

Original Article

Oral Health Status and Treatment Needs among Differently Abled Children

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ABSTRACT

Introduction: The provision of dental services to children with special health care needs historically has been given limited attention by the dental profession. Under-diagnosis and differential oral health treatment contribute to the poor oral health of adults with disabilities. The present study was undertaken to assess the oral health status and behaviour among differently abled children.

Methodology: The study sample comprised of 317 subjects who were disabled and attending special schools. All the teeth were examined for dental caries. Mouth mirrors and CPI probes were used according to the WHO criteria. Clinical assessment of the oral health status was done by using the simplified oral hygiene index, DMFT. Chi square test and ANOVA were used to compare categorical variables.

Results: The study consists of 317 intellectually disabled (ID) children, divided into three groups, out of which 65 (20.50%), 184 (58.04%) and 68 (21.45%) were suffering from autism, cerebral palsy and mental retardation respectively. Irrespective of the type of disability, most of the subjects consulted dentist only in need. The decayed teeth in subjects with mental retardation, cerebral palsy and autism were 2.37 ± 1.01 , 1.91 ± 1.50 and 1.75 ± 1.11 respectively and 58.82% of the mentally retarded subjects reported with poor oral hygiene status.

Conclusion: In comparison with normal children, the disabled subjects were not given enough dental care with respect to their treatment needs. Taking into consideration the multi factorial influence on oral health status of the present disabled population, oral health promotion and intervention programs should be targeted and concentrated towards these risk groups.

INTRODUCTION

Differently abled children are those who have physical,

mental, sensory, behavioural, emotional and chronic medical conditions that require health care beyond that considered routine and which involves specialized knowledge, increased awareness, attention and accommodation. Developmental disabilities can develop due to a variety of conditions which include cerebral palsy, Down's syndrome, mental retardation, autism, seizure disorders, hearing and visual impairments, congenital defects and even social or intellectual deprivation. The provision of dental services to children with special need historically has been given limited attention by the dental profession.¹

The American Health Association defines a child with disability as a child, who for various reasons, cannot fully make use of all his or her physical, mental and social abilities² in other words, a child who cannot play, learn, or do things that other children of his or her age can. In general, disabilities in children may be present individually or as a set of multiple physical, developmental, cognitive and/or affective disabilities. According to World Health Organization report individuals with disabilities comprise 10% of the population in developed countries and 12% in developing countries.³ Because of their special care needs, daily care of children with disabilities is different from that of children with normal abilities, who can usually manage their own oral health. In contrast, children with disabilities may be partially or wholly dependent on someone else to perform their daily care activities which may cause difficulties for the families of these children.⁴ Oral disease is a major health problem for adults with disabilities⁵ who have a higher prevalence and severity of oral disease when compared to the general population.⁶ High rates of dental caries, missing teeth, periodontal disease, prolonged retention of primary teeth, malaligned or supernumerary teeth and malocclusion are all indicators of poor oral health in adults with disabilities.⁷ Poor oral health has

negative impact on nutrition, digestion, the ability to chew and enjoy food, facial shape and speech.⁸ Under-diagnosis and differential oral health treatment contribute to the poor oral health of adults with disabilities.⁹

The prevention and treatment of the early stages of dental disease lie in the provision of self-care but this may be difficult for the special need children.¹ In India, there is little data available relating to dental health among differently abled children.¹ Thus, the study aims to determine the prevalence of dental caries, oral hygiene status and behaviour among differently abled children.

METHODS

The present study was initiated after obtaining ethical clearance from the ethical committee of the Surendera Dental College and Research Institute. The study was conducted on students attending special schools in the North West part of Rajasthan, India. Data was obtained from all the subjects present on the day of the examination and their parents from March 2016 to May 2016. An invitation letter along with consent was sent to the parents for participation and written consent was obtained. The parents were briefly explained about the nature of study and were assured of keeping the contents confidential. All proformas were coded to avoid identification of the students by the examiners. The sample populations of children with the type of disability were derived from the databases of school records. Those subjects who were either unable to provide the required information or incomplete questionnaire and presence of one or more erupted permanent teeth were excluded. The initial sample size was 346 students and after considering the inclusion and exclusion criteria the final sample size comprised of 317 subjects.

Prior to the study, a team made up of two examiners participated in a training program which included intra-examiner and inter-examiner calibration exercises where minimum and maximum kappa values were agreed (0.81 and 0.86 respectively) between the examiners. After compiling the socio-demographic factors, the following explorations were performed in the subjects:

1) Evaluation of oral hygiene on buccal/labial and lingual/palatal surfaces of the selected index teeth. Debris and calculus was assessed according to the Oral Hygiene Index- Simplified (OHI-S).¹⁰

2) Evaluation of the dental caries was done according to the rules of WHO. Dental caries was further categorised depending upon the decayed teeth in an individual: caries free ($d=0$), low severity ($d=1-4$) and high severity ($d \geq 4$). The severity of dental caries was based on DMFT index.¹¹

3) Evaluation of malocclusion and occlusion anomalies.

Children were examined in a classroom lying on desks

under the natural light. The teeth were first cleaned and dried with gauze and then examination was done with the help of front surface mouth mirror and CPITN probe.¹² World Medical Association Declaration of Helsinki principles for Medical Research involving human subjects were followed to maintain the ethics. Collected data was tabulated in an excel sheet, under the guidance of statistician and analyzed using SPSS software, Statistics Windows, Version 20.0. (Armonk, NY: IBM Corp) for the generation of descriptive and inferential statistics. The statistical significant difference among groups was determined by the Chi square test and one-way analysis of variance and the level of significance was set at $p < 0.05$.

RESULTS

The study consists of 317 intellectually disabled (ID) children, divided into three groups, out of which 65 (20.50%), 184 (58.04%) and 68 (21.45%) were suffering from autism, cerebral palsy and mental retardation respectively. When different age groups were statistically analysed with different types of disability, it was found to be non-significant ($p > 0.05$) (Table 1).

Irrespective of the type of disability, most of the subjects consulted dentist only in need. 77.9% percent of the subjects had class one molar relationship. Approximately 60% of the subjects were suffering from occlusion anomalies (Table 2). The decayed teeth in subjects with mental retardation, cerebral palsy and autism were 2.37 ± 1.01 , 1.91 ± 1.50 and 1.75 ± 1.11 respectively. When decayed component was statistically analysed with different type of disability, it was found to be statistically significant ($p < 0.05$) (Table 3). 58.82% of the mentally retarded subjects reported with poor oral hygiene status. When oral hygiene status was compared with the type of disability, it was found to be statistically significant (Table 4).

DISCUSSION

Maintaining good oral health is particularly challenging among individuals with disabilities because of increased oral health risks due to underlying disease, limitations regarding access to care and also competing demands. The lack of oral hygiene has been implicated as a fundamental factor in the development of periodontal diseases and dental caries in mentally challenged individuals.

The findings of this study regarding brushing frequency were consistent with the National Oral Health Survey (2002–2003)¹³ and Shukla D et al.¹⁴ This could be ascribed to improved living conditions of the study groups in terms of their socio- economic status and higher literacy level affecting oral health behaviour. It was evident from the results of our study that the prevalence of dental caries in disabled individuals was similar with previous studies

Table 1: Age group distribution of study population.

Age Group		Autism	Cerebral Palsy	Mentally retarded	Total
3-5 years	Male	3 (20%)	8 (53.33%)	4 (26.67%)	15 (21.4%)
	Female	15 (27.27%)	33 (60%)	7 (12.73%)	55 (78.6%)
6-15 years	Male	8 (12.12%)	47 (71.21%)	11 (16.67%)	66 (42.86%)
	Female	11 (12.5%)	51 (57.96%)	26 (29.55%)	88 (57.14%)
16-20 years	Male	13 (30.23%)	20 (46.51%)	10 (23.26%)	43 (46.23%)
	Female	15 (30%)	25 (50%)	10 (20%)	50 (53.76%)

Table 2: Demographic variable distribution in relation to study population

Variables	Options	Autism	Cerebral Palsy	Mentally retarded	Total
Treatment	None	12 (18.46%)	13 (7.06%)	9 (13.24%)	34 (10.73%)
Pattern	Regular	14 (21.54%)	15 (8.15%)	5 (7.35%)	34 (10.73%)
	Only in need	39 (60%)	156(84.78%)	54 (79.41%)	249(78.55%)
Tooth brushing	Once	52(80%)	175(95.11%)	57 (83.82%)	284(89.59%)
	Twice	13 (20%)	9 (4.89%)	11 (16.18%)	33 (10.41%)
Malocclusion	None	0	0	0	0
	Class-1	46(70.77%)	152(82.60%)	49 (72.06%)	247(77.92%)
	Class-2	12 (18.46%)	23 (12.5%)	12 (17.65%)	47 (14.83%)
	Class-3	7 (10.77%)	9 (4.89%)	7 (10.29%)	23 (7.26%)
Occlusion anomalies	Crowding	22 (33.85%)	51 (27.72%)	21 (30.88%)	94 (29.65%)
	Spacing	17 (26.25%)	44 (23.91%)	14 (20.59%)	75 (23.66%)
	Anterior bite	8 (12.31%)	7 (3.80%)	8 (11.76%)	23 (7.26%)
Education level of father	None	18 (27.69%)	82 (44.57%)	25 (36.76%)	125(39.43%)
	Primary	19(29.23%)	59(32.06%)	14(20.59)	92 (29.02%)
	Secondary	26(40%)	83(45.11%)	24(35.29%)	133(41.96%)
	College	14 (21.5%4)	36 (19.57%)	22 (32.35%)	72 (22.71%)
Education level of mother	None	6 (9.23%)	6(3.26%)	8(11.76%)	20 (6.31%)
	Primary	31(47.69)	71(38.59)	21 (30.88%)	123(38.80%)
	Secondary	4(6.15)	55(29.89)	14 (20.55%)	73 (23.03%)
	College	10(15.38)	27(14.67)	9(13.24%)	46(14.51%)
	None	20(30.77)	31(16.85)	24 (35.29%)	75 (23.66%)

Table 3: Mean distribution of decayed, missing and filled teeth among types of disability

Age Group	No.	D/d Mean (SD)	M/m Mean (SD)	F/f Mean (SD)	DMFT/dmft Mean (SD)
"Mentally retarded	68	2.37 (1.01)	1.21 (1.58)	0	3.59 (1.95)
"Cerebral palsy	184	1.91 (1.50)	1.37 (1.59)	0	3.28 (2.22)
Autism	65	1.75 (1.11)	1.41 (1.61)	0	2.87 (1.97)
Anova test		0.02	0.73	0	0.14
Total	317	1.97 (1.31)	1.26 (1.53)	0	3.21 (2.10)

DMFT = decayed, missing, or filled permanent teeth, dmft = decayed, missing, or filled deciduous teeth

Table 4: Oral hygiene status among types of disability

Age Group	No.	Good	Fair	Poor
Mentally retarded	68	17 (25%)	11 (16.18%)	40 (58.82%)
Cerebral palsy	184	42 (22.83%)	63 (34.23%)	79 (42.93%)
Autism	65	18 (27.69%)	19 (29.23%)	28 (43.08%)
Chi square test	p<0.01			

which reported prevalence of dental caries ranging from 78% to 90% in disabled individuals.¹⁵ This could be attributed to muscle weakness and inadequate muscular coordination meddling with daily hygiene procedures. Moreover, less frequent brushing, and some socio-demographic factors may be important determinants of dental caries risk in these individuals.

The mean DMFT score in the present study was found higher in subjects with mental retardation while Shukla D et al¹⁴ reported the same in subjects suffering from cerebral palsy and autism disorders. This may be attributed to the fact that the subjects with mental retardation were more with poor oral hygiene as compared to the subjects with other disorders. In the present study, approximately 70% of the subjects were having poor oral hygiene which was consistent with the findings of previous studies implying poor level of oral hygiene among individuals with disabilities.^{16,17,18}

The findings of this study showed that the mentally retarded individuals reported more with poor oral hygiene as compare with the subjects with other disorders which were in agreement with previous studies.^{19,20} These results may be related to the low physical abilities of these individuals, inadequate understanding of oral health management,²¹ problems in conveying oral health needs,¹⁸ anxiety of oral health procedures²² and dependence on other people such as parents or employees with assisted living services.²³

The present study reports a higher prevalence of untreated carious lesions in the Special health care need (SHCN) children than in their normal counterparts which is in accordance with previous findings which suggested that the severity of caries attack is essentially the same in disabled and normal schoolchildren but that the rate of treatment is frequently lower in the disabled.^{18, 24, 25} This study showed that there was a high demand for provision of dental services, especially to the disabled, and that this population had received less dental treatment. Many dentofacial anomalies were also observed such as malocclusion, crowding and spacing. All these factors collectively lead to poor oral hygiene and they are a cause of dental caries. These results are similar to the results of and Griffiths J²⁶ and Mary E. Dávila²⁷ .

Limitations of the current study is that assessment or tracking changes in oral health assessment with advancing intellectual disability was not allowed because of cross sectional nature of the study. Therefore, further longitudinal studies are recommended .

CONCLUSION

Oral health of disabled children assessed indicates a cumulative neglect of oral health and that poor oral health is a major problem for disabled school children. In comparison with normal children, the disabled subjects were not given enough dental care with respect to their treatment needs. Taking into consideration the multifactorial influence on oral health status of the present disabled population, oral health promotion and intervention programs should be targeted and concentrated towards these risk groups.

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