EVALUATION OF THE DENTAL STATUS IN SPECIAL NEEDS CHILDREN

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ABSTRACT

INTRODUCTION: Contemporary literature suggests that individuals with chronic diseases or special needs tend to have worse oral health, compared to the healthy population.

AIM: The aim of this study is to research the distribution of caries lesions in children with special needs.

MATERIALS AND METHODS: The observation was performed using the dmft/DMFT index.

RESULTS AND DISCUSSION: The total average dmft/dmf(T+t)/DMFT index was 14.28±2.95. The final value of the index was higher in children from the youngest group <6 years (20.18±3.66), compared to the 6- to 12-year-old patients (11.94±1.89) and the patients >12 years (0.37±0.59). The results from the registration of the dental status described a high prevalence of carious lesions in special needs children (SNC) treated under general anesthesia, which was a result of the main systemic disease and the side effects, experienced from the prescribed medicaments. Other reasons for the high carious lesion count in these children were the absence of proper oral hygiene habits due to sensory impairment and pain from complicated carious lesions, as well as neglected oral health due to care for the main systemic disorder.

CONCLUSION: In SNC it is very important to focus on prophylaxis and special care for control of oral hygiene.

Keywords: *children with special needs, dental status, evaluation*

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INTRODUCTION

Contemporary literature suggests that individuals with chronic diseases or special needs tend to have worse oral health compared to healthy population. The interpretations of these results correlate with neglected oral hygiene, undesired side effects from medications, underestimating the need of dental treatment, the severity of the systemic disorders and the difficult access to dental help (1,2,3).

AIM

The aim of this article is to research the distribution of caries lesions in children with special needs (SNC).

MATERIALS AND METHODS

The object of this research were 402 children with special needs, treated under general anesthesia (GA), divided into three age groups: <6 years; 6-12 years; >12 years. The research was conducted in the University Medical and Dental Center in Varna, in the period 2015-2019. The correlation between the registered indices and the distribution of the children in the three age groups was observed.

The dental status was registered according to the World Health Organisation criteria, using the dmft/dmf(t+T)/DMFT index and the ICDAS system for caries evaluation, modified by Peneva. The index is based on the clinical evaluation of the patients, as well as a dental mirror, probe, cotton rolls and saliva ejectors. DMFT/dmft is the sum of the number of decayed (D), missing (M) and filled (F) teeth (T). T+t is used for mixed dentition, because capital letters portray permanent teeth, and lower case letters – primary teeth (4). Every patient filled out an ambulatory sheet for evaluation of the dental status. The dental status of the children was diagnosed with visual obseration and registered with initial diagnostic threshold D1, reflecting the earliest visible lesions (enamel lesion, seen after drying). In cases that demanded more precise diagnostics, an instrumental examination, using DIAGNO dent, was performed. Depending on the age of the child dmt, DMF(T+t), or DMFT was measured.

RESULTS AND DISCUSSION

As Table 1 shows, there is statistically significant difference in the distribution of carious lesions in the three age groups, as well as in the depth of the lesions in the age groups (D1,D2,D3,D4).

The total average dmft/dmf(T+t)/DMFT index was 14.28±2.95. The final value of the index was higher in children from the youngest group <6 years (20.18±3.66), compared to the 6- to 12 year-old patients (11.94±1.89) and the patients >12 years (0.37±0.59). There was a statistically significant difference in the distribution of carious lesions among the first and second group, as well as the first and third group. The possible reason for this existence is the large number of children with cerebral palsy and early childhood caries, whose dmft index was the highest. The high value of the index is a result of untreated complicated caries lesions, while obturated and prematurely extracted teeth were relatively low in number (Table 1). Our results are similar to those of some Taiwanese autors, who suggest that the total count of caries lesions for SNC is 12.5±5.0 (5).

Table 1. Distribution of carious lesions of the examined children in the three age groups

Children	n	d_1/D_1 mean±SD	d_2/D_2 mean±SD	d_3/D_3 mean±SD	d_4/D_4 mean±SD	m/M mean±SD	f/F mean±SD	dmft/ dmf(T+t)/ DMFT mean±SD
<6 y. -1	51	2,35±1.30	2,29±1.38	3,05±1.52	9,85±1.68	0,25±0.25	0,39±0.28	20,18±3.66
6-12 y. -2	283	2,92±1.83	1,31±1.02	2,35±1.63	4,18±0.05	0,58±0.86	0,60±0.69	11,94±1.89
>12 y. -3	68	4,03±1.89	1,42±1.30	1,93±0.79	2,90± 0.82	0,08±0.25	0,37±0.59	10,73±1.78
t-test P-value		$t_{1,2}$=-4.87; P=0.0001	$t_{1,2}$=7.880; P=0.00001	$t_{1,2}$=4.433; P=0.00001	$t_{1,2}$=35.20; P=0.00001	$t_{1,2}$=-7.80; P=0.0001	$t_{1,2}$=-4.091; P=0.00003	$t_{1,2}$= 6.401; P=0.00001
		$t_{1,3}$=-6.96; P=0.0001	$t_{1,3}$=2.950; P=0.00238	$t_{1,3}$=3.430; P=0.00071	$t_{1,3}$=22.91; P=0.00001	$t_{1,3}$=-0.46; P=0.323	$t_{1,3}$=-1.038; P=0.150	$t_{1,3}$= 4.314; P=0.00416
		$t_{2,3}$=-3.30; P=0.0009	$t_{2,3}$=-1.227; P=0.132	$t_{2,3}$=0.851; P=0.202	$t_{2,3}$=5.998; P=0.00001	$t_{2,3}$=3.07; P=0.0015	$t_{2,3}$=1.085; P=0.137	$t_{2,3}$= -0.89; P=0.194

D1 lesions were observed mainly in the third age group (4.03±1.89) , with lowest counts in the first group (2.35±1.30). The difference was statistically significant ($t_{1,3}$=-6.960; P=0.0001). D1 lesions were observed mainly in the third age group (43.40%) and had the lowest count in the first group (24.32%). In the second age group they were 32.28% (Fig. 1).

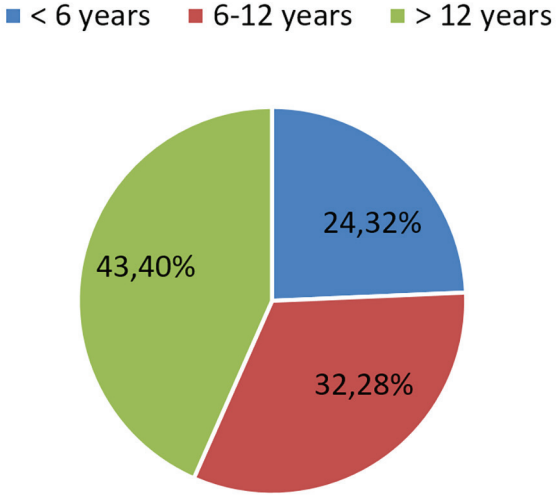

Fig. 1. Relative share of the D1 lesions according to age groups

This fact is important for the study, as it is indicative of the existing active caries process. d_2/D_2, d_3/D_3, d_4/D_4 lesions were registered mainly in the youngest patients (under 6 years). The values for this group were as follows: 2.29±1.38; 3.05±1.52; 9.85±1.68. For the second group of examined patients the values for d2/D2, d3/D3, d4/D4 were: 1.31±1.02, 2.35±1.63; 4.18±0.05. In the third examined group they were as follows: D_2=1.42±1.30; D3=1.93±0.79; D4= 2.9±0.82. There was a difference with statistical value between the first and second group, concerning D2 lesions (t1,2=7.880; P=0.00001). D3 lesions showed a significant difference between the first and the other two groups (t1,2=4.433; P=0.00001;t1,3=3.430; P=0.00071).

Concerning D4 lesions, the highest number of complicated carious lesions was seen in the first examined group, followed by the second, and the third. The difference of these lesions in the three age groups was as follows: t1,2=35.20; P=0.00001; t1,3=22.91; P=0.00001; t2,3=5.998; P=0.00001.

The highest number of prematurely extracted teeth due to caries (m/M) – 0.58±0.86 was in the second group, followed by the first (0.25±0.25) and the third (0.08±0.25). The difference between the second and first and between the second and third group was t1,2=-7.80; P=0.0001; t1,3=-0.46; P=0.323; t 2,3=3.07; P=0.001. The number of prematurely extracted teeth was negligible, which had to do with retreatments, which were a rarity. The number of treated teeth was also negligible due to the same reason. The values for the first, second and third group were: 0.39±0.28; 0.60±0.69; 0.37±0.59 (Table 1).

D2 caries lesions were observed mainly in the first age group (46%) and were the lowest in number in the second group (26%). In the third age group they were 28%. (Fig. 2)

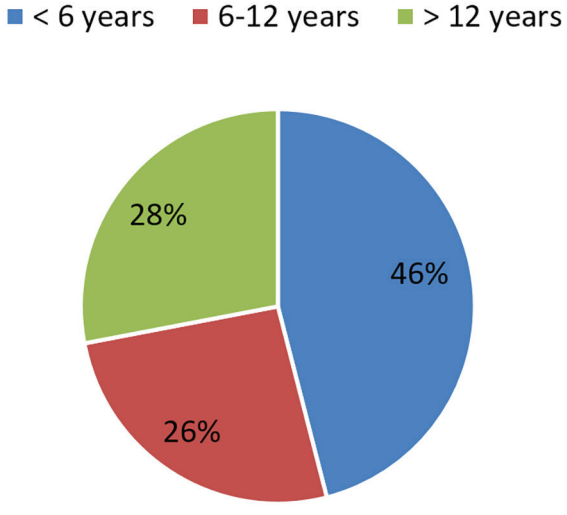

Fig. 2. Distribution of D2 caries lesions according to age group

D3 caries lesions were with highest count in the first age group (42%) and with the lowest in the third age group (26%). In the second age group they were 32%. (Fig. 3)

D4 caries lesions were 58% in the first group and 17% in the third group. The share for the second group was 25% (Fig. 4).

The relative share of the filled teeth was highest in the second age group – 44%, followed by the first age group (29%). Their share in the third age group was 27% (Fig. 5).

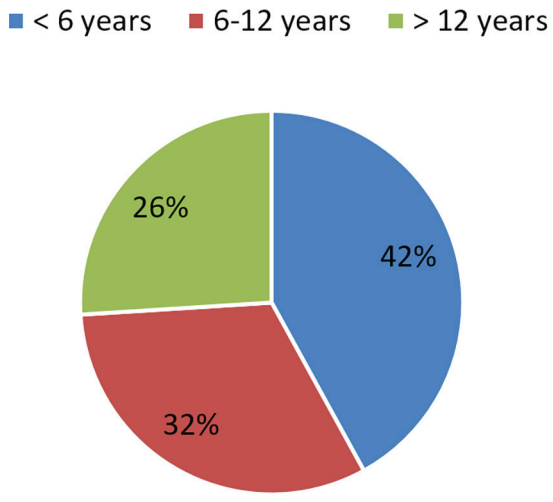

Fig. 3. Distribution of D3 caries lesions according to age group

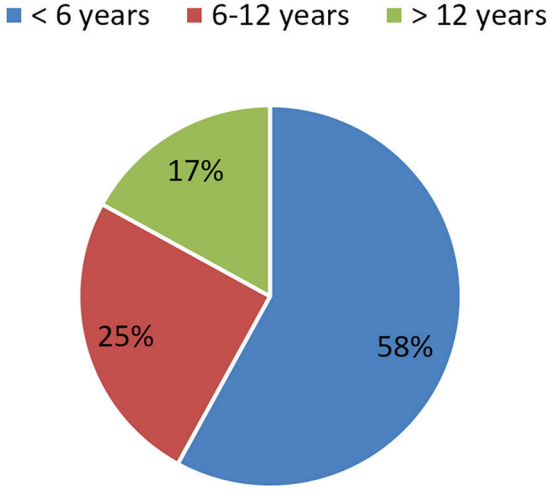

Fig. 4. Distribution of D4 caries lesions according to age group

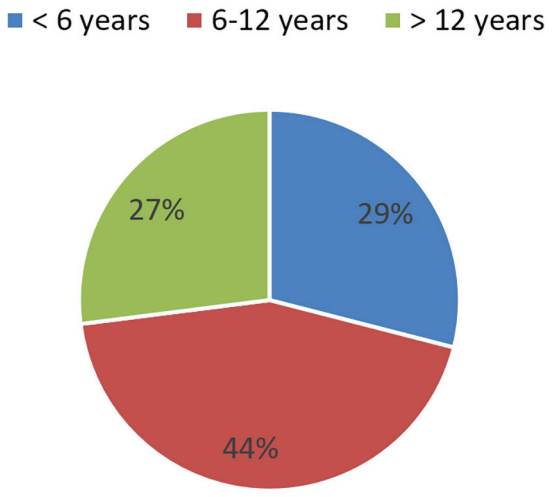

Fig.5. Distribution of filled teeth in different age groups

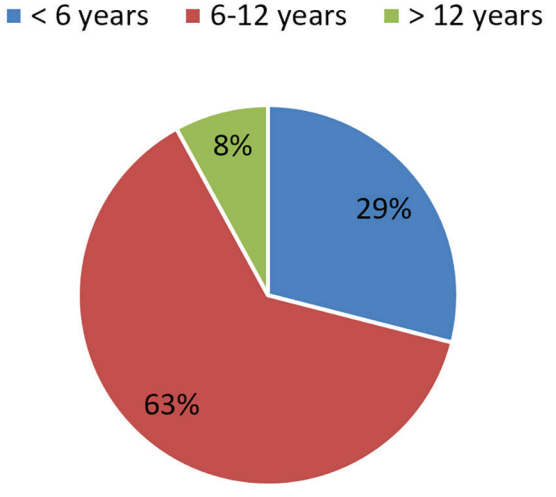

Fig. 6. Distribution of the missing teeth due to premature extraction in the different age groups

The most significant share of prematurely extracted teeth was in the second age group – 63%, followed by the first age group (29%). For the third age group the share was 8% (Fig. 6).

The data reflecting the dental status reveals that SNC, treated under general anesthesia, have high caries activity. The high values of dmft/DMFT index are mostly due to untreated complicated caries lesions. The results show a more active carious environment in SNC, treated under general anesthesia. Our results are confirmed by other authors (3,5). This is probably a result of the lack of sufficient oral hygiene, physical and psychological disorders or pain, associated with complicated caries lesions in children with early childhood caries. The need for prophylaxis is evident.

According to our research the highest carious lesion number in children treated under general anestesia was observed in children under 6 years of age. This data is similar to the results, written by other authors (6,7,8). This could be due to the fact that the number of SNC and early childhood caries, who have the highest dmft index, is continually increasing (9,10,11). The high values of the index are due to the untreated caries lesions, while the number of filled and prematurely extracted teeth is neg-

ligible. A lot of the carious teeth fall out in children with mixed dentition due to the physiological change of the teeth. In children above 12 years, in early permanent dentition, the carious lesion number was the lowest, because the cariogenic factors had not affected the newly erupted teeth for a sufficient amount of time. Data shows another important fact – SNC receive special care and control of the oral hygiene. While performing diagnostics on reversible and irreversible caries lesions, there are high average values of the index for SNC, treated under GA. The more cariogenic environment in children treated under GA is a result from the decreased ability to apply proper oral hygiene habits due to sensory impairment or pain from complicated carious lesion in SNC, as well as neglected oral health as a result of the main disease (12,13). Another key moment is the higher number of untreated carious lesions in SNC treated under GA. It is evident there is difficulty in seeking dental help from parents and SNC. This difficulty is objective and in order to decrease the need for dental help, there is an even greater necessity for adequate preventive care to influence the carious process and to lower the consequences that follow it (14,15).

In scientific researches from India there is a significantly higher number of carious lesion distribution in SNC (30%), compared to their healthy peers (16%). Only in Down syndrome children, the prevalence of carious lesions has a lower count, which is a result of the delayed eruption of the teeth, as well as the high number of diastemas in these children (17,18).

CONCLUSION

Results from the registration of the dental status descrybe a high prevalence of carious lesions in SNC treated under GA, which is a result from the main systemic disease and the side effects experienced from the prescribed medicaments. Other reasons for the high carious lesion number in these children is the absence of proper oral hygiene habits, due to sensory impairment and pain from complicated carious lesions, as well as neglected oral health due to care for the main systemic disorder. In SNC it is very important to emphasize on prophylaxis and special care for control of the oral hygiene.

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