ORIGINAL ARTICLE

Dental Caries Status in Mentally Challenged Children in Comparison with Normal Children

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Abstract

Aim: The aim of the study was to evaluate and compare the oral health conditions and dental caries status in disabled and healthy children.

Materials and methods: Two groups of randomly selected children aged 3–12 years were examined. The first group comprised 100 children with disabilities (cerebral palsy, mental retardation, Down syndrome, autism, and hearing–speaking disorders) and the second (control) group included 100 healthy children. The examined children were selected from a normal school and from schools that take care of the disabled children. A clinical examination was performed using a mirror and probe, which revealed the presence of dental caries as well as missing (extracted) and filled teeth. All clinically detected cavitations were recorded as dental caries. The degree of oral hygiene was evaluated according to the OHI-S index values, which were determined by marking the plaque with 1% eozine solution.

Results: The values of OHI-S index ranged from 3.9 to 4.56 in disabled children and from 2.84 to 2.94 in healthy children. In disabled children, the average dft values were 3.52 in deciduous teeth and 5.34 in mixed dentition. In healthy children, the average dft values were 1.53 in deciduous teeth and 5.21 in mixed dentition. The average DMFT index in disabled children was 1.51 for mixed and 6.48 for permanent dentitions. In healthy children, the average DMFT values were 1.33 in mixed and 4.84 in permanent dentition.

Conclusion: In general, the results revealed a significantly poor level of oral hygiene and quite a high level of caries prevalence in disabled compared to the healthy children, accentuating the need to organize preventive care measurements and improve dental care among the disabled.

Keywords: DMFT/dft index, Mentally challenged children, OHI-S, Oral health status.

Journal of Oral Health and Community Dentistry (2019): 10.5005/jp-journals-10062-0050

Introduction

The disabled comprise a substantial section of the community and it is estimated that there are about 500 million people with disabilities worldwide.[1] Dental caries is the most prevalent disease among mentally retarded children worldwide and "dental treatment is the greatest unattended health need of the disabled."[2] Many published studies have reported relatively poor oral hygiene and high levels of periodontal disease in mentally challenged children,[3,4] and in a questionnaire survey, Randell et al. found that children with Down's syndrome had poorer dental health practices than normal children do.[5] Individuals with Down's syndrome demonstrate a high prevalence of periodontal diseases.[6,7]

Children with disabilities, having serious psychological, physical, and intellectual problems, should obtain special preventive care in dental office.[8] Consequently, inadequate dental care or poor dental public health measurements may have a negative influence on the oral health status. Because of the insufficient or sometimes complete dysfunction of their stomatognathic apparatus, often due to anatomical malformations of the oro-facial cavity and children's uncooperative behavior, accomplishment of good oral hygiene measurements usually implies the assistance of parents or caretakers. The most important risk factor for dental caries in disabled children is due to poor oral hygiene and inadequate tooth brushing. Preventive measurements should thereby include adequate education and motivation both for patients and their caretakers, finally aiming at obtaining and maintaining satisfactory oral hygiene throughout the lifespan.[9] The aim of the present study was to evaluate and compare the oral health conditions and dental caries status in disabled and healthy children.

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How to cite this article: Tom K. Dental Caries Status in Mentally Challenged Children in Comparison with Normal Children. J Oral Health Comm Dent 2019;13(2):31–33.

Source of support: Nil

Conflict of interest: None

Materials and Methods

A clinical examination was performed on a randomly selected sample of 100 healthy children from St. Aloysius Higher Secondary School, Kerala and 100 disabled children from the Anugraha School for mentally challenged, Kottackupuram, Kottayam, Kerala. For the purpose of the study, examinees were divided into two groups: the first group comprising 100 children with disabilities (cerebral palsy, mental retardation, Down syndrome, autism, and hearing—speaking disorders) and the second control group comprising 100 healthy children. Children were 3–12 years old. Clinical examination was performed by using a probe and a mirror and included registration of clinically present caries lesions, extractions, and the number of fillings. The oral hygiene index (OHI) was used for the evaluation of the degree of oral hygiene conditions. For that purpose, teeth of each child in the examined groups were treated with 1% eozin alcohol solution. Teeth were first separated into six groups

(3 in maxilla and 3 in mandible). After having them marked by using a plaque marker (1% eosin alcohol solution), the degree of oral hygiene was evaluated by revealing vestibular and oral colored surfaces. The most colored surfaces in each of the six groups of teeth in a patient's mouth were evaluated from 0 to 3 and the values were registered in the patient's chart. The OHI index for each patient was calculated by dividing the total sum with the number of groups (6).[10,11] Clinically detected cavitations were registered as active carious lesions. For the purpose of evaluating the prevalence and the intensity of carious lesions in both dentitions and revealing every possible morbidity (caries, extractions, and fillings), Klein–Palmers index (DMFT index) was used. Representing the average number of cariously affected and dentally treated teeth in the population, the DMFT index revealed decayed, missing, and filled teeth in the permanent dentition. The dft index was used for the same purpose in deciduous teeth (d = decay in deciduous teeth; D = decay in permanent teeth), extractions (M = missing tooth in permanent dentition), and fillings (f = filling in deciduous tooth; F = filling in permanent tooth). The prevalence of caries was established and presented as percentage of the population affected by caries. Parents and/or caretakers of the examined children were obliged to sign the informed consent and the approval from the Institution for Disabled Children was taken. For statistical analysis, the data were performed in Excel and converted to the SPSS statistical program, version 10.

Results

Figure 1 representing the average OHI-index values show that there is a statistically significant difference in the quality of oral hygiene between deciduous ($p = 0.033$) and mixed ($p < 0.001$) dentitions, in both control and examined groups of children.

Comparing the results of the average dft index values presented in Figure 2, there is no statistically significant difference between the examined groups, and there is no significant difference between deciduous and mixed dentitions in healthy and mentally handicapped children.

Comparing the results of the average DMFT values obtained for mixed dentition, there is no statistically significant difference between disabled and healthy children (Figs 3 and 4).

Discussion

There is a statistically significant difference in the quality of oral hygiene in deciduous ($p = 0.033$), mixed ($p < 0.001$), and permanent dentitions ($p < 0.001$), between the control and the examined groups of children (Fig. 1).

The OHI-S index for disabled children ranges from 3.9 to 4.56 indicating poor oral hygiene in comparison with healthy children, whose OHI-S index ranges from 2.84 to 2.94. Comparing the results of the average dft index values presented in Figure 2, there is no statistically significant difference between the groups in deciduous and mixed dentitions.

The average dft index in disabled children is 3.52 for deciduous and 5.34 for mixed dentition, whereas in healthy children, the average dft index for deciduous dentition is 1.53 and 5.21 for mixed dentition.

Comparing the average deft values in deciduous (1.51) and DMFT values in permanent (6.48) dentitions, there is an increase in the intensity of caries. Children in the age of six are more independent in brushing their teeth. Owing to their psychological and physical impairment, as well as inadequate oral hygiene measurements, they might consequently be at risk for a higher intensity of caries.

Referring to the recent findings, the prevalence of caries in children with special needs was very high and the number of children with good oral hygiene status was very low.[12]

Some authors confirmed that effective oral health programs commencing well before the usual first contact with dental services in the age of 5 are needed for young children who are at a high risk of dental caries.[13]

Conclusion

According to the present results, a significantly low level of oral hygiene status and a high level of the caries prevalence are found in disabled children compared to healthy children. It leads to the conclusion that preventive care is still not satisfactory in the Indian population and dental care, especially in disabled children, is not adequately organized in the country. Further changes are

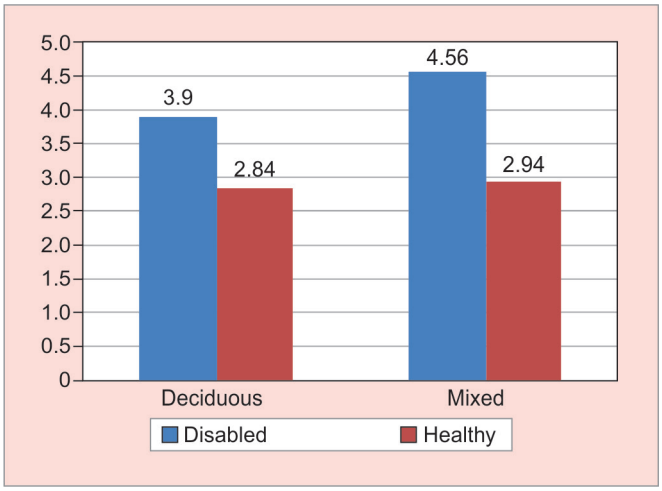

Fig. 1: The relationship representing the average OHI-S index values in deciduous and mixed dentitions in healthy and mentally handicapped children ($p = 0.033$ in deciduous, $p < 0.01$ in mixed dentition, OHI-S value = oral hygiene index—simplified)

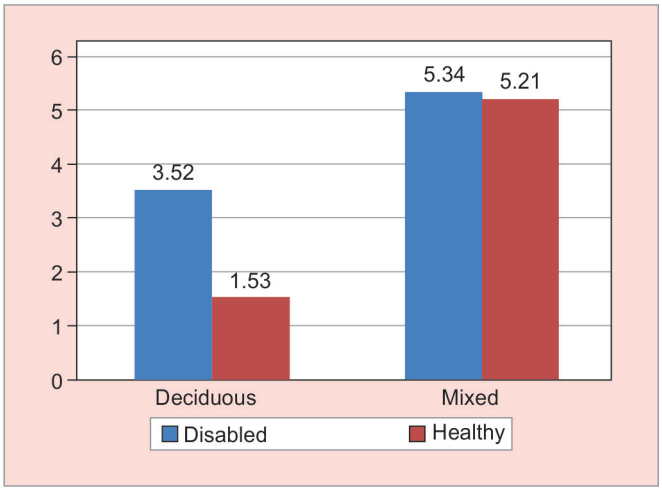

Fig. 2: The relationship representing the average values of dft index in deciduous and mixed dentitions in healthy and mentally disabled children [*p*(deciduous, mixed)—no statistically significant difference; dft index—decayed, filled teeth (deciduous teeth)]

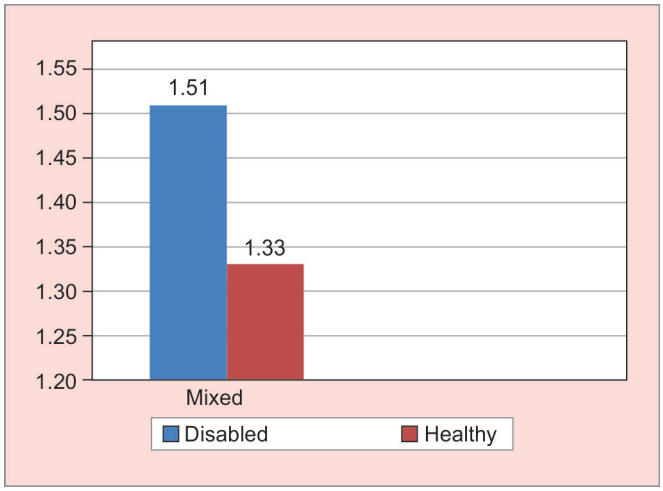

Fig. 3: The relationship representing the average values of DMFT index in mixed dentition in healthy and mentally handicapped children [*p*(mixed)—no statistically significant difference, DMFT index—decayed, missing, filled teeth]

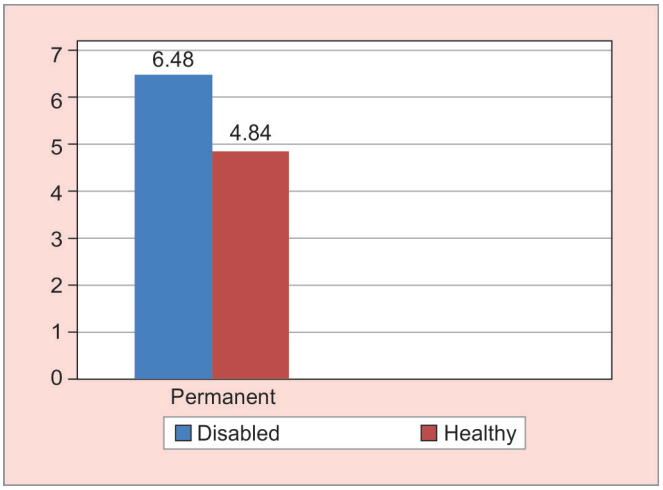

Fig. 4: The relationship representing the average values of DMFT index in permanent dentition in healthy and mentally handicapped children [*p*(permanent)—no statistically significant difference, DMFT index—decayed, missing, filled teeth]

mandatory in order to improve preventive measures and promote oral health particularly in children with disabilities.

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