

# DENTOFACIAL CHANGES AND ORAL HEALTH STATUS IN INDIVIDUALS WITH DOWN SYNDROME IN JORDAN — CROSS SECTIONAL STUDY

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## ABSTRACT

*The purpose of this study was to investigate the various dentofacial anomalies and oral health status associated with Down Syndrome patients in Jordan. The study was carried out on 53 individuals with Down Syndrome from private institute of rehabilitation for disabled children in Amman, Jordan. There were 15(28.3%) females and 38(71.7%) males. The age of the patients ranged from 7-16 years with meanage of 11.09±2.74 years. Medical history and relevant information were obtained from individual's file. Clinical levels of oral hygiene status were assessed using simplified oral hygiene index and caries detection was according to WHO caries recording criteria and compared to historic caries incidence in normal children with similar age group in Jordan. The prevalence of dentofacial anomalies (hypertelorism, flat nasal bridge, macroglossia, fissured tongue, high arched palate, and malocclusion) was recorded.*

*A total of 60.4% of the Down Syndrome patients practiced good oral hygiene, 56.6% were affected with dental caries. The mean caries experience indices were (1.84). All Down Syndrome patients had one or more form of dentofacial abnormality; 94.3% had flat nasal bridge, 90.6% showed hypertelorism, 75.5% had high arched palate, 69.8% showed fissured tongue, 62.3% had macroglossia, 18.9% showed delayed eruption and 45.3% showed malocclusion.*

*DMFT and dmft in Down syndrome patients were significantly lower compared to those in normal children in Jordan. Individuals with Down syndrome in Jordan showed better oral health in younger age group but as they became older, dental caries and poor oral hygiene became more prevalent.*

**Key words:** Caries experience, Down's syndrome, periodontitis, Oral health status.

## INTRODUCTION

Down's Syndrome (DS) is an autosomal disorder with an incidence of 1:700, caused by an extra chromosome 21. The syndrome is characterized by short stature, characteristic facial features with a protruding tongue, a wide range of learning difficulties, congenital heart disease, gastrointestinal disorders and other features.<sup>1</sup> DS children have characteristics orofacial feature. The most common oral findings in these children include mouth breathing, open bite, macroglossia, fissured lip and tongue, angular cheilitis, delayed eruption of teeth, missing and malformed teeth, microdontia, crowding malocclu-

sion, bruxism, poor oral hygiene and low level of caries.<sup>2-4</sup>

Some studies on the prevalence of dental caries in DS have shown that there is no difference between children with DS and children without DS.<sup>5</sup> However, other studies have shown that the prevalence of dental caries in children with DS is relatively low compared to other mentally retarded or normal children.<sup>6,7</sup>

Therefore, the precise cause of the lower prevalence of dental caries in DS patients is still unclear. Most of the published studies reported poor oral hygiene and high level of periodontal disease in DS patients.

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In Jordan there is little data available relating dental health status in DS patients. The aim of this study was to investigate the various dentofacial anomalies and oral health status associated with DS patients in Amman, Jordan.

## METHODOLOGY

The study was carried out on 53 individuals suffering DS and seeking dental treatment in private Institute of rehabilitation for disabled children in Amman, Jordan. Permission to carry out the study was obtained from the 'Medical Research Committee'. 15(28.3%) were females and 38(71.7%) were males. The age of the patients ranged from 7-16 years with meanage of  $11.09 \pm 2.74$  years.

Medical history and relevant information were obtained from individual's file. Clinical levels of oral hygiene status were assessed using simplified oral hygiene index. Caries detection was according to WHO caries recording criteria and compared to historic caries incidence in normal children with similar age group in Jordan. The prevalence of dentofacial anomalies (hypertelorism, flat nasal bridge, macroglossia, fissured tongue, high arched palate, and malocclusion) were recorded.

## Statistical analysis

The data were analyzed using computerized Statistical Package for Social Sciences (SPSS) 15 for windows (SPSS Inc, Chicago, IL, USA). Descriptive statistics (mean, SD, %) were used. ANOVA test was used to compare the means of multiple variables. The level of statistical significance was chosen at  $p < 0.05$ .

## RESULTS

All patients with DS had one or more of dentofacial abnormality. The details of various dentofacial anomalies can be seen in Table 1.

A total of 60.4% of the DS patients had good oral hygiene, while 39.6% of patients had chronic gingivitis. There were no significant differences in the oral hygiene status between male and female. 30(56.6%) of individuals with DS were affected with dental caries, while 23(43.4%) were caries free. Table 2.

TABLE 1: DENTOFACIAL ABNORMALITIES AMONGST DS (53 PATIENTS)

Abnormalities	No. of patients affected	Percentage
Flat nasal bridge	50	94.3%
Hypertelorism	48	90.6%
High arched palate	40	75.5%
Fissured tongue	37	60.8%
Macroglossia	33	62.3%
Malocclusion	24	45.3%
Delayed eruption	10	18.9%

TABLE 2: THE RELATIONS BETWEEN AGE GROUP AND CARIOUS TEETH IN DS

Age (years)	No. caries	No. of caries teeth				Total
		1	2	3	4 +	
< 12	3	1	2	1	1	8
> 12	20	11	6	5	3	45
Total	23	12	8	6	4	53

## DISCUSSION

In present study, most of the individuals with DS had 94.3% flat nasal bridge and 90.6% showed hypertelorism; this is due to mid-face hypoplasia. Fissured tongue was seen in 69.8% while 62.3 were suffering from macroglossia. This finding was consistent with the findings in other studies.<sup>8,9</sup>

In this study, 75.5% of patients with DS had high arched palate, which was higher than in another study.<sup>10</sup> Palatal anomalies were present in 64% of the individuals. Malocclusion was present in 45.3%, which related to retardation of the growth of the maxillae and mandible and both are placed anteriorly to the cranial base. Delayed eruption of permanent teeth was present in 18.9% in this study which was not consistent with another study.<sup>11</sup> Delayed eruption of permanent teeth was seen in 14.8%. 30(56.6%) of individuals with DS were affected with dental caries, while 23(43.4%) were caries free. Increased caries incidence in DS patients has also been reported by others.<sup>11,12,13</sup> Oredugba showed that individuals with DS had higher prevalence of dental caries than controls. It was reported that children with DS are more likely to develop caries because they are given syrup based medicines for repeated infections due to swallowing problems.<sup>15</sup> The

result of the present study was coinciding with other studies.<sup>16,14</sup> However, 29.4% of normal children in Jordan at the age of 6 years were caries free.

In the present study, the mean caries experience indices for the DS children were (1.84) dmft which were significantly lower compared to those in normal children where the mean caries experience index was (2.74).

## CONCLUSIONS

Individuals with Down Syndrome in Jordan have better oral health in younger age group but as they get older, dental caries and poor oral hygiene became more prevalent. Dentofacial abnormality prevalence in DS patients in Jordan was near to international prevalence.

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