



Evaluate the needs of prosthodontic and orthodontic care among individuals with special needs

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ABSTRACT

Approximately 1.7 per cent of worldwide children with disabilities (INDIA) are "special." They come to Earth with unique talents, but conventional lives have no time for them and consider them a problem. In terms of physical pain and community disabilities, malocclusion and missing teeth combined can have a detrimental impact on an individual's quality of life. Data on the individual's special needs for oral health are limited. Most studies are focused on the analysis of a limited number of people, subjects of substantially different ages or with different conditions of special need. There is a lack of records of oral disorder limited to cleft lips and cleft palate, hearing impaired and, specifically, psychologically challenging persons. The present Research aims assessing the severity & complexity of Orthodontic Treatment Needs using "IOTN Index" - Dental Health Component and "Prosthodontic requirements" as per WHO Oral Health Assessment of 12-25 years of age individuals with special needs in Mysuru City, Karnataka, India.

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INTRODUCTION

Approximately 1.7 per cent of nationwide children with disabilities (INDIA) are "special." They arrive on Earth with unique gifts, but mainstream lives have little time for them and consider them an issue. Etiological factors for malocclusion may emerge from physical, behavioural, or disease mechanisms.

The risk of malocclusion is higher for children with premature tooth loss, missing teeth or arch length and dental discrepancy. Malocclusion The risk factors for behaviour include finger sucking and excessive mouth breathing. Finally, the disease may increase the risk of malocclusion, as evidenced by the incidence of malocclusion in the disabled population (Muppa *et al.*, 2013).

Often ignored the widespread incidence of tooth loss seen in individuals with special needs and the effect of reduced masticatory ability on food selection patterns. There is evidence that declining masticatory function is primarily responsible for unique eating more soft, easy-to-chew foods that can lead to poor dietary habits and reduced nutritional intake, in turn (Chauncey *et al.*, 1984). Malocclusion and missing teeth together can harm the "Quality of Life" of an individual in terms of physical pain and community disabilities (Becker *et al.*, 2009).

Data on the special Needs individual's oral health

condition are scarce. Most reports are based on an examination of a small number of individuals, subjects with considerably different ages or with different conditions of special need. Reports of oral condition constrained to cleft lip and cleft palate, hearing impaired and specifically mentally challenging individuals are lacking. For the oral health of these individuals, the incorporation of intervention methods aimed at preventing and treating malocclusion and replacing missing teeth is vital for oral health services (Muppa *et al.*, 2013)

The government or private organisation has generally neglected orthodontic and prosthetic replacement of missing teeth. To provide orthodontic and prosthodontic oral health care, and to become an integral part of oral healthcare services, necessary information on prevalence and treatment needs is required (Oliveira *et al.*, 2011)

The present research aims assessing the severity & complexity of Orthodontic Treatment Needs using "IOTN Index" (Brook and Shaw, 1989) - Dental Health Component and "Prosthodontic requirements" as per WHO Oral Health Assessment (WHO, 1997) of 12-25 years of age individuals with special needs in Mysuru City, Karnataka, India.

The special need individuals assessed were with

1. Speech and Language Disorders
2. Cleft lip & Palate
3. Mental

METHODOLOGY

This study was a Descriptive Cross-Sectional Survey with three groups of special needs individuals. Group, I included individuals Speech and Language Disorders, Group II included Cleft Lip and Palate Affected and Group III individuals with Mental Retardation aged 12-25 years in Mysuru City. Targeted schools, hospitals & institutions were assessed for severity & complexity of Orthodontic Treatment Needs and missing teeth. The mean age in group-I was 14.08 years, in group-II was 15.83 years, and in group-III was 16.5 years. The total number of participants was 109, and Research Protocol (No-JSS / DCH / Ethical / PhD-02/2017-18, of-01-03-2018) has been reviewed and accepted by the Committee on Institutional Ethical Research.

Inclusion Criteria

A subject in Selected schools/institute/hospital in the age group of 12-25 years was included, they were asked to give informed consent, if not capable

of the same parent's consent was taken, only such individuals were included in the study.

Exclusion Criteria

Speech and Language Disorders with neurological problems, Cleft lip and palate related to syndrome and mental retardation (IQ-<25-39) were excluded from the study. Any history of prior orthodontic treatment and subjects undergoing orthodontic treatment and prosthetic replacement were also not considered.

Patient with Rampant caries and any other craniofacial anomalies and syndromes have been excluded.

The consent of the pre-structured questionnaire, including name, age, academic and gender, as well as socio-demographic findings and information, was provided and obtained from respective school authorities and the children's parents or guardians. Special children's oral examination was performed under natural light in their respective schools.

All ten malocclusion trait measured using DAI components, weights (Table 1), Assessing DAI Score by malocclusion severity level (Table 2). And for the prosthodontic criteria for restoring missing teeth have been determined as per the WHO Oral Health Assessment (Table 3)

RESULTS

Results show orthodontic severity levels, a frequency distribution of malocclusion and prosthodontic status among individuals with special needs.

Table 4 Orthodontic treatment needs Group-I Speech and Language Disorders, Group-II Cleft lip & palate affected and Group-III Mental Retardation.

Illustrates how the treatment needs are allocated according to the DAI severity levels. Individuals with the highest dental appearance in group I – 68 %, group III – 10 % and the lowest in group II – 0.71 %, where the need for orthodontic care is small or not. It is highly beneficial for those with a definite treatment malocclusion considered elective to account for around 18% in group I, 1.07% in group II and 10% in group III and 0.8% severe malocclusion in group I, 1.78% in group III and 20 in group II. Individuals with disabilities were, however, 64.2% in a group — II, 60% in a group — III and the lowest in a group — I with 0.6% in a group — I

Table 5 Shows the frequency distribution of other malocclusion traits based on the DAI components. One or more missing teeth were observed in 100% of the cleft lip and palate group and followed by mentally retarded individual 66.6% and less in speech

Table 1: Dental Aesthetic Index (DAI)

S. No.	DAI Components	Weights
1	Number of missing visible tooth (incisors, canine and premolar teeth in the maxillary and mandibular arches)	6
2	Crowding in the incisal segments: 0=no segment crowded. 1= 1 segment crowded, 2=2 segments crowded	1
3	Spacing in the incisal segments: 0= no spacing, 1=1 segment spaced, 2= 2 segments spaced.	1
4	Midline diastema in millimetres	3
5	Largest anterior irregularity in the maxilla in millimetres	1
6	Largest anterior irregularity in the mandible in millimetres	1
7	Anterior maxillary overjet in millimetres	2
8	Anterior mandibular overjet in millimetres	4
9	Vertical anterior open bite in millimetres	4
10	Antero-posterior molar relation largest deviation from 3 normal either left or right; 0 = normal, 1- $\frac{1}{2}$ cusp either mesial or distal, 2 = one full cusp or more either mesial or distal	3
11	Constant Total	13 DAI Score

Table 2: Malocclusion severity levels

DAI Score	Severity Levels
<25	"Normal or minor malocclusion no treatment needs or slight need."
26-30	"Definite malocclusion treatment elective."
31-35	"Severe malocclusion treatment highly desirable."
>35	"Very severe handicapping malocclusion treatment mandatory."

Table 3: Prosthodontic Requirements

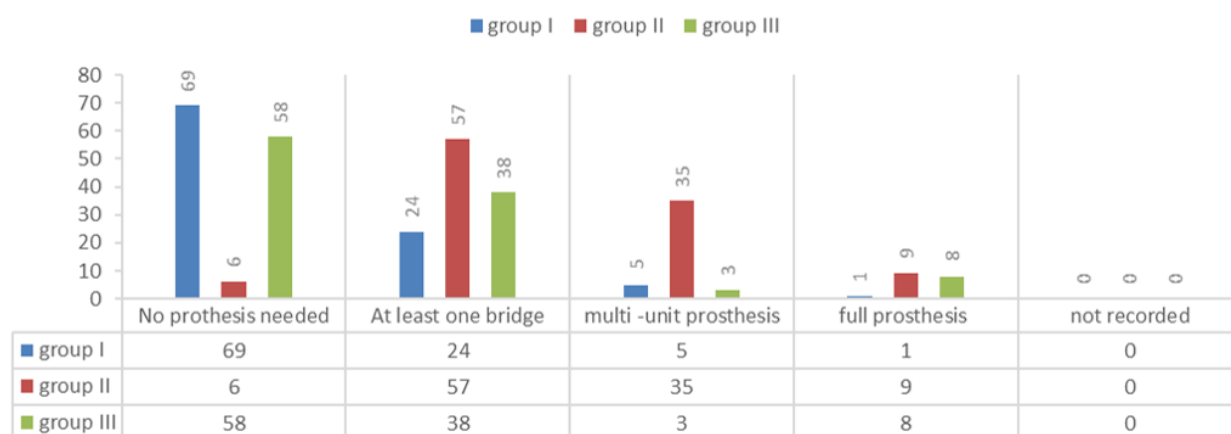
Data	Requirements
0	"No Prosthesis Needed"
1	"Need for one-unit Prosthesis."
2	"Need for a Combination of one and /Or Multi-Unit Prosthesis."
3	"Need for a combination of one- and/or multi-unit prostheses."
4	"Need for Full Prosthesis (Replacement of All Teeth)"
9	"Not Recorded"

Table 4: Orthodontic treatment needs Group-I Speech and Language Disorders, Group-II Cleft lip & palate affected and Group-III Mental Retardation

DAI Score	Frequency					
	GP - I		GP - II		GP - III	
	n	%	n	%	n	%
<25	34	68	02	0.71	04	10
26-30	9	18	03	1.07	04	10
31-35	4	0.8	05	1.78	08	20
>35	3	0.6	18	64.2	24	60

Table 5: Frequency Distribution other malocclusion traits on DAI Component Scores

DAI component		Frequency					
		Group I		Group II		Group III	
		n	%	n	%	n	%
Missing teeth	>1	03	0.25	12	100	08	66.6
Crowding	1-2	05	0.41	09	75	06	0.50
Spacing	1-2	07	0.58	08	66.6	09	0.7
Diastema (mm)	>1	02	0.16	03	0.25	03	0.25
Anterior maxillary irregularity (mm)	>1	04	0.33	12	100	07	0.58
Maxillary Overjet (mm)	>1	06	0.50	04	0.33	09	0.75
Mandibular Overjet (mm)	>0	06	0.50	09	75	00	0.00
Open bite (mm)	>0	03	0.25	01	0.083	06	0.50
Molar Relationship	> $\frac{1}{2}$ unit cusp	09	0.75	10	0.83	09	0.75



Graph 1: Prosthodontic Status

and hearing impaired individuals 0.25% Incisal crowding and spacing were seen in 75% highest and 66.6% in group II, 0.50% and 0.75% in group III & 0.41% & 0.58% in group I. Open bite was observed in about 0.25%, 0.083% and 0.50% respectively of the study population group I, II, III. Half-cusp relationship with group I, II and III was found to be 0.75%, 0.83% and 0.75% respectively.

The WHO oral health assessment index (Graph 1) was assessed to check for prosthetic status.

No Prosthesis Need

Group I – 69% was the highest in the other groups, followed by 6% in Group II and 58% in Group III respectively.

At least One Bridge

Highest in Group II – 57% followed by 38% in Group

III and 24% in Group I respectively

Multi-Unit Prosthesis

35% in group II followed by the group I – 5% and the lowest in group II – 3%.

Full prosthesis

The lowest in group I – 1%, followed by group II – 8% and the highest in group III – 9% respectively.

DISCUSSION

IOTN -DAI

The results (Table 4) of this study indicated that the speech- and hearing-impaired person had a dental appearance that did not require orthodontic treatment by far more than half (68 per cent). This is comparable to that of [Hegde et al. \(2018\)](#) in Mangalore for Speech & Hearing Children, which reported

that 76.4 per cent did not require treatment. However, this result is lower than the one reported by Hedge, the Angle Class I Malocclusion being one of the most prevalent. Present DAI study used to identify the severity of malocclusion and the need for orthodontic treatment.

Individual cleft lip and palate group DAI score indicated orthodontic treatment was mandatory 64.2 per cent. Compared with Tang and So (1992) using the occlusal index in the Hong Kong population, the severity ranged from 92.3 per cent in males to 71.5 per cent in females. Our study showed a lower number when considering Tang EL, and the occlusal index was used to detect various malocclusions.

However, DAI SCORE showed a 60 per cent mandate for orthodontic treatment in a mentally retarded individual. This is compared to Hegde *et al.* (2018) and Vigild (1985) for mental disabilities, respectively 82.8% and 33.3% for those requiring orthodontic treatment. A large proportion of children had severe to very severe malocclusion and based on the DAI SCALE decision points, and treatment was considered compulsory. Unfortunately, the orthodontic treatment needs of these children may not be met due to environmental factors and individual characteristics. People who are mentally retarded cannot often recognise health problems. When they recognise the need for services, many of the environment and individual barriers prevent them from receiving the necessary care.

Speech and hearing impaired & Intellectual Disabilities Patients group 0.75% of the Class II malocclusion rate. Class III malocclusion was more common in the lip cleft and palate group (Table 5). open bite (AOB) was more prevalent in Group III (0.50 per cent) than others. Group statistically significant difference Factors associated with a high incidence of open bite in mentally handicapped children include abnormal habits (including finger sucking, mouth breathing, swelling of the tongue) and generally poor muscle development. Previous studies have shown that mental retardation is often linked to oral dysfunction (Oreland *et al.*, 1989; Svaton and Heloe, 1975). Oral dysfunctions and para functions of the masticatory system have been suggested to be responsible for the increased prevalence of malocclusion in children with mental disabilities (Svaton and Heloe, 1975).

Prosthodontic status

The present study was undertaken to assess the prosthetic status and prosthetic needs of speech and hear impaired, cleft lip and palate mentally challenged individual attending special schools in the Mysore district. (Graph 1)

An important step in the planning of oral health care was the assessment of prosthetic needs. The present study reported high prosthetic needs. Almost 38% of mentally retarded subjects needed a single unit, multiple units or combined prosthesis. Svaton and Heloe (1975) reported slightly higher prosthetic status and needs compared with the current study. This may be due to lack of care in most institutions to prevent loss of teeth, mainly due to lack of care. Patients with cleft lip and palate deformity had a prosthetic requirement of 57% for a single unit bridge. According to Mazaheri (1962), 60 per cent of people with cracks will require specific types of denture, and this percentage tends to be higher. In cleft affects the alveolar ridge.

The most important observation in the study was that there was a strong deficit between the needs and the availability of prosthetic treatment services, as reflected in the prosthesis given to these subjects despite the many missing teeth. Gotowka *et al.* (1982) investigated the costs of providing mentally retarded adult dental services.

The study reported that the cost of comprehensive dental services to mentally challenged individuals is higher than the normal cost; therefore, the reimbursement structure needs to be reassessed to ensure that providers can recover their costs. Medicaid reimbursement for dental services rendered to eligible special patient groups shall be the same as reimbursement for dental services rendered to the eligible Medicaid population as a whole, i.e. no differential fee shall be granted to the provider to compensate for the increased cost of the production of services.

CONCLUSION

The present study concluded that the orthodontic and prosthetic needs of specific individuals were significantly higher than those of status. It could be concluded that the majority of these subjects remain without the rehabilitation of oral functioning, which may be due to lack of cooperation, low priority for dental care, lack of motivation, poor socio-economic status of parents/guardians, higher costs for the treatment of these subjects, lack of experience and knowledge of dental professionals in the treatment of the disabled, etc.

Clinical significance

The study provides databases for oral health professionals regarding the Severity, Complexity of Orthodontic Treatment Needs & Prosthodontic needs in special needs.

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Conflict of Interest

The authors declare that they have no conflict of interest for this study.

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