Medical Journal Of Montenegro
DOI: 10.5937/cma2-8362

The importance of oral health behaviour of children for their oral health

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Abstract

Introduction. Health culture is an integral part of generalculture and health education plays an important role in maintaining health of individuals.
Aim. The main objective of this study is to determine the influence of oral health behavior of schoolchildren aged 12 to 14 on their oral health.
Method. The survey was conducted during the period from the end of January to April 2015 at Drago Milovic Elementary School in Tivat. The survey instrument was a questionnaire and it consisted of 36 closed-ended questions. Assessment of oral health was carried out under natural light with dental mirror and probe according to WHO recommendations. The parameter used to assess the state of oral health was DMFTindex. In addition, the assessment of oral hygiene was conducted using soft debris index according to Green-Vermillion.
Results. The majority of students stated that they lack knowledge regarding the effectiveness of fluoride toothpaste (69.4%).It was found that the lowest incidence of caries occurred among those students who think that teeth should be brushed after every meal, and the highest incidence of this diagnosis occurred in respondents who think that teeth should be brushed once a day. DMFTindex for study population was 1.87 while Green-Vermillion soft debris score of oral hygiene was 2 in largest number of students(49.5%).
Conclusion. Looking at the results it can be concluded that dental care in this area does not significantly affect the improvement of oral health in children.
Key words: students, oral health, health education, DMFTindex, Green-Vermillion index

Introduction

Caries or tooth decay regardless of the good knowledge of the nature of the disease and the possibility of its effective prevention is still the most widespread disease in our population. It also very often threatensthe functions of organs and even the entire organism. Even in ancient times it was known that dental foci may be the cause of subsequent diseases and thus for the treatment of arthritis the tooth extraction wasadvised[(1)]. Different diseasessuch as infective endocarditis, an infectionof head and neck, respiratory infections, diseases of gastrointestinal tract, skin diseases, bone disease, premature birth, can be caused by microorganisms from odontogenic foci[(2)]. Health culture is an integral part of general culture and health education plays an important role in maintaining healthof individuals. Special attention should be paid to education of parents and children and implementation of prevention programmesin order to ensure not only adequate oral health of children, but also a better quality of life[(3)].

ORAL HEATHBEHAVIOUR AS DETERMINANT OF ORAL HEALTH

Parents have very important role in maintaining oral health in children because children attitude formation is based on the opinions and actions of their parentsin preschool age. Studies have shown that the control of oral hygiene in children by their parents as well as good oral hygiene habits of parents have a statistically significant impact on the dental health of a child [(4)]. However, even today it is not rare that among very young children tooth decay occurs due to unhealthy diet and lack of oral hygiene [(5)]. Children should be educated on the consequences of their risky behaviourin order to acceptresponsibility for their own health. Numerous studies conducted so far confirmed the possibility of high preventability of oral diseases and therefore it is very important to start with preventionand education programmesat preschool age so thatchildren can get information about caries and periodontal diseases as well as proper tooth brushing techniques and use of assistive devices for oral hygiene [(6)]. The main goal of the implementation of health education programmesis to reduce the incidence primarily of dental caries and periodontal diseases but also of other diseases of the oral cavity[(7)].

Apart from education, regularpreventive dental check-ups can also prevent oral diseases. Unfortunately, this fact is not fully appreciated by the parents of a large number of school-age children[(8)]. The study conducted in Norway found that family characteristics such as marital status and education level of parents, ethnicity, parentslifestyle as well as the mother's diet during pregnancy are associated with the development of caries in preschool children[(9)]. Correlation between dental health and socio-economic status is higher at that age than in older children.A higher prevalence of dental caries has been demonstrated in children in families with low income, lower education level of mothersand those from large families [(10)]. Also, one of the studies has shown that parents with proper oral hygiene habits paid more attention to their children's tooth brushing, prevention of caries as well as diet rich in sugar compared to parents with bad oral hygiene [(11)]. A study conducted in Iran showed a statistically significant difference between plaque index of children and education level of their mothers as well as between the toothbrushing frequency in parents and their children [(12)].

Research goal

The main objective of this study isto determine the influence of oral health behaviourof school childrenaged 12 to 14 on their oral health. The schoolchildren attended the seventh and eighth grade atDragoMilovic Primary School in Tivat. The specific objective is to identify habits, attitudes, and behaviourof school children as well as the state of their oral health that determines the occurrence of oral diseases.

Method

The surveywas conducted during the period fromtheend of January to April2015 at DragoMilovic ElementarySchool in Tivat. The survey comprisedall seventh and eighth-graders thatwere at school that day. All childrenhave voluntarily agreed to participate in the study.

Coverage rate was about 95%, since total number of students in abovementioned grades in this school is 432 which means that 20 students were absent on the day the survey was conducted.

The survey instrument was a questionnaire specially designed for this study and it consisted of 36 closed-ended questions. It had three parts which related to children's knowledge about oral health, behaviourof children in relation to oral health and their attitudes towards oral health. Clinical examination of oral health in children was used as an additional research instrument. Assessment of oral health was carried outunder natural light with dental mirror and probe according to WHO recommendations. The parameter used to assess the state of oral health was DMFT index – the number of carious, extracted and filled teeth. In addition,assessment of oral hygiene was conducted using soft debris index according to Green-Vermillion which determines absence or presence, quantity and distribution of dental plaqueand other soft deposits. Lesions with clearly formed cavity on the surface ofthe tooth weremarked as dental caries. Changes in transparency and initialenamel demineralization with intact surfaces which did not lead to discontinuation of dental tissue were not registered. Clinical examination at school was done by thedentist trained to use abovementioned indices. During the examination children were advised how to maintain proper oral hygiene and that was demonstratedon a modelas well.They werealsogiven advice on proper nutrition and fluoride prophylaxis.

The surveydata were presented using descriptive statistics.

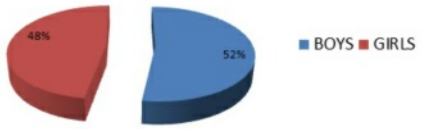
Results

The studyincluded a total of 412 seventh and eighth-graders..Of allrespondents 52.3%were boys (Figure 1).

The majority of pupils stated that they lack knowledge regarding the effectiveness of fluoride toothpaste (69.4%) while5.4% of them believe that fluoride toothpaste does not affect dental health. Almost onein four respondents (24.5%) said that fluoride toothpaste iseffective in maintaining oral health(Figure2).

Slightly more than half of the respondents (53.2%) change their toothbrush every six months, 10.7% of them do so only once a year while more than a third of respondents use a toothbrush while it lasts (Figure 3).

Figure 1. Distribution of respondents by gender

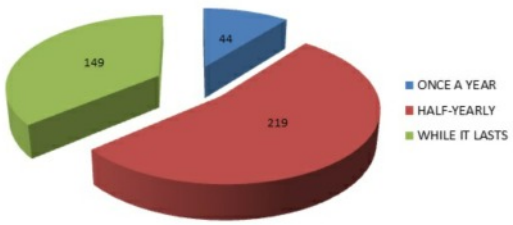


One-way analysis of variance (ANOVA) was used to study the effects of attitudes of how often one should brush the teeth on the values of diagnostic data regarding occurrence of caries.

Table 2. Knowledge about effectiveness of fluoride toothpaste

Respondents were divided into five groups based on their attitude to the frequency of tooth brushing: at least once a day, twice a day, and not every day, after every meal and not knowing how often teeth should bebrushed. It was found that

Figure 3. Frequency of changing toothbrushes



the lowest incidence of caries occurred in group four i.e. those who believe that teeth should be brushed after every meal. The highest incidence of caries occurred in group one i.e. those who think the teethshould be brushed once a day(Table 1).

Data analysis showed that there was a statistically significant difference between attitudes of children towards frequency of tooth brushing and their educational achievement. Half of the surveyed children think that teeth should be brushed after every meal and among excellent students more than half of them (55.6%) think so, slightly less very good ones (51%), followed by those who are good (42.6%) while it is less present in children with bad grades (Table 2).

DMFTindex forstudypopulation was 1.87 and the most common identified change was caries(81.65%), most frequently occurred in two teeth, then three, followed by one while there were students with eight or ten carious teeth (Table3). Filled

ATTITUD TOWARDS TOOTH BRUSHING	MD	SE	Sig.
At least once a day	1,27	0,33	0,002
At least twice a day	1,31	0,39	0,001
Not necessary to brush every day	-1,27	-2,21	0,002
After each meal	-1,36	-0,39	0,001
I do not know	-1,44	-4,80	0,219
ANOVA: F=6,530; p<0,001			

Table 1. The impact of students' attitude about tooth brushing frequency onoccurrence of caries

teeth were also frequently present (77.9%) while number of students with extractedteeth was the lowest (28.2%) (Table 3).

It was found that only one student had no deposits (Figure 4) using Green-Vermillion soft debris index.The largest number of students had debris score2 (49.5%), followed by score 1 (25.7%) and score 3 (24.7%).

ACHIEVEMENTAT	TOOTHBRUSHING FREQUENCY					
	Once a day	Twice a day	Not every day	After each meal	Don't know	Tota l
Unsatisfactory	0	3	1	2	0	6
Makeup exam	2	3	0	1	2	8
Satisfactory	2	4	0	1	1	8
Good	8	28	0	29	3	68
Very good	11	51	2	69	2	135
Excellent	13	69	0	104	1	187
Total	36	158	3	206	9	412
X squared test = 65,579; p < 0,001						

Table 2. Corelation betweentoothbrushing frequency and educational achievement at the end of the previous school year

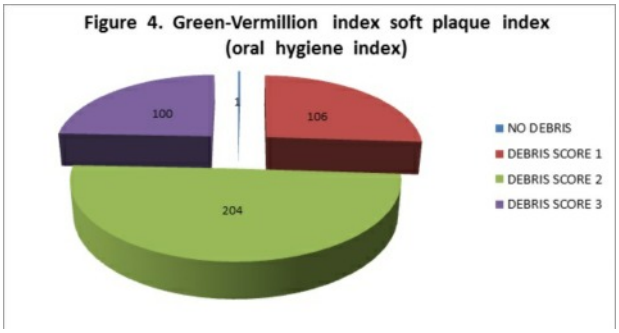
Discussion

This study aims to investigate risk factors for occurrence of caries that are caused by certain health habits, attitudes andbehaviourand as such they can be highly preventable with adequate health education activities. Regular and proper oral hygiene, the use of fluoride and regular dental visits are of particular importance for maintaining good oral health.

The research has shown that nearly half of respondents (45.9%) know that for a thorough cleaning of teeth besides toothbrush and toothpaste it is necessary to use dental floss while more than athird of students (36.2%) applythat in practice.In a study conducted in Pancevo, 16.2% of children [4],

Number of Teeth	Type of change		
	CARIES	EXTRACTION	FILLING
No changes in teeth	80	296	91
Changes in one tooth	61	52	41
Changes in two teeth	96	41	63
Changes in three teeth	81	17	78
Changes in four teeth	47	6	76
Changes in five teeth	23	0	34
Changes in six teeth	10	0	19
Changes in seven teeth	9	0	3
Changes in eight teeth	3	0	5
Changes in nine teeth	0	0	2
Changes in ten teeth	1	0	0
Changes in eleven teeth	0	0	0
Changes in twelve teeth	1	0	0
TOTAL	412	412	412
DMF INDEX = 1,87			

Table 3. Changes inteeth diagnosed in respondents



and in Albania 21% of children [13]stated that they regularly use dental floss. The analysis of respondentsresponses showed that 182 students (44.2%) do not use anything else besides toothbrush and toothpaste to maintain oral hygiene which agrees with result of research conducted in a group of teenage boys in Banja Luka [14].

Apart from regular and proper oral hygiene, every prevention programmein dentistry must havefor its basis prevention of dental caries and application of fluoride both endogenous and exogenous [15]. Data on whether the students are informed about fluoride prophylaxis showed that majority of children (87.4%) do not know whether the toothpaste they used for brushingtheir teeth contains fluoride, while results ofresearch conducted in Sweden showed that20% of respondents aged 15 to 16 years werealso not familiar with the fact whether the toothpaste contains fluoride or not [16]. The highest percentage of children (88.6%) doesnot use fluoride tablets as their peers in Bosnia and Herzegovina [17]. Slightly more than a half of respondents (52.2%) do not use mouth rinse with fluoride. Low awareness of positive effects of fluoride among children was

observed in Serbia where only 21.33% respondents were informed about impact of fluoride prophylaxis on dental health [18].Similar results were obtained in a study conducted in Pancevowhich showed that 35.4% of children knew that fluoride in toothpaste helps prevent tooth decay while only 9.1% of respondents usedmouth rinse with fluoride [4].

All respondents stated that they have their own oral hygiene kit which is consistent with research conducted in six municipalities (Tivat, Kotor, HercegNovi, Budva, Ulcinjand Bar) of coastal region of Montenegro. The results ranged from 76.5% in Ulcinjto 100% in Bar[19].

Slightly more than half of respondents brush their teeth twice a day,inthe morning and in the evening, while 18.2% of twelve year olds in Bosnia and Herzegovina [17], 81.8% of respondents in Pancevo[4], 58% of respondents in Croatia [6] and 42.5% of respondents in Albania [13]also do it twice day.The research conducted in the area of Banja Luka showed that 53.37% of twelve year olds from urban areas brushed their teeth twice a dayand 33.76%after each meal while in rural areasthe corresponding percentages were59.23% and 17.93% [14]. Our research has showed that the lowest incidence of carries occurs among those respondents who believe that the teeth should be brushed after every meal and the highest incidence occurs in children who think that teeth should be brushed once a day. Also, studentswith excellent and very good grades believe that the teeth should be brushed after every meal while this attitude is less prevalent in schoolchildren with bad grades in school.

In this study about half of respondent have oral health index score 2 while research conducted in the region showed that the average values of this index in children of both sex in urban compared to rural areas is 1.084:1.142 (t=1,517, p>0,05) [20]. Of the total number of examined students only one respondent had no deposits as opposed to 6.5% of respondents from research conducted in Republic of Srpska[21].

DMFT index for study population was 1.87 while caries occurred in 81.6% of examined children. The value of this index was 3.43 in the research conducted in 2006 in Montenegro while carries occurred in 88.35% of examined children [20]. When the comparison with results from similar epidemiological studies conductedin the neighbouringcountries wasmade the average value of the number of diseased permanent teeth per respondent ranged from 2.89±0.37 in Romania [22], 3.4 in Macedonia [23], 3.8 in Albania[13], 4.2 in Bosnia and Herzegovina[24]to 4.8 in Croatia [25].

Significantly lower value of DMFT index were recorded in Italy(1.21), Austria (1.50), Germany (0.72), Norway (1.2), Kenya (0.76 - urban areas, 0.36 - rural areas), Brazil (0.9%), Zimbabwe (1.29% - urban area, 0.66% rural area),and slightly higher in Russia(2.95), Lithuania(3.7), Qatar (4.62) and Saudi Arabia (5.49) [26-36]. The study conducted in 2010in Norway showed that the prevalence of dental caries in children is low (8.78) and that most preschool children had no experience with caries as a disease. This could beattributedto the high level of education of the population and free dental carefor children from early years[37].

Conclusion

Taking into account the obtain results it can be concluded that dental health care in this areadoes not significantly affect the improvement of oral health in children. Therefore, a greater attention should be paid to continuous education programmesand gaining knowledge about oral health and hygieneof the mouth and teeth. Special emphasis should be placed on the development of primary dental care that will be based on preventive and prophylactic methods, promotion of oral health and health education particularly of children and then of their parents. Successful implementation of preventive and prophylacticprogrammeshelps the improvement of both oral and general health of children. Health education should start at an early age so that a child could adopt hygiene habits and it should be combined with other preventive measures. Health education activities should have an influence on adoption of healthy behaviourwith regard to implementation of proper and regular oral hygiene, proper nutrition, fluoride prophylaxis and regular dental visits in order to prevent oral diseases. Only in this way can we expect to improve oral health of the population which is the main goal of dental health care.

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DOI: 10.5937/cma2-8362