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Oral Health of Down Syndrome Adults in Bosnia and Herzegovina

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ABSTRACT
Introduction: The objective of this study was to determine the oral health condition Down syndrome (DS) adults in Bosnia and Herzegovina, by analyzing oral health of Down syndrome individuals in two largest regions, Sarajevo and Tuzla Canton. **Patients and Methods:** Caries and oral health status of 33 Down syndrome adults aged 19-45 years were examined and assessed according WHO 1997 criteria. **Results:** The mean DMFT index is 15,96±8,08. The analysis of oral hygiene of Down syndrome children by using the debris index, is found that 42,4% have very good oral hygiene , 21,2% respondents have good oral hygiene, 27,3% are with poor oral hygiene, while the very poor hygiene have 9,1% subjects. The Value of CPI index is 0,82.
Keywords: oral health, Down syndrome, adults, Bosnia and Herzegovina.

1. INTRODUCTION

Down syndrome (DS) is a genetic disorder produced by the (complete or partial) presence of three copies of chromosome 21 . The syndrome is characterized by a distinctive and immediately recognizable craniofacial phenotype (1).

Dental characteristics of DS individuals include abnormally rounded labial forms of the tooth crown, partial anodontia, delayed eruption, pronounced periodontal break down, low prevalence of dental caries and malocclusion such as crowding, posterior cross bite, and anterior open bite (2).

Oral disease is a major health problem for individuals with disabilities, who have a higher prevalence and severity of oral disease compared to the general population. High rates of dental caries, missing teeth, periodontal disease, prolonged retention of primary teeth, misaligned or supernumerary teeth and malocclusion are all indicators of poor oral health in adults with disabilities (3).

Some syndromes, which have chromosomal abnormalities reported to be associated with low caries indices. Down syndrome is an example of this condition; however, the reason of the low incidence of caries in Down syndrome is unclear (2).

The vast majority of published studies report a lower prevalence and experience of caries in this group of individuals than in groups not affected by DS and groups with other disabilities, while a smaller number of studies, however, have highlighted an equivalent or higher prevalence of caries in individuals with DS (4).

Periodontal disease is the most significant oral health problem in people with Down syndrome. The precocious nature of the condition is thought to be due to such factors as immunological deficiency, poor oral hygiene, fragile periodontal tissue, early senescence, and poor masticatory function, while it is also likely that short tooth roots lead to tooth mobility and subsequent loss (5).

There are a few reports on the oral health status of the mentally disabled population from Bosnia and Herzegovina. The objective of this study was to determine the oral health condition of adult Down syndrome individuals in Bosnia and Herzegovina, by analyzing oral health parameters in two largest regions, Sarajevo and Tuzla Canton.

2. PATIENTS AND METHODS

This cross-sectional study included 33 DS individuals , aged 19 - 45 years, from Sarajevo and Tuzla Canton, Bosnia

and Herzegovina. At the time, this study was carried out (January, 2014), there were 19 DS individuals attending three centers for mentally handicapped in Sarajevo Canton, and 14 DS individuals were examined at six centers for mentally handicapped in Tuzla Canton. Written consents for the participation of DS individuals were obtained from Ministry of Science, Education and Youth of Sarajevo and Tuzla Canton, principals of schools, directors of centers and parents of participants. The examinations were performed in the school chair; the examiner sat in front of them. Calibrated dentist performed the clinical examination under adequate natural light using a plane mirror and CPI ball-ended probe. Data were recorded into modified WHO form for this kind of research (6). Caries was measured using the DMFT/dmft index according to WHO criteria. In period of mixed dentition (7-12 years), only DMFT of first permanent molars was used for recording. It was detected at the cavitation level only (detectable softened floor, undermined enamel or softened wall). Criteria of „catching" or „retention" of the explorer were not used to detect caries (7). The mouth was divided into sextants and six index teeth were utilized (the first molar of each quadrant, the right maxillary central incisor and the left mandibular central incisor) to evaluate oral hygiene and periodontal health. Oral hygiene status was assessed using the Simplified Debris Index (DI-S), as described by Greene–Vermillion. When (debris index) is DI < 0,4 (very good oral hygiene): score 0; DI= 0,4-1,0 (good oral hygiene): score 1; DI= 1,1-2,0 (poor oral hygiene): score 2; DI >2,0 (very poor oral hygiene): score3. CPI (Community Periodontal Index) evaluates three periodontal indicators: bleeding gums, periodontal calculus and periodontal pockets. The CPI was coded by as: 0 = healthy; 1 = bleeding; 2 = calculus; 3 = pocket 4-5 mm; 4 = pocket >6mm; X = sextant excluded; 9 – not registered (8, 9). Participants were also divided into four groups according to their age, as follows: a) Age 6 years (n=10); b) Age 7–12 years (n=17); c) Age 13-18 years (n=30) and d) Age 19-45 years (n=33).

Statistical analysis

Statistical analysis was carried out using the SPSS software program. The sample has been described using descriptive statistics (mean, standard deviation). Chi-square test was used to determine significant differences in data (P<0,05).

3. RESULTS

Of the 33 participants in the study, 63,6% were males (n=21), and 36,4% females (n=12).

The value of DMFT index age group of 19-45 years is (15,96) (Table 1).

X±SD	19-45 years	P
Decayed	3.57±3.05	0.001
Missing	10.18±9.55	0.001
Filled	2.21±1.23	0.001
DMFT*	15.96±8.08	0.001

Table 1. Value of DMFT index of Down syndrome individuals.
*DMFT: D-decayed; M-missing; F-filled; T-teeth.

The analysis of oral hygiene of Down syndrome individuals by using the debris index, it was found that 42,4% have very good oral hygiene, 21,2% respondents have good oral hygiene, 27,3% were with poor oral hygiene, while the very poor hygiene had 9,1% of the subjects (Table 2).

		Age group
		19-45 yrs
0-Very good oral hygiene	N	14
	%	42.4%
1-Good oral hygiene	N	7
	%	21.2%
2-Poor oral hygiene	N	9
	%	27.3%
3-Very poor oral hygiene	N	3
	%	9.1%
Total	N	33
	%	100.0%

Table 2. Values of Debris index of Down syndrome individuals

	N	Mean	Std. Error	95% CI for Mean	
				Lower	Upper
19-45 yrs	33	0.82	0.14	.5334	1.1103

Table 3. Value of CPI index

Value of CPI index is 0,82 (Table 3).

4. DISCUSSION

The oral health of Down syndrome individuals has not been enough in research focus. Most studies have suggested that the reduction of dental caries in Down syndrome individuals than that of normal ones may be explained by congenital oligodontia, delayed eruption, a different salivary composition (salivary IgA, salivary pH, buffering capacity, and flow rate) or a difference in eruption times as the teeth of children with Down syndrome often erupts in 1-2 years later than that of the normal child (2).

Our results showed a high caries experience of the examined group. That is explained as a low awareness of oral health among the population in Bosnia and Herzegovina, lack of preventive programs, as well as poor promotion of importance of oral health (7, 10, 11, 12). Unlike other studies that showed that Down syndrome individuals have lower values of DMFT (13-19), values of DMFT obtained in our study correlate with the values obtained in the survey conducted in neighbor country Croatia (20) and India (13), Nigeria (15), and Argentina (21**)**.

It is very interesting that the majority of respondents in this survey noted very good and good oral hygiene, while the balance of the DMFT was really bad. The reason for this discrepancy in the results is likely that all exams of DS individuals in institutions were announced about dental examination, so that parents added extra attention for tooth brushing their children. Similar results were obtained in Nigeria (15), while results conducted in this survey differ from surveys provided in Brazil(22) and India (23).

The values of the CPI of Down syndrome examinees are better in comparison to results in healthy subjects and those with allergic asthma in Bosnia and Herzegovina (24), and better related to results (22, 23).

Lack of knowledge about good oral hygiene practices among parents and caregivers, lack of motivation, low priority given to dental care in society, lack of dental professionals trained to work with this specific population, have

resulted in accumulated treatment needs, and extraction as a choice option of dental therapy.

5. CONCLUSION

The reality of high risk for caries and extraction as a treatment option, demands immediate attention to increase efforts for prevention and treatment of oral diseases in DS individuals in Bosnia and Herzegovina, as well as creating preventive and educational programs for their parents/caregivers.

• Conflict of interest: none declared.

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