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Assessment of oral hygiene and gingival health status among special children in Mathura District

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Abstract

Aim: To evaluate the oral hygiene and gingival health status among special children in various schools of Mathura district.

Materials and methods: 184 children between 6 to 12 years with Cerebral palsy, Down's syndrome, Autism, Mental retardation and Hearing impaired were examined. Plaque index and gingival index were taken using Loe and Silness method and data were collected.

Result: The mean value plaque index & gingival index came out to be highest in Mentally retarded children (P.I=1.18; G.I=0.96) followed by Down's syndrome; Cerebral Palsy; Autism; and Hearing impaired children(P.I.=0.66; G.I=0.41).

Conclusion: As these children need special care and attention preventive dental treatment and regular routine dental checkup is a must.

Keywords: Autism, Cerebral palsy, Down's syndrome, Hearing impaired, Mental retardation,

Introduction

Globally, the prevalence of mentally challenged persons has ranged from 9% to 19%[1],[2]. In developing countries, out of 200 million children worldwide, it was estimated that 80% of these were suffering from various types of disability [3]. The American Academy of Pediatric Dentistry (2012) defines special health care needs as "any physical, developmental, mental, sensory, behavioral, cognitive, or emotional impairment or limiting condition

that requires medical management, health care intervention, and/or use of specialized services or programs." The condition may be congenital, developmental, or acquired through disease, trauma or environmental cause and may impose limitations in performing daily self-maintenance activities or substantial limitations in major life activity. For individuals with special health care we require specialized knowledge with increased awareness and attention, adjustment, and accommodative measures beyond what are considered routine" [4]. These children depends on parents or guardians for carrying out day to day activities including oral health care[5]. Oral disease is a major health problem for people with disability. When compared with the general population, they have a higher prevalence and severity of oral disease. On global scale, dental caries and periodontal diseases exert tremendous, social, economic and financial burden[6]. Some reasons for this observation are inadequate oral hygiene, and disability-related factors[7,8]. Oral health improvement of these children requires not only high quality clinical care, but also to receive entry to the dental office in the first place[9]. Improvement oral health in a population begins with the collection of epidemiological data, which helps to understand the needs of the community, to plan treatment, and prevention strategies and monitor the development of situation over a period of several years. Thus, this study was conducted with the aim to assess the oral hygiene and gingival health status of special children inorder to prevent further complications cause by poor oral health**.**

Materials and Methods

Ethical Consideration

Ethical clearance was taken from the ethical committee of K.D. Dental College and Hospital, Mathura. Permission to carry on the study was taken from the different special schools by giving an informed consent to the special schools.

Inclusion and exclusion criteria

Special children between the ages of 6-12 years, children who were present on the day of dental examination and both boys and girls were included in the study. Subjects suffering from major systemic illness and children who were not willing to participate were excluded .

Study design

The study was done under the support of K.D. Dental College and Hospital, Mathura. A total of 184 subjects between the ages of 6 and 12years were selected from various special schools in Mathura district for the study. The participants were divided into 5 groups depending upon their disability:

1) Cerebral Palsy (n=41),

2) Down's syndrome (n=42),

3) Autism (n=24),

4) Mental retardation (n=26),

5) Hearing impaired (n=51), where 'n' is equal to number of participants.

Dental examinations were done in three different special schools at Mathura. The children were seated on a normal chair under natural daylight and oral examination was done by using mouth mirror, WHO probe and explorer. The plaque index, Silness and Loe index (1967) and gingival index (1963) were recorded for each subject by visually assessing the buccal and palatal or lingual surface of the teeth.

Statistical analysis

Data were analysed using Statistical Package for Social Sciences, SPSS version 17. Frequency tables were prepared and mean and standard deviation were calculated. Descriptive statistics, One way ANOVA test, Post hoc tukey test were used to examine the relationship between plaque & gingival scores.

Result

Plaque index came out to be highest in Mental retardation (mean value=1.18) > Down's syndrome (mean value=1.17) > Cerebral Palsy (mean value=1.04) > Autism (mean value=0.87) > Hearing impaired (mean value=0.66) [Table no.1, Figure no.1].

Gingival index came out to be highest in Mental retardation (mean value=0.96) > Down's syndrome (mean value=0.90) > Cerebral Palsy (mean value=0.71) > Autism (mean value=0.69) > Hearing impaired (mean value=0.41) [Table no. I, Figure no.2].

Overall plaque index and gingival index were statistifically significant (p-value=0.000) [Table no. II]. Table no.III shows Post hoc Tukey multiple comparisons. The results indicate that children with hearing impaired had significantly fewer plaque index and gingival than the other different groups of children.

Discussion

One of the most common health problems among individuals with special health care needs is Oral diseases. There is a general agreement that higher rates of poor oral hygiene, gingivitis, and periodontitis is found in specially challenged children as compared to the general population[10][11]. Their poor oral health condition is due to their low physical activities in maintaining their oral hygiene. These children need same health care facilities as the general population, but there is evidence that they experience poor oral as well as general health[12]. Their oral health may be affected by limited understanding on the importance of oral health maintenance[13]. difficulties in communicating oral health needs,[14] poor motor skills, anticonvulsant medications that impact on gingival health,[15] fear of treatment procedures [16] and lack of care. So, in order to maintain a proper oral hygiene, these special children need data about their oral health status.

Snyder et al. pointed out a factor that lead to the difficulty in maintaining their oral hygiene is the lack of manual coordination[17]. According to Wei-Li Jen et al.(2009) in children with cerebral palsy, if phenytoin is used as a medication, different extents of drug-induced gingival hyperplasia are commonly seen, and daily oral hygiene maintenance becomes very important[18]. Children with Down's syndrome & hearing impaired are usually cooperative during dental treatment, and techniques used in treating pediatric patients like "tell, show and do" can be helpful & thus this method can also help in their oral hygiene maintenance[19]. Regular oral examinations, oral hygiene instruction, and design of preventive strategies are necessary to promote the oral health of these children. Higher prevalences of gingivitis and other periodontal diseases are more common in mentally retarded children than the general population.

In this study, the mean value of plaque index & gingival index came out to be highest in Mentally retarded children followed by Down's syndrome, Cerebral Palsy, Autism and Hearing impaired children. It can be due to the variation of IQ level of the child as Hearing impaired children have higher IQ level as compared with rest of them. Children with normal IQ can respond properly and thus they can maintain their oral hygiene well while other children with low IQ cannot respond properly. Many studies have reported similar findings, and this has been attributed to improper brushing technique and inadequate knowledge of oral hygiene practices despite the high prevalence of parental attention[20][21][22]. So, inorder to avoid poor oral hygiene, these children should be taken proper care with their oral hygiene maintenance. Parents and caretakers should be instructed with the oral hygiene maintenance.

Figures and tables

Table 1: Mean value of Plaque and Gingival index

Descriptive Statistics

Index	Type	N	Mean	SD	Min	Max
Plaque Index	Cerebral palsy	41	1.04	0.48	0.33	2.25
	Down's syndrome	42	1.17	0.59	0.29	2.58
	Autism	24	0.87	0.43	0.29	1.90
	Mental retardation	26	1.18	0.53	0.29	2.20
	Hearing impaired	51	0.66	0.44	0.08	1.88
Gingival Index	Cerebral palsy	41	0.71	0.41	0.00	2.00
	Down's syndrome	42	0.90	0.56	0.00	2.00
	Autism	24	0.69	0.47	0.00	1.62
	Mental retardation	26	0.96	0.57	0.00	2.00
	Hearing impaired	51	0.41	0.27	0.00	1.33

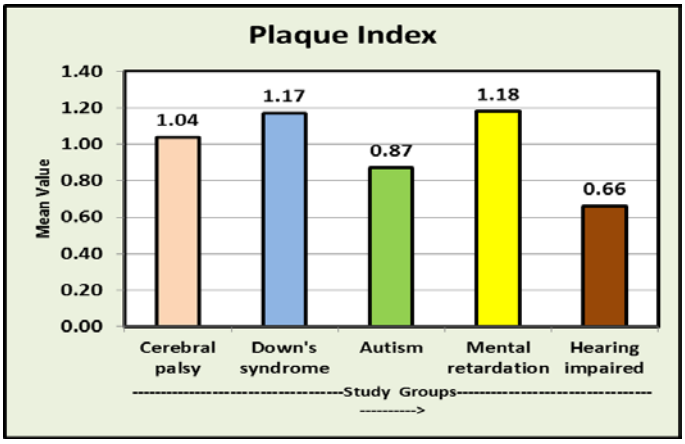

Figure 1: Graph showing the status of oral hygiene among the subjects

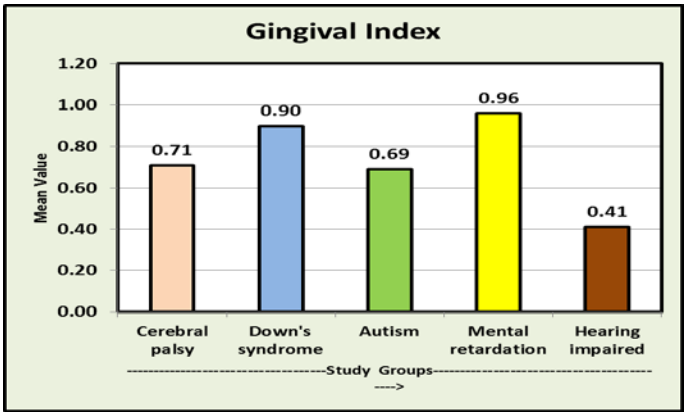

Figure 2: Graph showing the status of gingival health among the subjects

Table 2: Distribution of Plaque and Gingival index among the study groups

Index	Type	N	Mean	S.D.	F-value	P-value	Inferences
Plaque Index	Cerebral palsy	41	1.04	0.48	8.480	0.000	S
	Down's syndrome	42	1.17	0.59			
	Autism	24	0.87	0.43			
	Mental retardation	26	1.18	0.53			
	Hearing impaired	51	0.66	0.44			
Gingival Index	Cerebral palsy	41	0.71	0.41	9.477	0.000	S
	Down's syndrome	42	0.90	0.56			
	Autism	24	0.69	0.47			
	Mental retardation	26	0.96	0.57			
	Hearing impaired	51	0.41	0.27			

Table 3: Multiple comparison among the study groups for plaque and gingival index

Index	Type (I)	Type (J)	Mean Difference (I-J)	P-Value	Inferences
Plaque Index	Cerebral palsy	Down's syndrome	-0.13	0.741	NS
		Autism	0.17	0.653	NS
		Mental retardation	-0.15	0.773	NS
		Hearing impaired	0.38	0.003	S
	Down's syndrome	Autism	0.31	0.116	NS
		Mental retardation	-0.01	1.000	NS
		Hearing impaired	0.52	0.000	S
	Autism	Mental retardation	-0.32	0.161	NS
		Hearing impaired	0.21	0.437	NS
	Mental retardation	Hearing impaired	0.53	0.000	S
Gingival Index	Cerebral palsy	Down's syndrome	-0.19	0.288	NS
		Autism	0.02	1.000	NS
		Mental retardation	-0.26	0.165	NS
		Hearing impaired	0.30	0.018	S
	Down's syndrome	Autism	0.21	0.357	NS
		Mental retardation	-0.06	0.983	NS
		Hearing impaired	0.49	0.000	S
	Autism	Mental retardation	-0.27	0.211	NS
		Hearing impaired	0.278	0.099	NS
	Mental retardation	Hearing impaired	0.550	0.000	S

Conclusion

As special children need special care and attention, parents and caregivers should be aware of their oral hygiene. Preventive dental treatment and routine dental check up is a must for these children. Necessary steps for the maintenance of their oral hygiene status should be taken by giving proper oral health education to develop their skills by diet counselling, proper oral hygiene instructions, regular dental check up & by providing school based programs.

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