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ORIGINAL ARTICLE

Dentition Status, Periodontal Status, Dentofacial Anomalies and Treatment Needs Among Differently Abled Children in Chennai

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ABSTRACT

BACKGROUND: Oral health is an important aspect of health for all children, and is more important for children with special health needs.

AIM: The study was done to assess the dentition status, periodontal status, dentofacial anomalies and treatment needs of differently abled children attending special schools in Chennai.

MATERIALS AND METHOD: A cross sectional study was conducted among 6 - 18 year old hearing and speech impaired children and visually impaired children in Chennai. A cluster sampling methodology was followed for the selection of study subjects. The final sample size for the study was 624 hearing and speech impaired children and 506 visually impaired children. The data was collected using WHO Assessment Form (WHO 1997) modified. Statistical analysis was done using Pearson chi-square test and Student t test.

RESULTS: Overall mean dmft/DMFT among differently abled children was (0.58+1.46)/ (0.50+0.93). Dental caries experience was more among hearing and speech impaired children with mean dmft/DMFT being (0.67+1.44) / (0.52+0.95) and it was statistically significant($P < 0.05$) with visually impaired children in case of dmft. Overall mean DAI was (22.3+5.4) and malocclusion was predominant among visually impaired children compared to hearing and speech impaired children and it was statistically significant ($P < 0.001$) The periodontal conditions were poorer among visually impaired children with most of them having calculus and it was statistically significant ($P < 0.05$) compared to hearing and speech impaired children. Traumatic injuries were seen more among visually impaired children compared to hearing and speech impaired children and it was statistically very highly significant ($P < 0.001$). Hearing and speech impaired children needed more treatment than the visually impaired children with majority of them needing restorations.

CONCLUSION: It can be concluded from the study that even though the oral health status and treatment needs of differently abled children is not alarming, a prevention based intervention program directed especially towards dental caries and periodontal health is recommended for these special groups for a better productive life in future.

Key Words: Differently abled, Treatment, Dental caries, Periodontal health, Hearing and speech impaired, Visually impaired

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INTRODUCTION

Oral health is an important aspect of health for all children, and is more important for children with special health needs (1). Nowadays, the term "disability" is preferred to the "handicapped" (2). Disability is an umbrella term, covering impairments, activity limitations, and participation restrictions (3). There are more than 1000 million people with disabilities in the world (4). This corresponds to about 15% of the world's population. Between 110 million (2.2%) and 190 million (3.8%) people 15 years and older have significant difficulties in functioning (5, 6). Disability is more complex among children (7). This figure is increasing through population growth, medical advances and the ageing process (8). According to World Health Organization estimates, individuals with disabilities comprise 10% of the population in developed countries and 12% in developing countries (9). People with disabilities deserve the same opportunities for oral health and hygiene as those who are healthy. Unfortunately, oral health care is of the greatest underserved health needs of the disabled people. Inadequate dental care or poor dental public health measurements may have negative influence on their oral health status (1). They have poor oral health status compared with normal children due to their inaccessibility to dental care due to communication barriers (10).

Children with hearing impairment seem to be one such group lacking adequate oral health awareness to maintain their oral health owing to communication barriers (10). A person with hearing impairment is one who is not able to hear as well as someone with normal hearing – hearing thresholds of 25db or better in both ears- is said to have hearing loss. Four degrees of hearing impairment have been suggested. They are mild (26-40db), moderate(41-70db), severe(71-90db), Profound(>90db) (11). According to National Sample Survey Organisation (NSSO) of India in 2002, 0.4% of 1065.40 million children suffered from hearing impairment (12).

Visual impairment varies from total blindness to slight limitations of size, color, distance and shape (13). Moderate visual impairment(20/70 to 20/160-visual acuity) combined with severe visual impairment(20/200 to 20/400-visual acuity) are grouped under the term 'low vision' taken together with blindness represents all visual impairment(14).

Visual impairment and hearing impairment constitutes a significant proportion among all disabled children. Comparing oral health attributes between different groups of special care children would be helpful in obtaining baseline data to understand oral health need of these children and accordingly recommending appropriate preventive measures. Therefore, the present study was undertaken with an aim of understanding the oral health status and treatment needs of differently abled children attending special schools in Chennai.

MATERIALS AND METHODS

A cross sectional study was conducted to assess the dentition status, periodontal status, dentofacial anomalies and treatment needs of differently abled children attending special schools in Chennai. The hearing and speech impaired and the visually impaired children were selected since they form the major portion among the differently abled children attending special schools in Chennai.

Study Population

The study was conducted among 6-18 year old hearing and speech impaired children and visually impaired children, attending special schools in Chennai.

Table 1: Distribution of study subjects according to impaired conditions-Age wise

Age wise	Type of handicapping conditions		Total
	Hearing and speech impaired	Visually impaired	
Males	397(63.6%)	268(53%)	665(58.8%)
Females	227(36.4%)	238(47%)	465(41.2%)
Total	624(100%)	506(100%)	1130(100%)

Table 2: Caries experience among study subjects

Caries experience	Overall				P-value
	Hearing and speech impaired		Visually impaired		
	Mean	SD	Mean	SD	
Dt	0.61	1.41	0.43	1.30	0.032*
Mt	0.01	0.105	0.01	0.099	0.828+
Ft	0.05	0.348	0.02	0.217	0.200+
Dmft	0.67	1.44	0.47	1.48	0.022*
DT	0.42	0.752	0.38	0.699	0.331+
MT	0.03	0.198	0.04	0.279	0.559+
FT	0.07	0.586	0.07	0.435	0.975+
DMFT	0.52	0.958	0.48	0.886	0.527+

P+ value >0.05 is not significant; P value <0.05 is significant; P** value <0.01 is highly significant; P*** value <0.001 is very highly significant*

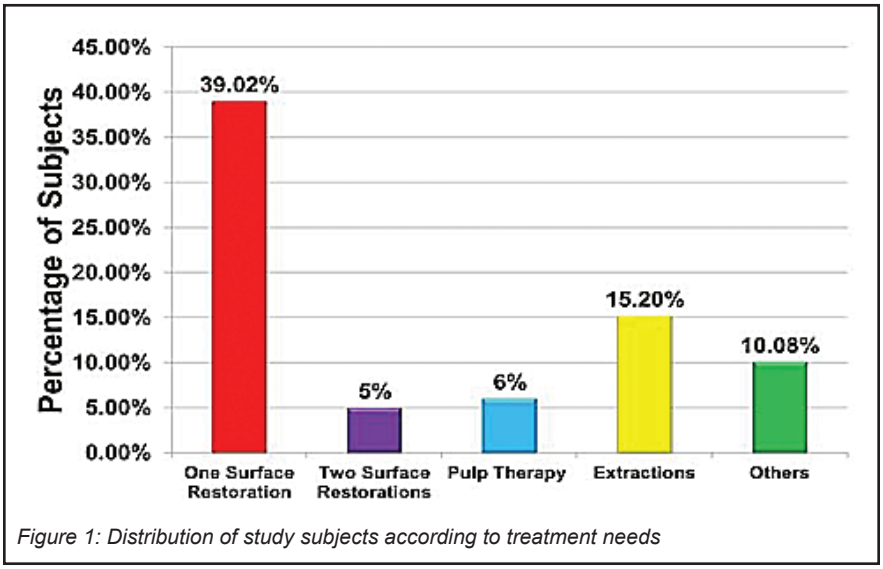

Figure 1: Distribution of study subjects according to treatment needs

Inclusion criteria

- Children who returned the informed consent with permission obtained from parents / guardians.
- Children who are attending the special schools in Chennai.
- Children who are from 6 to 18 years of age.

Exclusion criteria

- Children undergoing orthodontic treatment
- Children not willing to participate
- Children absent on the successive days of examination.

ETHICAL CLEARANCE

The ethical clearance for the study was obtained from the Institutional Review Board of Meenakshi Academy of Higher Education and Research.

OBTAINING APPROVAL FROM THE AUTHORITIES

The nature and purpose of the study was explained to the special school (Correspondent, Principal, Headmaster/ Headmistress, etc.) and prior permission was obtained to conduct the study in their schools. The list of private schools was obtained from Chief Educational Officer and for the government school, the permission was obtained from the State Commissioner.

PILOT STUDY

For the pilot study, one school for hearing and speech impaired children and one school for visually impaired children were randomly selected from Chennai. The children were examined according to the WHO Basic Oral Health Assessment (1997) modified proforma. A total of 150 study subjects were examined with random selection of 75 hearing and speech impaired and 75 visually impaired children. All children were examined by a single examiner, seated on a chair under natural light using standardized instruments.

SAMPLING METHODOLOGY

A cluster sampling method was used to select the samples. A list of special schools was taken from chief educational officer for private schools and for the government school it was taken from state commissioner for differently abled. It consists of eight schools, out of which six schools were taken since they granted permission for the study. From the selected schools all inmates between the ages of 6-18 years old were included in the study. Even though the sample size required was 481 after examining the children in the visually impaired school it ended up with 506 and in hearing and speech impaired school it ended with 624 which increased the total sample size to 1130.

Data was collected using the following WHO Assessment Form (WHO 1997) modified (15).

RESULTS

The final sample consisted of 1130 differently abled children of which 624 were hearing and speech impaired and 506 were visually impaired children,

Table 3: Prevalence of malocclusion and orthodontic treatment needs among study subjects (12-18 years only)

DAI scores	Severity of malocclusion	Treatment need	Number of children affected		P value
			Hearing and speech impaired children n=393(%)	Visually impaired children n=366 (%)	
≤ 25	No abnormalities	No or slight need	364(92.6%)	233(63.7%)	0.000***
26 – 30	Definite malocclusion	Elective treatment	21(5.4%)	78(21.3%)	0.0002***
31 – 35	Severe malocclusion	Highly desirable treatment8	(2.2%)	28(7.6%)	0.000***
>35	Very severe or handicapping	Treatment mandatory	0%	27(7.4%)	0.000***

P+ value >0.05 is not significant; P* value <0.05 is significant; P** value <0.01 is highly significant; P*** value <0.001 is very highly significant.

who were examined from various special schools in Chennai.

Table 1 shows the distribution of study subjects according to impaired conditions and the prevalence of dental diseases and treatment needs is given in the table 2.

Caries experience among the study subjects

The caries experience among hearing and speech impaired and visually impaired children is given in table 3, with hearing and speech impaired children having more caries experience than visually impaired children and it was statistically significant only in case of deciduous dentition($P < 0.05$).

Prevalence of malocclusion and orthodontic treatment needs among study subjects

The prevalence of malocclusion was considered only for the study subjects 12 years and above. There were total of 759 children. The results were given in table 4.The results showed that more number of visually impaired children had very severe malocclusion than hearing and speech impaired children which was statistically very highly significant($P < 0.001$).

Prevalence of periodontal conditions (highest CPI scores) among study subjects

Among the study subjects, 28.0% of hearing and speech impaired children and 9.5% of the visually impaired children had prevalence of healthy periodontal conditions with code 0 as the highest score and the difference noted was statistically very highly significant ($P < 0.001$). 1.8% of the hearing and speech impaired children and 6.9% of the visually impaired children had prevalence of bleeding with code 1 as the highest score and the difference noted was statistically very highly significant ($P < 0.001$). 70.2% of the hearing and speech impaired children and 83.6% of the visually impaired children had prevalence of calculus with code 2 as the highest score and the difference noted was statistically not significant($P > 0.05$). None of them had periodontal pocket.

Distribution of study subjects according to trauma

Overall 6.8% of study subjects had trauma in their teeth. 3.3% of hearing and speech impaired children and 11.06% of visually impaired children had trauma in their teeth and the difference noted was statistically very highly significant ($P < 0.001$).

Distribution of study subjects according to treatment needs

The distribution of study subjects according to treatment needs is given in the figure 2. 40.5% of the hearing and speech impaired children and 37.2% of visually impaired children required one surface restoration and the difference noted was statistically not significant ($P > 0.05$). 18.1% of the hearing and speech impaired children and 11.7% of visually impaired children required extractions and the difference noted was statistically significant ($P < 0.05$).

DISCUSSION

In the present study overall mean dmft and DMFT was 0.58+1.46 and 0.50+0.93 in their deciduous and per-

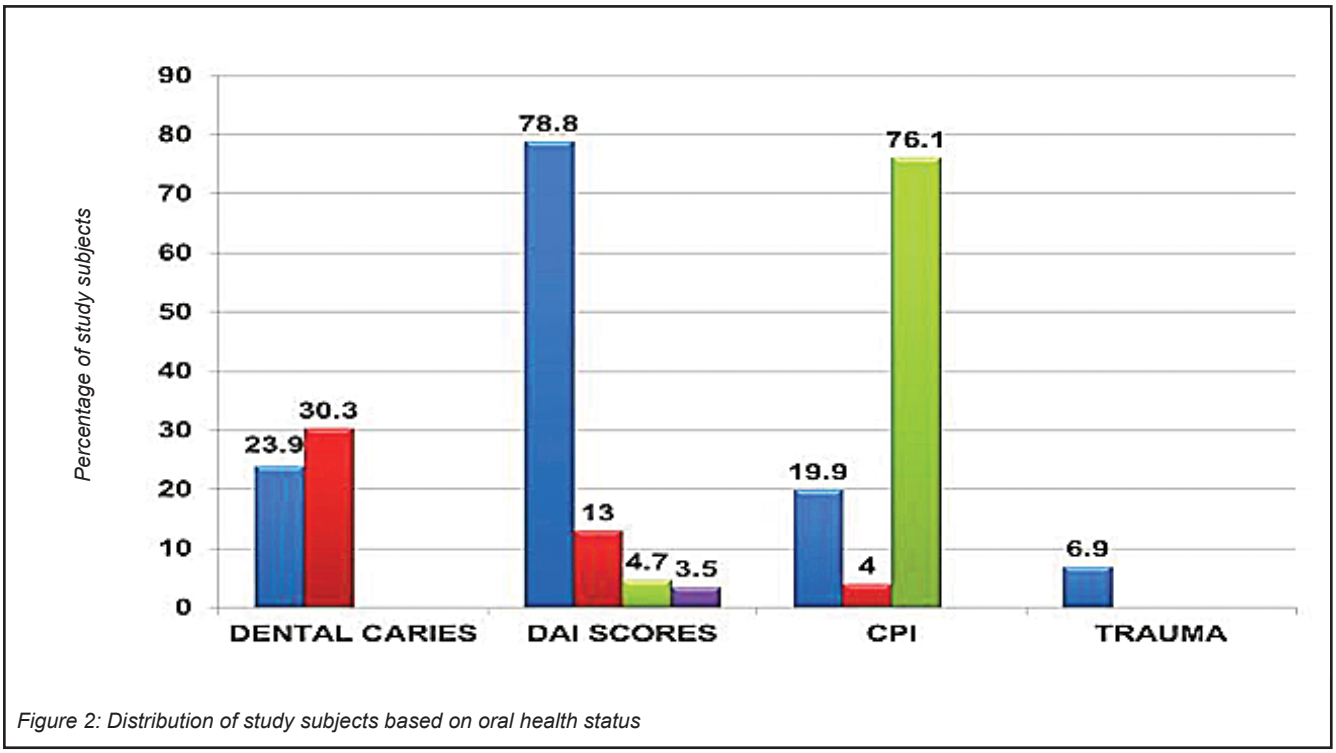

Figure 2: Distribution of study subjects based on oral health status

manent dentition respectively which is lesser than the studies conducted by Punithavathy et al (16) among disabled children in Erode where mean deft and DMFT being 3.59 and 2.84 respectively. Overall hearing and speech impaired children had more decay teeth than the visually impaired children and the difference was statistically significant in case of deciduous dentition, it is similar to the study conducted by Kanika avasthi et al (17) among sensory impaired children in Delhi and Gurgaon and in contrast to the study conducted by Behjat Almolook Ajami et al (18) among children with disabilities. These results of caries in handicapped children might be attributed to low level of awareness and negligence of good oral hygiene practices.

In the present study, overall 13.04% of the children had definite malocclusion, 4.7% had severe malocclusion and 3.5% had handicapping malocclusion which is almost similar to the study conducted by Mahantesh B Siddibhavi (19) among handicapped children in Belgaum where14.06% had definite malocclusion, 3.8% had severe malocclusion, 4.18% had handicapping malocclusion. In a study conducted by Bharathi M Purohit et al (9) among children with disabilities in Karnataka, 66.4% had definite malocclusion, 10.9% had severe malocclusion and 0.4% had very severe malocclusion which was higher than the present study.

Overall the prevalence of malocclusion was more in visually impaired children than in hearing and speech impaired children and it is contrast to the study conducted by Kanika Avasthi et al (17) among sensory impaired children in Delhi and Gurgaon where 58% of hearing and speech impaired children and 30.69% of visually impaired children had prevalence of malocclusion. In the present study, the prevalence of malocclusion was more in males than in females and it is similar to the study conducted by Pancham Aggarwal et al (20) among children with special needs in Chandigarh. The reason for increase in occlusion anomalies in handicapped children may be growth retardation, poor muscular co-ordination and may be habits associated with handicapping conditions.

In the present study, overall 4.1% had bleeding on probing which is lesser than the study conducted by Simon et al (21) among handicapped children where 73.5% of the handicapped pupils had bleeding of the gums. 1.8% of hearing and speech impaired children had bleeding on probing which is much lesser than in a study conducted by Manish jain et al (11) among hearing impaired and blind children. 21.2% of the hearing impaired had bleeding on probing whereas only 6.9% of the visually impaired children had bleeding on probing which is lesser than in a study conducted by Neeraj Chauhan et al (22) among visually impaired children in Bhopal, where 21% had bleeding gingiva.

In the present study, overall 76.2% had calculus which is higher than in the study conducted by Manish Jain et al (11) among hearing impaired and blind children where only 12% had calculus. Periodontal health was better in the hearing and speech impaired children than the visually impaired children which was statistically significant and similar to the study conducted by Kanika Avasthi et al (17) among sensory impaired children in Delhi and Gurgaon and contrast to the study conducted by Manish Jain et al (11) among hearing-impaired and blind children in Udaipur, where periodontal health was better in the visually impaired children than hearing and speech impaired children.

In the present study, overall 39% required one surface restoration, 5% required two surface restoration, 6% required pulp therapy it was lesser than in the study conducted by Mahantesh B Siddibhavi (19) among handicapped children in Belgaum where 70.7% required one surface restoration, 5% required two surface restoration.

The differences noted would probably be due to the differences in the location of the studies. Chennai being a metropolitan city would have probably enhanced the exposure of the study subjects to preventive aids.

SUMMARY AND CONCLUSION

This study has contributed to the better understanding of the oral health status and treatment needs of differently abled children. It can be concluded from the study that even though the oral health status and treatment needs of differently abled children is not alarming, a prevention based intervention program directed especially towards oral hygiene, dental caries and periodontal health is recommended for these special groups for a better productive life in future.

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