

ORIGINAL ARTICLE

PREVALENCE OF MALOCCLUSION AMONG 7-14 YEARS OLD SPECIALLY ABLED CHILDREN ATTENDING VARIOUS SPECIAL SCHOOLS IN MATHURA DISTRICT, INDIA

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ABSTRACT:

Aim: The study aims is to determine the prevalence of malocclusion among 7-14 years old specially abled children attending various special schools in Mathura district, India. **Materials And Methodology:** Ethical approval of the protocol was obtained from the Institutional review board, K.D.dental college and hospital, Mathura. An epidemiological survey was conducted to determine the prevalence of malocclusion in children attending various special schools for specially abled in Mathura district, India. A total of 400 children which included 205 female and 195 male students were examined. According to nature of handicap, they were divided into following groups: (1) Deaf and Dumb group (2) Mentally retarded (MR) group (3) Down's syndrome group (4) Learning disability group (LD) and (5) Complex group (children with more than one handicapping condition/disability). A survey profoma prepared with the help of WHO oral health assessment form (1997) was used. Malocclusion was determined by applying the 10 components of dental aesthetic index (DAI) developed by Naham C.C, Joanna J and Frank J.K in 1986 on study models for each individual. **Results:** Data obtained was subjected to statistical analysis using SPSS version 17. ANOVA and tukey test were employed for within and inter group comparisons respectively. Statistically highly significant difference was observed on inter group comparisons. Down's syndrome group showed the highest mean DAI values followed by the mentally retarded group, while the learning disability group showed the lowest mean DAI values. Statistically non-significant difference was observed in all the groups, when compared on the basis of gender. **Conclusion:** Though the literature abounds with information on the normal children population, there is lack of information on the handicapped, especially on the occlusal characteristics of these children. Therefore, there is need for more information on children with special needs, especially on the occlusal characteristics of this population.

Key Words: Specially abled, malocclusion, complex group, DAI, Down's syndrome

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INTRODUCTION:

The birth of a child is always eagerly awaited by family and friends, alike, as it is an event of joy and happiness. But when it becomes apparent that something is amiss with the newborn, the world of parents is shattered. Anger, denial and depression set in and parents of such children suffer a great agony. As the child grows, he is nurtured with great love and tenderness, but sometimes parents vent their rage on the innocent child who suffer for no fault of their own.¹ Handicapped is the loss or limitation of opportunities to take part in the normal life of the community on an equal

level with others due to physical or social barriers (Waldman, 1995).² It is a complex phenomenon reflecting an interaction between features of a person's body and features of the society in which he or she lives.³

The maintenance of good general health of specially abled children is difficult and there dentition may be ravaged by dental caries and periodontal disease. In many instances, a disabled child's oral hygiene care becomes the responsibility of another person, generally a parent or guardian, many of whom are emotionally or intellectually incapable of dealing with the health problems of their less fortunate affiliates.⁴ Individuals with special needs have

greater limitations in oral hygiene performance due to their potential motor, sensory and intellectual disabilities and are thus, prone to poor oral health.⁵ These individuals often have worse oral health status than the general population and tend to have a higher incidence of dental caries and difficulty in accessing dental care (Chikte et al., 1991).² Children with disabilities need functional and aesthetic considerations comparable to that of normal persons, though the literature abounds with information on the normal children population, there is lack of information on the handicapped children especially on the occlusal characteristics of this population. Therefore, this study was designed with an aim to determine the prevalence of malocclusion among 7-14 years old specially abled children attending various special schools in Mathura district, India.

MATERIAL AND METHODOLOGY:

Ethical approval of the protocol was obtained from the Institutional review board, K.D.dentalcollege and hospital, Mathura. An epidemiological survey was then conducted to determine the prevalence of malocclusion among 7 to14 years old specially abled children attending various schools for the specially abled in Mathura district, India. There are two schools for specially abled children in Mathura district, all the children attending these special schools were included in the study. A total of 400 specially abled children formed the study population. Among them, 205 were female and 195 were male. A schedule for data collection was prepared as per the permission hours granted by the two institutions. An average number of 10-15 school children were examined per day. The survey was conducted in august and september 2014. The schools included in the study were:

1. KalyanumKaruti, school for handicapped, Mathura
2. Asha, school for handicapped (AWWA), Mathura

A survey proforma was prepared with the help of WHO oral health assessment form (1997). Malocclusion was determined by applying 10 components of the Dental Aesthetic Index(DAI) developed by Naham C.C, Joanna J and Frank J.K in 1986, on study models for each individual.

According to nature of handicap, the children were divided into following groups: (1) Deaf and Dumb group (2) Mentally retarded(MR) group (3) Down’s syndrome group (4) Learning disability group (LD) and (5) Complex group

(children with more than one handicapping condition/disability). Before starting the study, the methodology was demonstrated and purpose of the study was informed and explained to the teachers and parents in a parent teacher meeting. To explain the purpose of the study to children and while impression taking and recording of general information, regarding name, age, help of respective class teachers was very valuable.

Study was well planned and arranged for maximum efficiency and ease of examination. The children were seated on a chair or stool with examiner standing behind or in front the chair during intraoral examination and impression taking. Platform table was used to keep the instruments and recording forms. The recording assistant was allowed to sit close enough to the examiner, so that the instructions and codes could be easily heard and the examiner could see that findings were being recorded correctly. Impressions for both upper and lower arch were taken using stock metal trays(size 0-3 SS White, Germany) and putty(Speedex, coltene Switzerland). Impression material was loaded short of the posterior palatal seal area to avoid any gagging sensation. After each day’s survey all the trays were autoclaved.

STATISTICAL ANALYSIS

The data was retrieved from pre-coded survey proforma to a computer. A master file was created for the purpose of data analysis. Descriptive statistics that included mean, standard deviation and percentages were calculated for each of the categories. ANOVA test was used to determine whether significant differences were present between handicapped groups. Significance for all statistical tests was predetermined at a probability value of 0.05 or less. Data were analyzed using the statistical package SPSS (Version 17, USA).

RESULTS:

Statistically highly significant difference (p=0.00) was observed on inter group comparison. Down’s syndrome group showed the highest mean DAI score followed by the MR and complex group, while the deaf and dumb group showed the lowest mean DAI values (**table-1, bar graph-1**)

When the respective groups were compared for prevalence of malocclusion on the basis of gender, statistically non-significant difference (P-value=0.90) was observed for all the groups (**table-2, bar graph-2**).

Table 1: DAI assessment

DAI ASSESMENT					
	COM	D&D	DOW	LD	MR
Mean	33.03	29.50	34.89	28.10	34.00
SD	5.74	5.17	8.12	4.48	4.68
P-value=0.00					

ANOVA						
Source of Variation	SS	Df	MS	F	P-value	F crit
Between Groups	809.40	4	202.35	6.36	0.00	2.43
Within Groups	5250.62	165	31.82			
Total	6060.02	169				

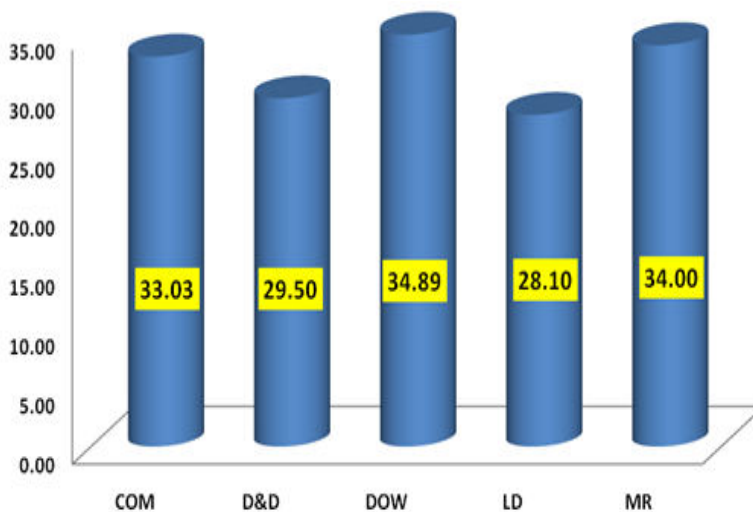
Down’s syndrome group showed the highest mean DAI values followed by the mentally retarded group, while the learning disability group showed the lowest mean DAI values.

Table 2: Mean DAI scores according to gender

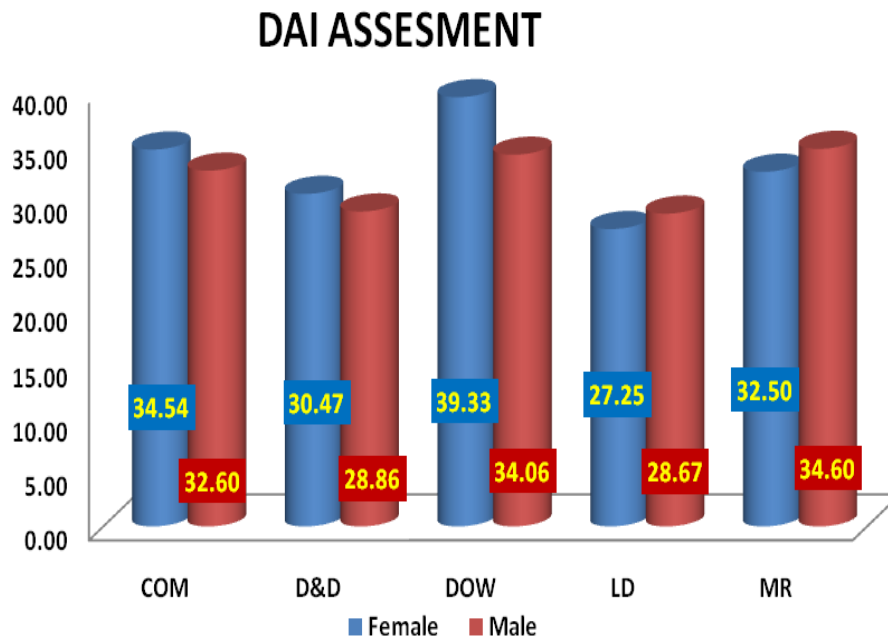
DAI ASSESMENT		
	F	M
Mean	32.24	32.12
SD	5.62	6.15
P-value=0.90		

ANOVA						
Source of Variation	SS	df	MS	F	P-value	F crit
Between Groups	0.58	1	0.58	0.02	0.90	3.90
Within Groups	6059.44	168	36.07			
Total	6060.02	169				

When the respective groups were compared for prevalence of malocclusion on the basis of gender, statistically non-significant (P-value=0.90) difference was observed for all the groups.



Bar Graph 1: Difference in mean DAI scores according to disability.



Bar Graph 2: Difference in mean DAI scores based on gender

DISCUSSION:

Despite advances in oral health, oral diseases continue to be a problem. Children with disabilities have a significantly higher burden of oral diseases because of the lack of oral health knowledge, access to care, and preventive measures. With half of the world’s population under 15 years of age, the number of adolescents and youth with disabilities particularly in developing countries is significantly higher and is on the rise. It is estimated that 6–10% of children in India are born disabled and that possibly one-third of the total disabled population is comprised of children.⁴ The inequitable distribution of health care services to the handicapped is obviously contrary to several clauses in the Declaration of the Rights of the child and also of the Rights of the Mentally Retarded Persons adopted by the United Nations General Assembly in 1971.⁵

Malocclusion can complicate the child’s disability, resulting in dental trauma (for example, a large overjet predisposes trauma in those with seizures), periodontal disease promoted by crowding or eruption problems, functional problems eg- mastication, drooling, speech impairment and even temporomandibular joint dysfunction.^{6,7} Incidence of severe malocclusion was observed to be higher in Down’s patients and mentally subnormal individuals compared to other handicapping conditions which is in accordance with observations of Dinesh RB, et al.(2003)⁸Utomi IL, et al.(2007)⁹ (2008)¹⁰Damodhar MD, et al.(2013)¹¹

Of note, although 70 per cent of the 200 children in the present study had severe to handicapping malocclusion, not even one child was undergoing orthodontic treatment at the time of the examination. Although no assessment of

orthodontic suitability was made, conventional treatment may not be feasible for many of those studied due to behaviour or medical problems where orthodontic treatment may pose an additional risk. In some children with physical impairments, self induced trauma can be averted by the judicious use of orthodontic appliances.¹² Mohlin and Kurol made the point that the assessment of treatment need cannot be based on orthodontic indices of need, but depends more on the consequences of the malocclusion for the patient.¹³ In another paper, on the extent to which deviations from an ideal occlusion constitute a health risk, the same authors underlined the importance of providing orthodontic treatment to people with disabilities that promotes normal growth and occlusal development.¹⁴ The conclusions of a survey of 381 children in six South African schools for children with disabilities using Summers Occlusal Index, 74% of children required treatment,⁷ which is similar to the results of our study.

In a similar survey 124, 6–18-year-olds with learning disabilities in Ibadan, Nigeria, the authors demonstrated that 58% had a significant need for treatment using the Dental Aesthetic Index.¹⁵ In impairments like Down syndrome, there are specific occlusal features, such as anterior open bite, posterior cross-bite and Class III malocclusion, which are a consequence of the relative underdevelopment of the maxilla, and these may merit orthodontic correction. Successful orthodontic treatment requires the active cooperation of the patient, compliance with the wearing of appliances and the ability to maintain an adequate standard of oral hygiene. These requirements may potentially be a problem for children with

impairments, especially those with learning disabilities, because the child's understanding of treatment may be limited, their ability to understand and learn new techniques may be impaired, and their manual dexterity is often poor. In 1967, Jackson¹⁶ was amongst the first to broach the issue of orthodontic treatment for children with disabilities. He suggested that treatment should still be undertaken, although 'ideal' results may not always be possible.

Removable orthodontic appliances require compliance and fixed appliances may require general anaesthesia for successful application in this population. There is a limit to the number of general anaesthetic exposures that should be given to such individuals within the time frame of orthodontic treatment, therefore decisions on orthodontic therapy should include consideration of the extent to which the malocclusion handicaps the individual. Many children with disabilities have been treated successfully, and the same methods of preparing these children for general dentistry can be used for orthodontic treatment. Even if an ideal orthodontic result is not possible, compromises can be achieved in guiding the developing occlusion for those with tooth-size/arch-size discrepancies or abnormal exfoliation or eruption patterns.¹⁷ Well timed extractions may produce an acceptable occlusion without other therapy or with the addition of a simple appliance.¹⁷

Recent European reports have shown successful use of biofunctional appliances at an early age for the management of malocclusion and drooling in children with cerebral palsy.¹⁸ The most frequently occurring problem was that of the child's inability to remain still for long enough to enable band and bracket placement, and this led Chaushu and Becker¹⁹ to concur with the view of Chadwick and Asher McDade²⁰ that treatment under general anaesthesia was indicated for some phases of orthodontic treatment plans in children with impairments. Before embarking on orthodontic treatment, careful selection of patients is vital and a high standard of oral hygiene should be demonstrable. For patients with a physical or intellectual impairment, greater reliance may have to be placed on carers for the maintenance of satisfactory oral hygiene. Becker et al. found that fixed appliances were more difficult for children with disabilities to tolerate compared with the use of removable appliances.²¹ By contrast, Chadwick and Asher McDade²⁰ recommended the use of fixed appliances, even for simple tipping mechanics, since, they maintained, the tooth movements can be accomplished more simply and rapidly. Provision of orthodontic care is important and should be appropriate to the child's needs and demands, and not driven by unrealistic parent/carer aspirations. At the same time, efforts should be directed towards correcting significant malocclusions where psychological harm in an already compromised child may be an additional and unnecessary burden. Orthodontic treatment for many patients with disabilities is entirely possible, and denying

this treatment could be viewed as neglectful, especially in the circumstances of a child who is vulnerable to self mutilation. Reducing an incisor overjet may also reduce the risk of anterior tooth trauma, as well as preventing self-inflicted soft-tissue trauma in those who are predisposed to it. In children who have impaired understanding and/or a physical impairment that compromises their manual dexterity, considerable reliance will need to be placed on parents and carers to ensure that not only is oral hygiene scrupulously maintained throughout the active phase of treatment, but also during retention, especially if bonded retainers are fitted.

Some form of objective assessment tool to decide who should receive orthodontic care, and how it might best be delivered, for people with impairments, to guide the less-experienced clinician is long overdue. In clinical governance terms, there must be a demonstrable oral health gain that is sustainable following such orthodontic intervention. Use of general anaesthesia should not be considered unless the child's oral or general health is at risk from nontreatment. It is the clinician's duty of care to provide treatment that is in the patient's best interests.

Oral health care is one of the greatest unattended health needs of the disabled people.²² Though the literature abounds with information on the normal children population, there is lack of information on the handicapped, especially on the occlusal characteristics of these children. These individuals need functional and aesthetic considerations comparable to that of normal. Therefore, there is need for more information on children with special needs, especially on the occlusal characteristics of this population.

CONCLUSION:

It appeared that a relatively high proportion of the children in our study did not currently receive or had not yet received any form of professional oral care. This suggests that there is a need for renewed collaborative efforts by the various health disciplines and social service agencies to increase access to dental services for these children.

Informed consent was obtained from the parents of each individual and official permissions were obtained from Basic education officer, Mathura and Heads of the respective special schools.

REFERENCES:

1. Ackerman A, Wiltshire WA. The occlusal status of disabled children. *J Dent Assoc S Afr* 1994;49:447-451.
2. Ahmad MS, Jindal MK, Khan S, Hashmi SH. Oral health knowledge, practice, oral hygiene status and dental caries prevalence among visually impaired students in residential institute of Aligarh. *Journal of Dentistry and Oral Hygiene* 2009;1(2):22-26.
3. Becker AJ, ShapiraChaushu S. Orthodontic treatment for disabled children – a survey of patient and appliance management. *Journal of Orthodontics* 2001; 28: 39–44.

4. Chaushu S, Becker A. Behaviour management needs for the orthodontic treatment of children with disabilities. *European Journal of Orthodontics* 2000; 22: 143–149.
5. Chadwick SM, Asher-McDade C. The orthodontic management of patients with profound learning disability. *British Journal of Orthodontics* 1997; 24: 117–125.
6. Damle SG. *Text book of pediatric dentistry*. 4th ed. New Delhi: Arya; 2012.
7. Dhamodhar MD, et al. An Assessment of Oral Health Status and Treatment Needs of Institutionalized Differently Abled Persons in Chennai City – a Cross Sectional Survey. *Indian journal of research*. 2013 Aug; 2(8).
8. Friedrich WN, Friedrich WL. Psychosocial assets of parents of handicapped and nonhandicapped children. *Am J Ment Defic*. 1981;85:551-553.
9. Gov. of India (2005). *Sample Registration System Statistical Report 2003*, Report No.2, 2005.
10. Henneguim M, et al. Accuracy of estimation of dental treatment need in special care patients. *J Dent*. 2000;28:131-136.
11. International disability statistics. <http://www.rehabinternational.org/publications/>.
12. Jackson EF. Orthodontic and the retarded child. *American Journal of Orthodontics and Dentofacial Orthopedics*, 1967;53: 596–605.
13. Levine N. Community responses to the disabled and the dental profession's responsibility. *J Can Dent Assoc* 1985;1:35-40.
14. Mohlin B, Kurol J. To what extent do deviations from an ideal occlusion constitute a health risk? *Swedish Dental Journal* 2003;27: 1–10.
15. Mohlin B, Kurol J. A critical view of treatment priority indices in orthodontics. *Swedish Dental Journal* 2003;27 : 11–21.
17. Onyeaso CO. Orthodontic treatment need of mentally handicapped children in Ibadan, Nigeria, according to the dental aesthetic index. *Journal of Dentistry for Children* 2003;70:159–163.
17. Pope JEC, Curzon MEJ. The dental status of cerebral palsied children. *Pediatr Dent* 1991;13:156-162.
18. Rao D, Hegde A, Munshi AK. Oral hygiene status of disabled children and adolescents attending special schools of south canara, India. *Hong Kong Dent J*. 2005 dec;2:107-13.
19. Sonnenberg EM. Treatment of self-induced trauma in a patient with cerebral palsy. *Special Care in Dentistry* 1990;10: 89–90.
20. Utomi IL. Need for interceptive intervention for malocclusion in handicapped children in Lagos, Nigeria. *Afr J Med Med Sci*. 2005 Sep;34(3):239-43.
21. Utomi IL, Onyeaso CO. Assessment of malocclusion and orthodontic treatment need in disabled children in Nigeria. *Journal of Disability and Oral Health*. 2007;8(1): 3–8.
22. World Health Organization. *World report on disability*. http://www.who.int/disabilities/world_report/2011/report/en/index.

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