



**ORAL HEALTH STATUS OF CHILDREN AND ADOLESCENTS
ATTENDING A CENTRE FOR INDIVIDUALS WITH SPECIAL
HEALTH CARE NEEDS IN MEERUT CITY & VARANASI CITY:
A COMPARISON**

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Introduction

Oral health is an important aspect of health for all children, specially children with special health care needs. Oral hygiene of an individuals affects one's esthetics and communication; with a strong biological, psychological and social projections. People with disabilities deserve similar opportunities for their oral health as any other individuals.²

According to WorldHealth Organization estimates, individuals with disabilities comprise 10% of the population in developed countries and 12% in developing countries.³

A normal child enjoys the benefits of affection and attention from parents and society, while less fortunate children, such as those who are physically, intellectually, or socially impaired, are ignored by both their own family and society..⁴

The poor oral hygiene of disabled individuals, in comparison with age- matched non-disabled groups, has been widely reported.² Moreover, some investigators² have shown that the situation worsens with increasing age. Because of their special care needs, daily oral care of children with disabilities is different from that of children with normal abilities, who can usually manage their own oral care.

Gingival / periodontal diseases and malocclusion development in people with disabilities follow the same course as in people without disabilities. When compared to children of the same age who are not disabled, plaque management, gingival health, and periodontal health are typically poor¹

Numerous studies⁷ have shown, how common malocclusion develop in people with these conditions. When it comes to appearance, factors like bad breath, misaligned teeth, trauma, gingival bleeding, the propensity to keep the mouth open, and drooling can either elicit feelings of sympathy from others or disgust and discrimination. Children with Down syndrome and cerebral palsy have the habit of projecting the tongue against the teeth and out of the mouth and frequently experience upper airway infection, which increases the prevalence of mouth breathing.⁷

Hence, this study had attempted to assess the oral hygiene status, periodontal status, dental caries & malocclusion in children with special health care needs in Meerut city & Varanasi city, Uttar Pradesh.

AIM:

- To assess the impact of socio-demographic and clinical variables on the oral hygiene, dental caries, periodontal status and malocclusion in a children with special health care needs attending various special schools in Meerut city (Uttar

Pradesh) and Varanasi City (Uttar Pradesh).

OBJECTIVES:

- To determine the oral hygiene status in children with Special health care needs attending various special schools in Meerut city (Uttar Pradesh) and Varanasi City (Uttar Pradesh).
- To determine the prevalence of dental caries in children with Special health care needs attending various special schools in Meerut city (Uttar Pradesh) and Varanasi City (Uttar Pradesh).
- To determine the prevalence of periodontal disease in children with Special health care needs attending various special schools in Meerut city (Uttar Pradesh) and Varanasi City (Uttar Pradesh)
- To assess the malocclusion in children with special health care needs attending various special schools in Meerut city (Uttar Pradesh) and Varanasi City (Uttar Pradesh).

Material and method

The present epidemiological study was carried out in Department of Pedodontics & Preventive Dentistry, Kalka Dental College, Meerut to assess the prevalence of Dental Caries, Oral Hygiene Status, Periodontal Status & Malocclusion among 08 year to 19 year old children with special health care needs attending various special schools in Meerut city (Uttar Pradesh) and Varanasi City (Uttar Pradesh).

Organization of the Study

Sampling procedure:

Study Population:

Children aged between 8 year and 19 year in Meerut city and Varanasi city, attending special schools with mental retardation, visually impaired, hearing impaired, physically challenged and disabled with more than one form of disability, were included in the study.

Each subject had their age, gender, and information about their parents' education and financial situation recorded before the dental exam. A single examiner conducted a clinical examination to evaluate the patient's oral hygiene status using a plane mouth mirror and a No. 23 explorer in accordance with the simplified oral hygiene index criteria.

Children under the age of 15 year were evaluated for bleeding and calculus mainly because periodontal pockets would be overstated in this sample due to false pockets, and periodontal condition was evaluated using the Community Periodontal Index.²⁸

Inclusion criteria :-

- 08 year to 19 year old children
- Children with parental consent
- Intellectually disabled individuals whose level of mental development and ability to adapt to their environment are significantly lower, like Down syndrome.
- Children with type of problems like autism, cerebral palsy & attention deficit hyperactive disorder.
- Visually impaired individuals whose limited vision restricts their normal activities.
- Physically challenged individuals such as muscular dystrophy, congenital limb defects.
- Hearing impaired individuals.
- Disabled individuals with more than one form of disability.

Exclusion criteria :-

- Children below 08 year
- Children above 19 year
- Children without parental consent
- Children without any disability

Special school included in study :-

Meerut city :-

- Brij Mohan school for blind, Lohiya Nagar, Meerut
- Deaf & Dumb school, Meerut cantt
- Play & Learn Rehabilitation center, Panchsheel colony, Meerut

Varanasi city :-

- Prem Jyoti integrated institute for special children, Chiraiogan, Varanasi
- Sri Hanuman Prasad Poddar school for blind, Durgakund, Varanasi
- B.C.G. school for deaf, Sidhgiribagh, Varanasi

Sample size estimation – A total 300 children and adolescents attending a Centre for special health care needs.

Meerut city :- 150 Special Children
Varanasi city :- 150 Special Children

Ethical Clearance :- Ethical Clearance was taken from the institution, informed consent from participants parents.

Questionnaire Proforma :-

A questionnaire form was designed to obtain the basic information such as address, age, type of disability, duration of disability, dental history, dietary habits, type of dentition and oral hygiene measures taken, frequency of brushing etc⁷³.

Structure of Examining Team :-

A single examiner conducted the clinical examination to evaluate the patient and the data was being noted by the recorder as per examiners instruction . prior to study examiner and recorder was being calibrated

Clinical examinations:-

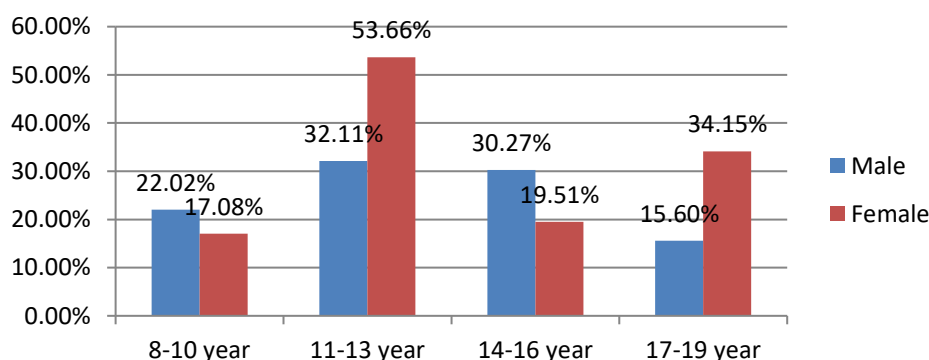
To avoid false readings caused by other means of artificial light source, subjects were examined at their respective schools under natural light while seated on an ordinary chair, unless the subject was confined to a wheelchair.

Statistical analysis :-

The data for the present study was entered in the Microsoft Excel 2007 and analyzed using the SPSS statistical software 23.0 Version.

Observations & Results :-

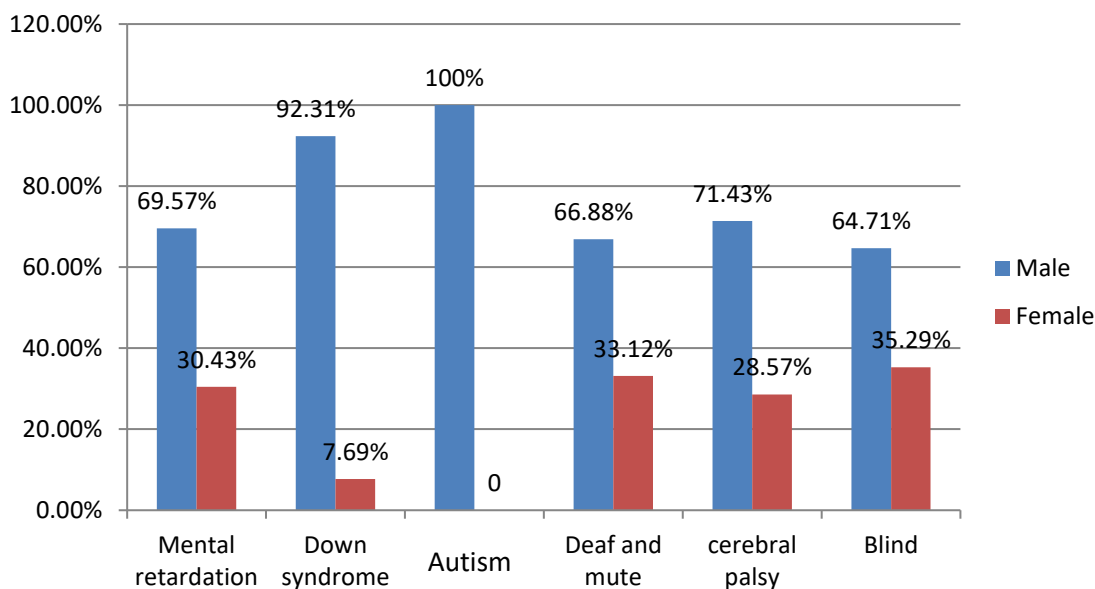
For gender and age distribution represented in graph 1, which shows that most of children examined were in the age group of 11-13 years both for females and males. Moreover for males the percentage of 11-13 years old was 32.11% followed by 14- 16 years 30.27% and for females the percentage of 11-13 years old was 53.66% followed by 17- 19 years 9.75%.



GRAPH 1: GENDER AND AGE DISTRIBUTION

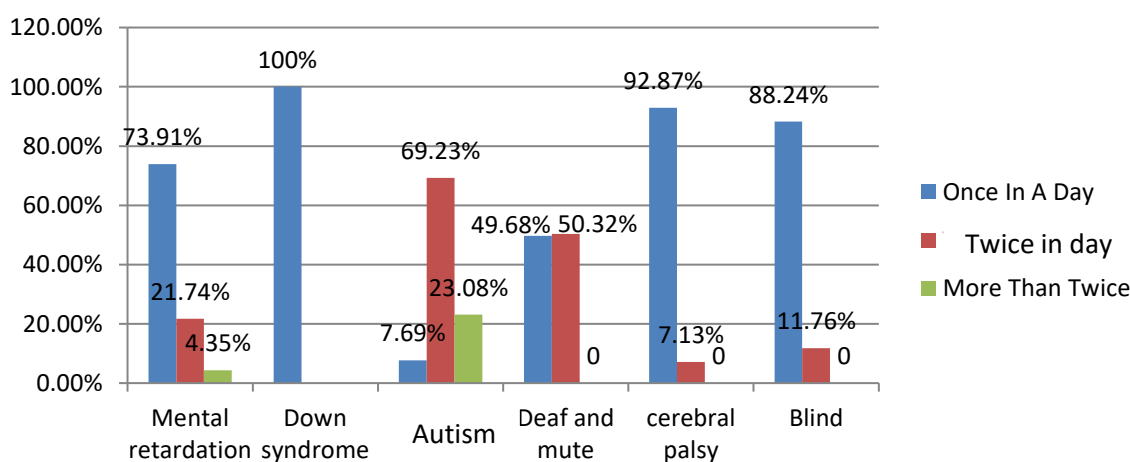
Distribution of disabilities in term of gender represented in graph 2 show that irrespective of gender the most common disability observed was Deaf & Mute which was followed by Mental

Retardation. The total percentages of Cerebral Palsy children, Autistic children and Down Syndrome children were present as near to equal percentage.



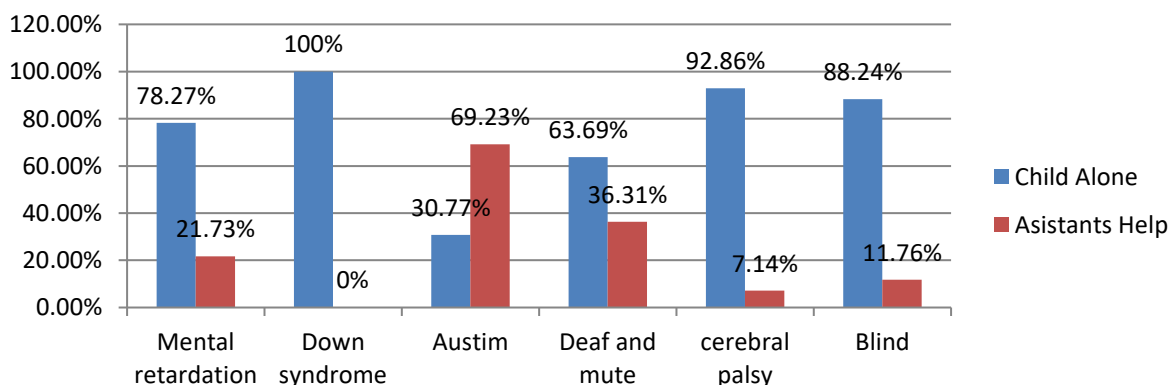
GRAPH 2: Gender and Type of Disability

Frequency of cleaning teeth represented in graph3,



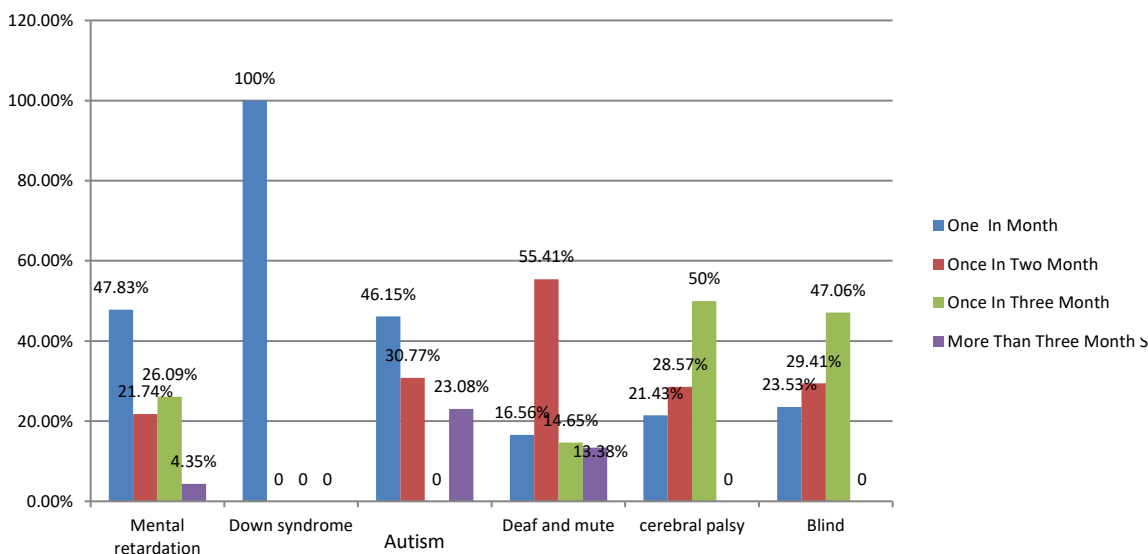
GRAPH 3: FREQUENCY OF CLEANING TEETH

Disabled children do their daily based activity alone or with the help of assistant represented in graph 4



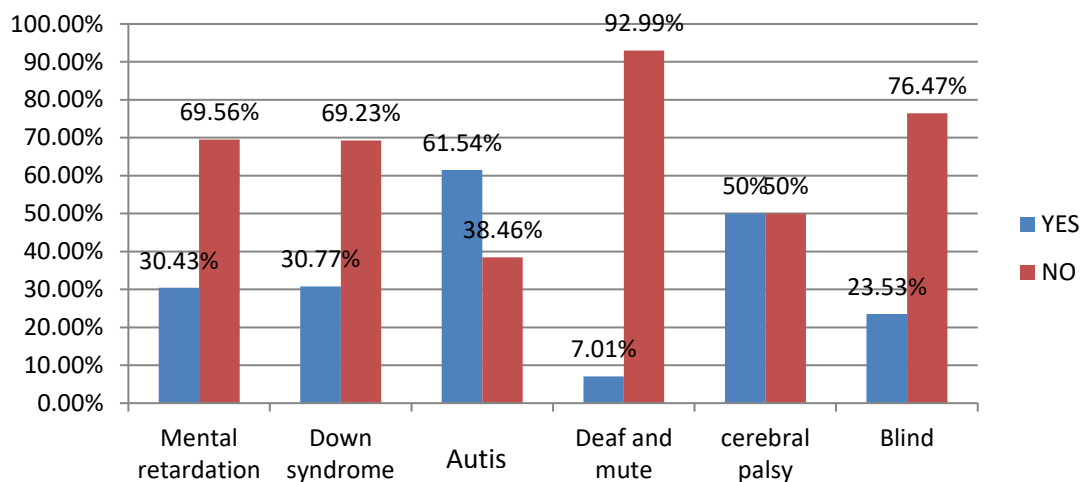
GRAPH 4: CHILD ALONE OR WITH ASSISTANT HELP

Frequency of changing toothbrush



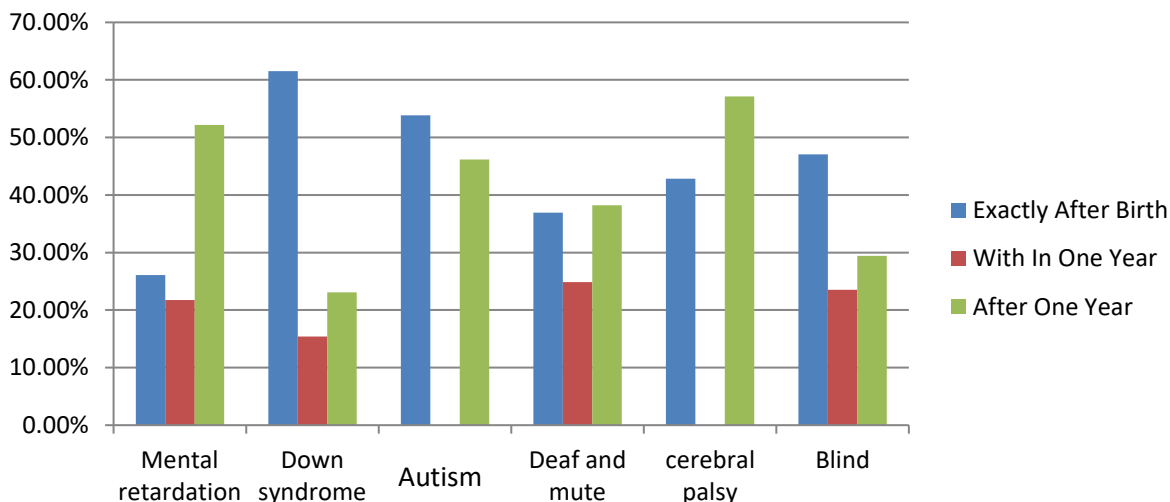
GRAPH 5:-FREQUENCY OF CHANGING THE BRUSH

Dental visit by the disabled children represented in graph 6



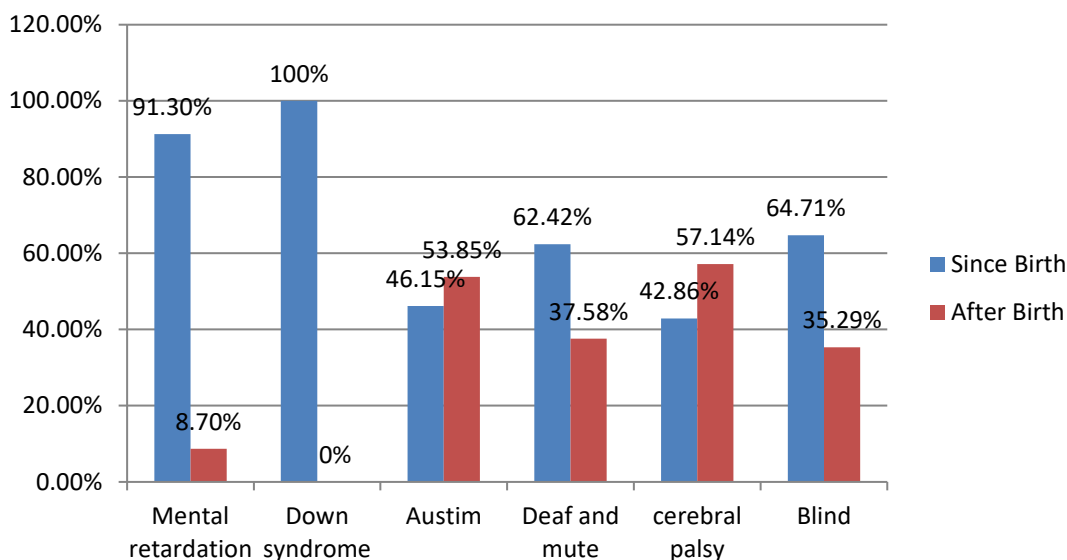
GRAPH 6: -DENTAL VISIT BY CHILDREN

Information by parents given to school at the time of enrolment,



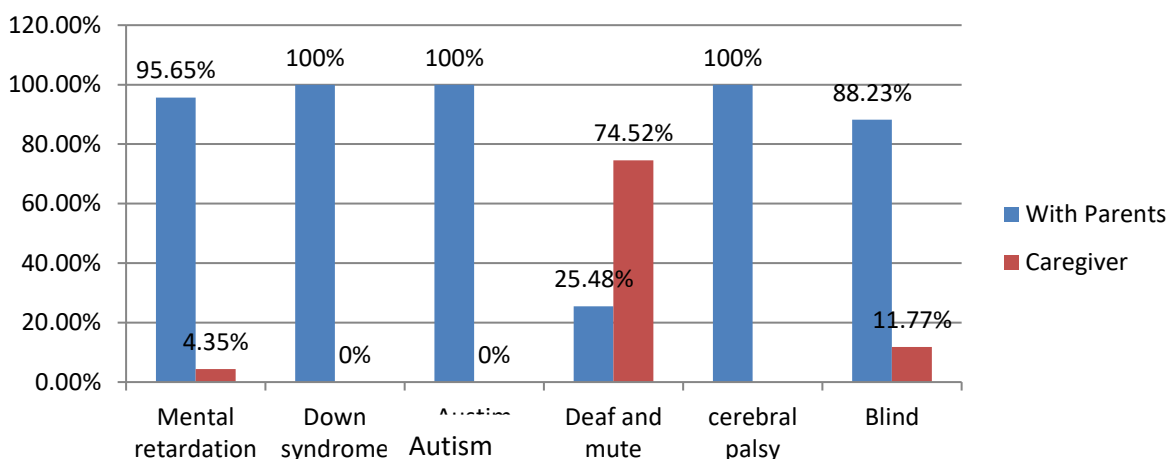
GRAPH 7: TIMING OF DISABILITY

Disability since birth or after birth represented in graph 8,



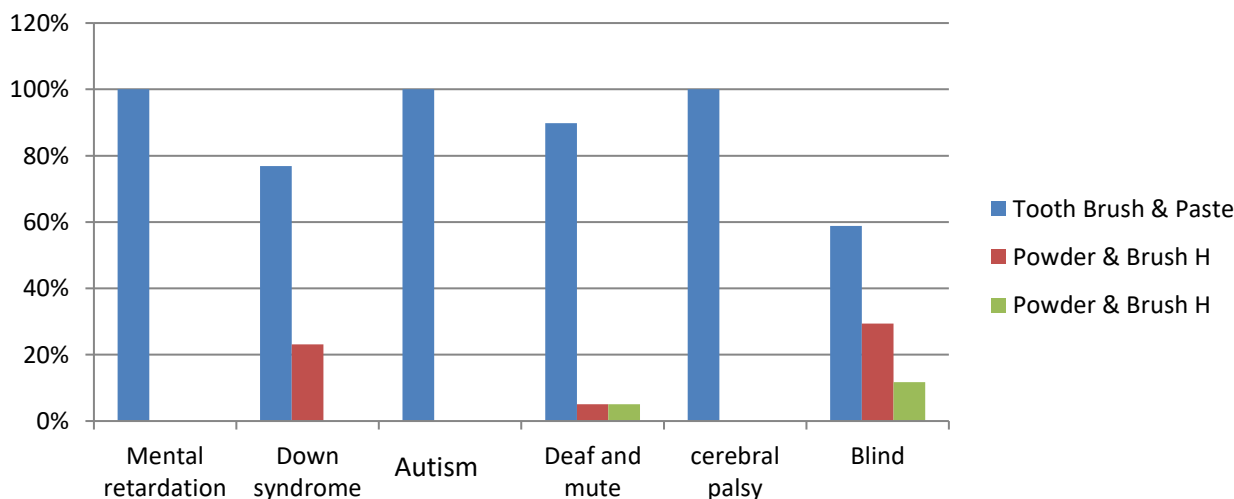
GRAPH 8: DISABILITY SINCE OR AFTER BIRTH

Children staying with their parents at home/with caretaker in the hostel represented in graph 9,

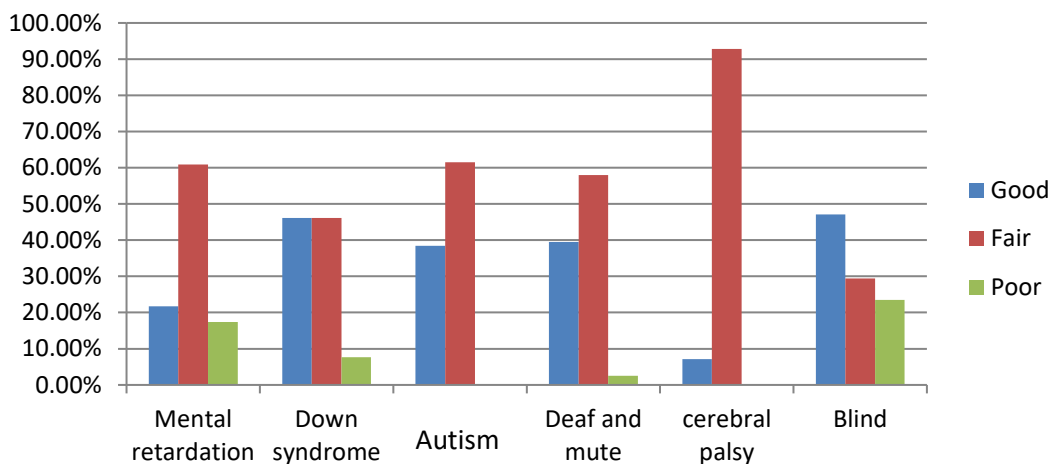


GRAPH 9: CHILD STAYING WITH THEIR PARENTS (AT HOME) OR CARETAKER (IN HOSTEL)

Oral hygiene aids used for maintaining oral health represented in graph 10,



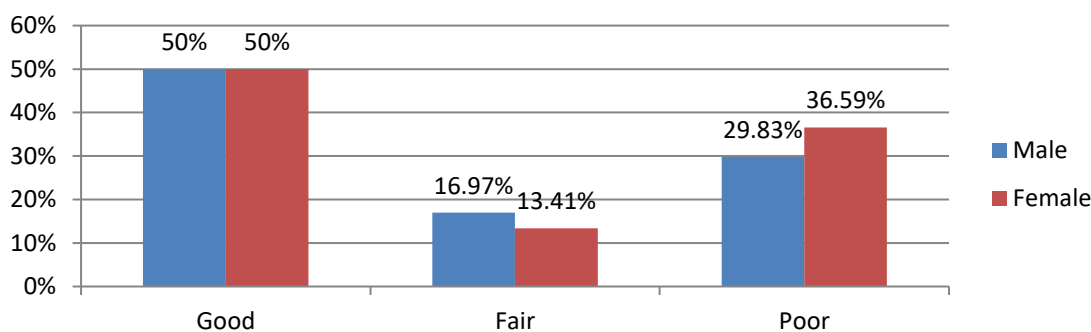
GRAPH 10: ORAL HYGIENE AIDS USED



GRAPH 11: OHI-S INDEX BASED ON TYPE OF DISABILITY

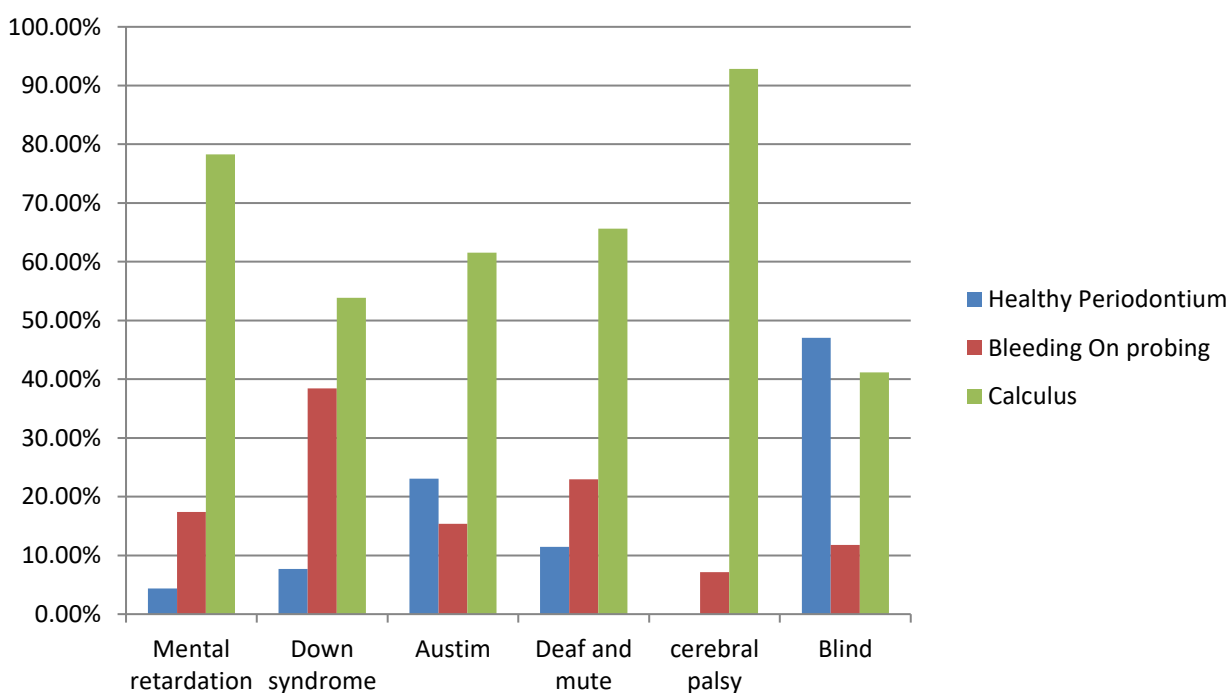
OHI-S index based on gender represented in graph 12, which shows that most of the patient reported to have good OHI-S with percentage of 50% for

males and 50% % for females. 16.97% males ,13.41% females have fair OHI-S and 29.83% males, 36.59% females with poor OHI-S score.



GRAPH 12: OHI-S INDEX BASED ON GENDER

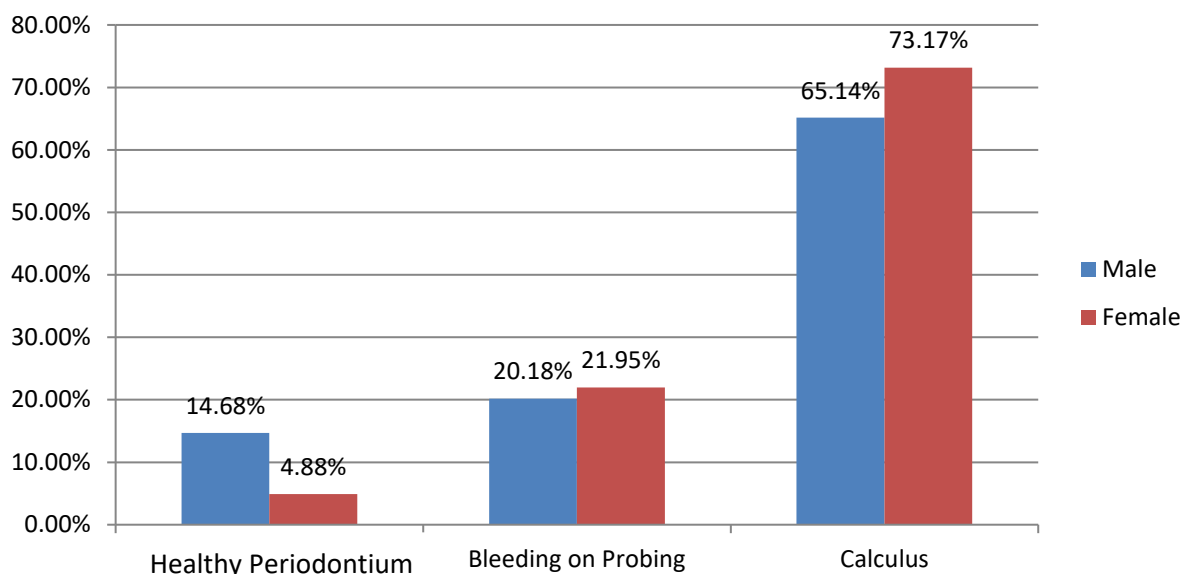
Periodontal status based on type of disability



GRAPH 13: PERIODONTAL STATUS BASED ON TYPE OF DISABILITY

Health of periodontium based on gender represented in graph 14, shows that subjects 73.17% of females and 65.14% of males were

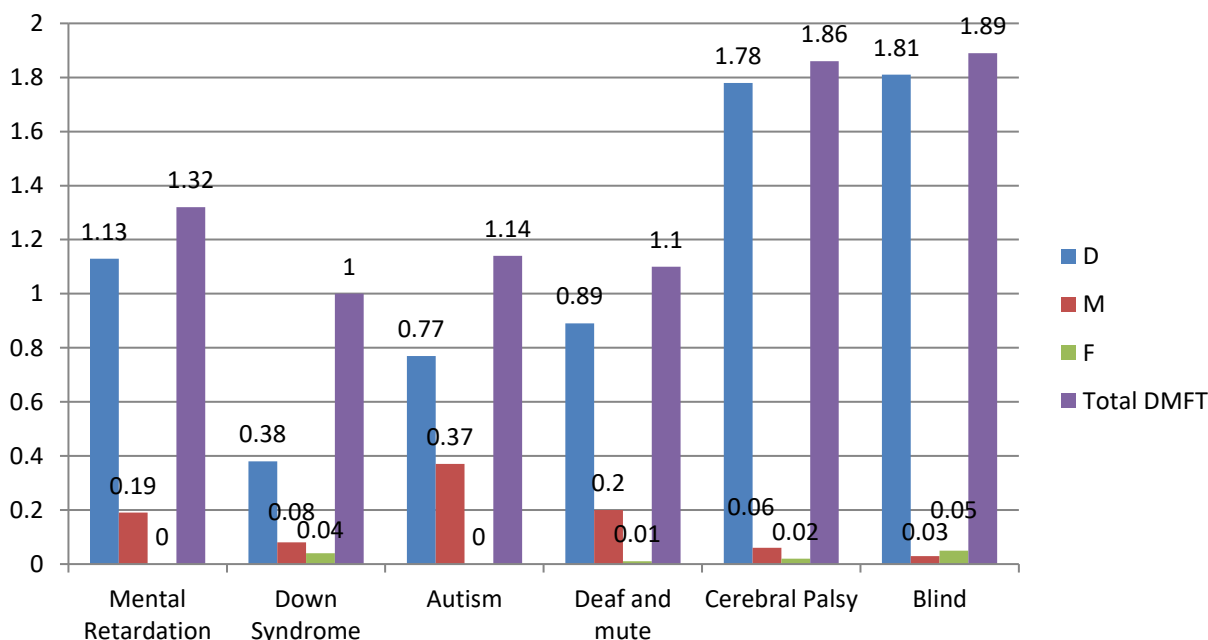
having calculus. Only 4.88% of females and 14.68% of males had healthy dentition



GRAPH 14: PERIODONTAL STATUS BASED ON GENDER

Dental caries status of children based on type of disability represented in graph 15, which shows that DMFT mean for blind children was 1.89 ± 0.98 Cerebral Palsy children was 1.86 ± 1.12 , for

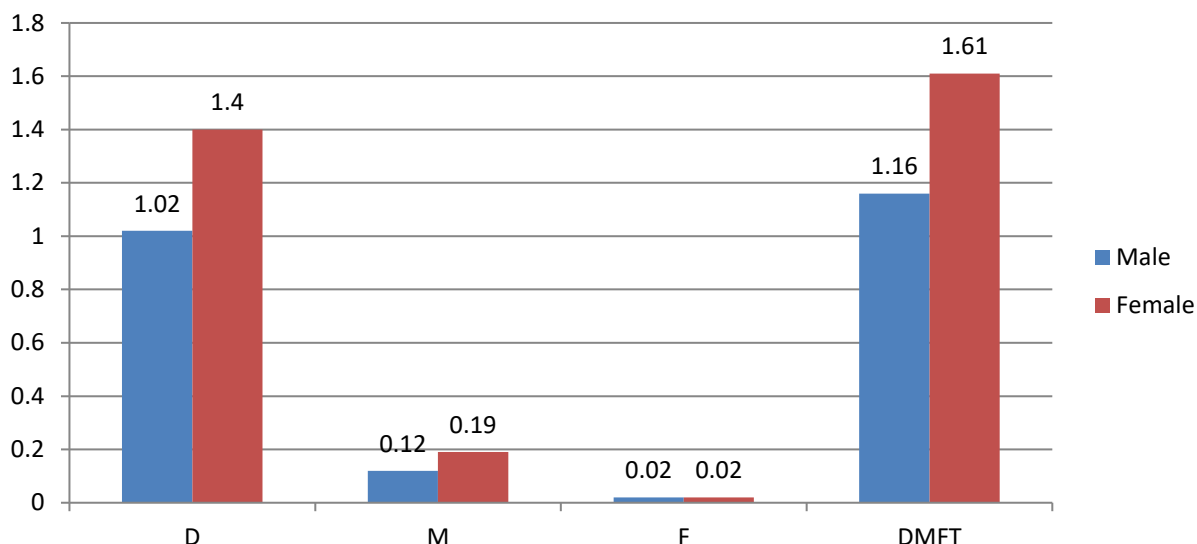
Mentally Retarded children was 1.32 ± 1.24 , for autistic was 1.14 ± 1.28 , for Down Syndrome 1.00 ± 1.24 and for Deaf & Mute children was 1.10 ± 1.26 .



GRAPH 15: DENTAL CARIES STATUS OF SUBJECTS BASED ON TYPE OF DISABILITY

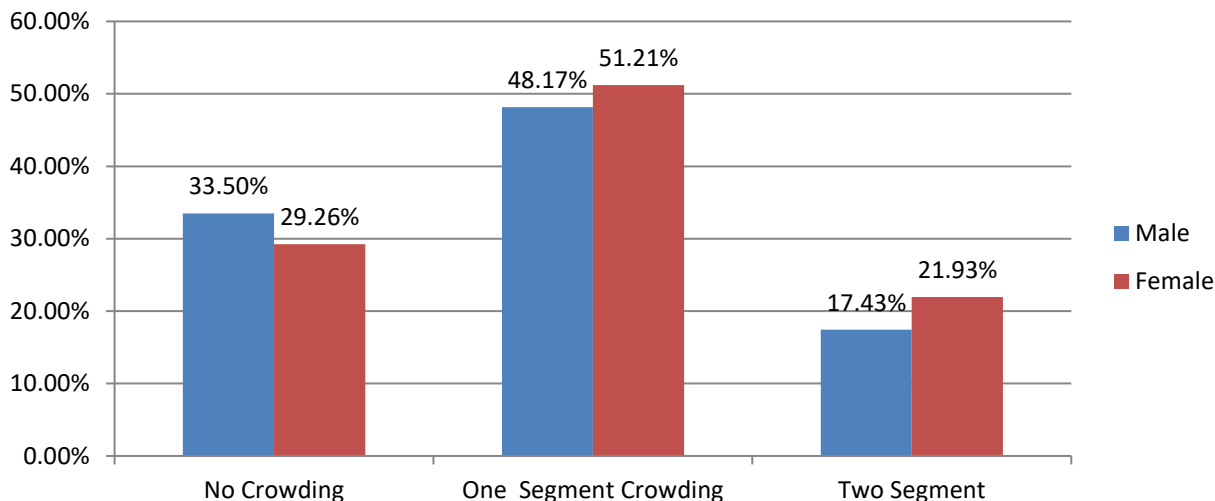
Dental caries based on gender describe in graph 16, shows, for males, the mean DMFT was 1.16 ± 0.98 while for females it was 1.61 ± 1.21 . The Mean DT, MT and FT component in males were 1.02 ± 0.95 ,

0.12 ± 0.39 and 0.02 ± 0.12 while for females, the corresponding figures were 1.40 ± 1.12 , 0.19 ± 0.51 and 0.02 ± 0.11 respectively.



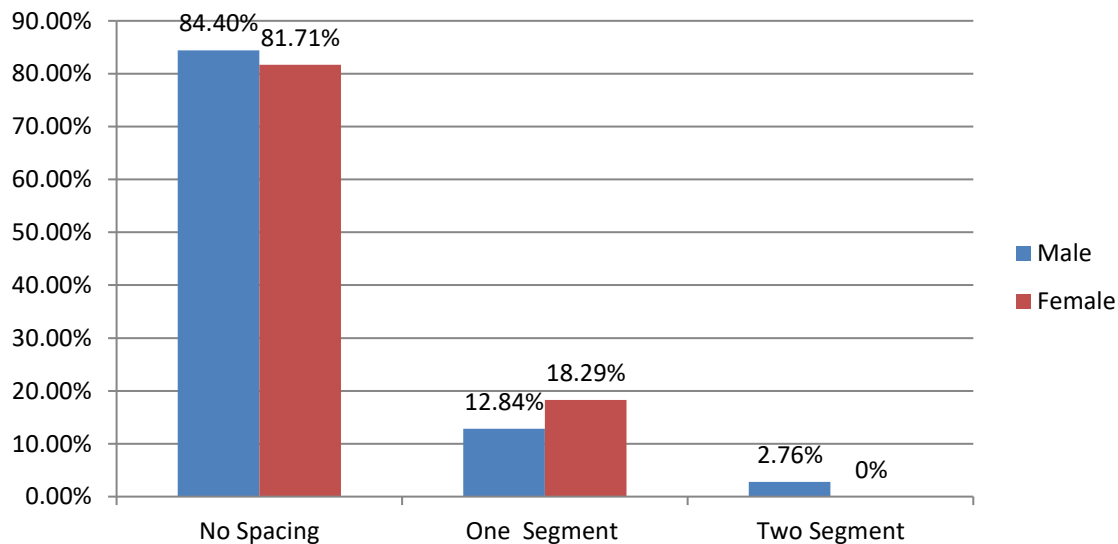
GRAPH 16: DENTAL CARIES BASED ON GENDER

Crowding distribution



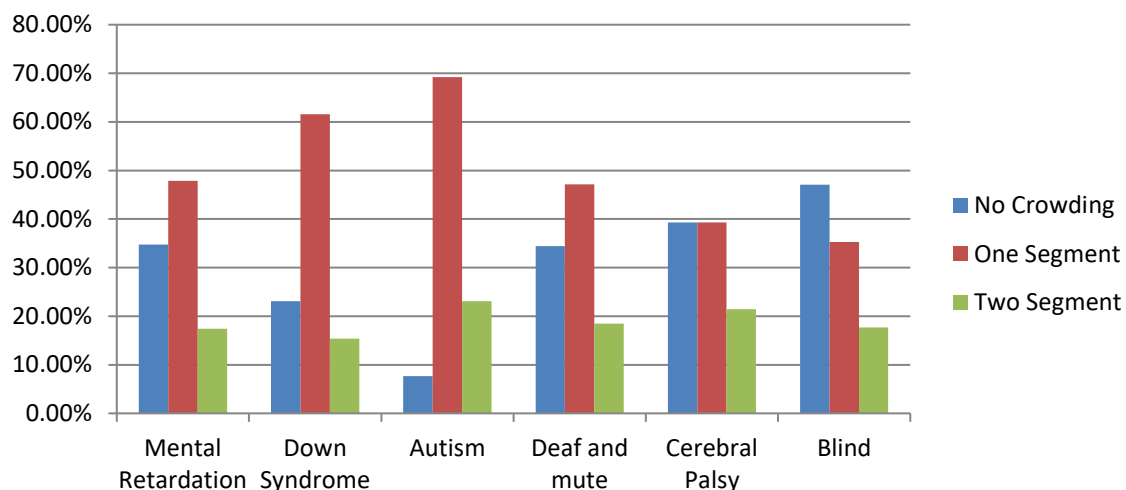
GRAPH 17 (A) ANTERIOR CROWDING DISTRIBUTION GENDER WISE

Spacing distribution.



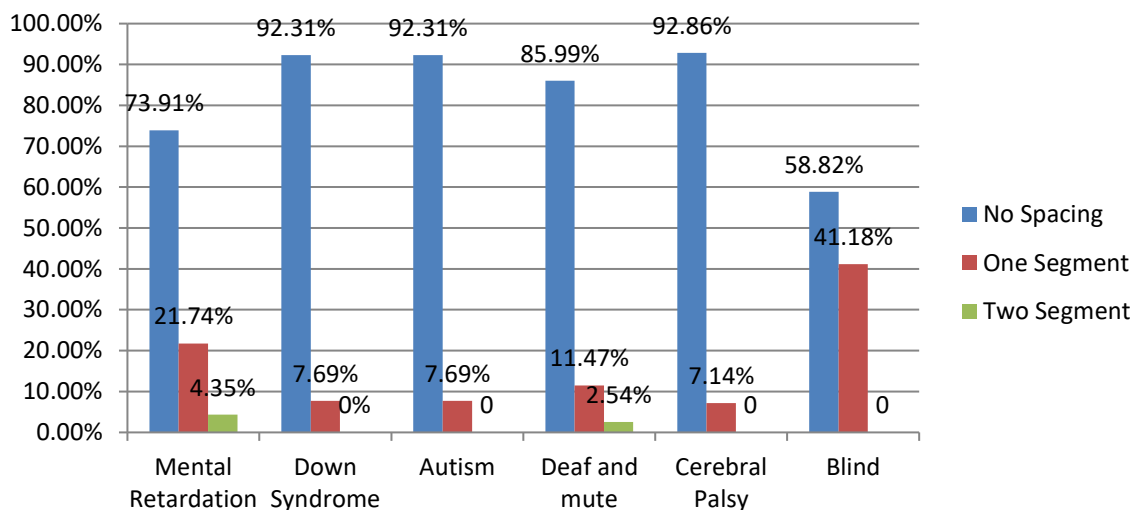
GRAPH 17 (B) SPACING DISTRIBUTION GENDER WISE

Anterior crowding distribution



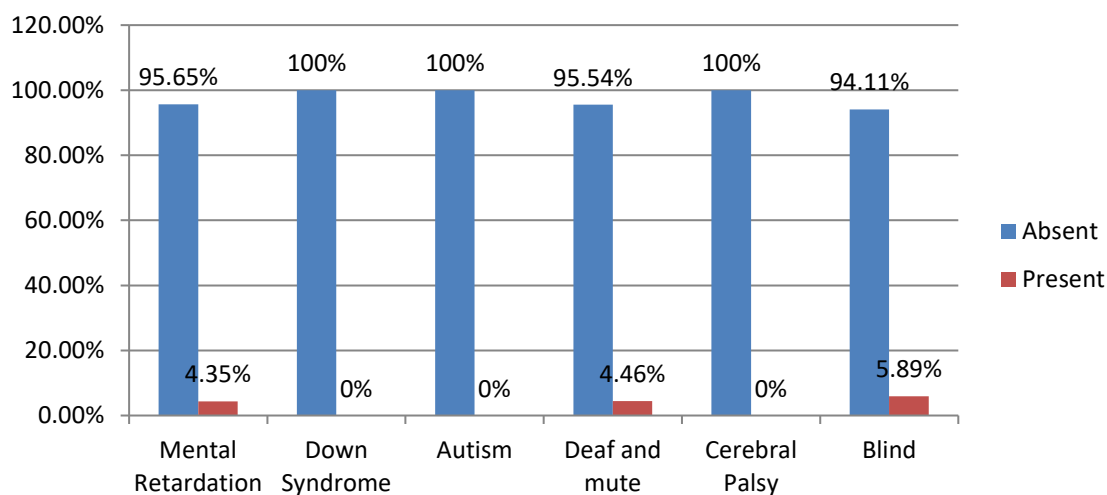
GRAPH 17(C) ANTERIOR CROWDING DISTRIBUTION DISABILITY WISE

Distribution of spacing in different type of disability represented in graph 17(D),



GRAPH 17 (D) SPACING DISTRIBUTION DISABILITY WISE

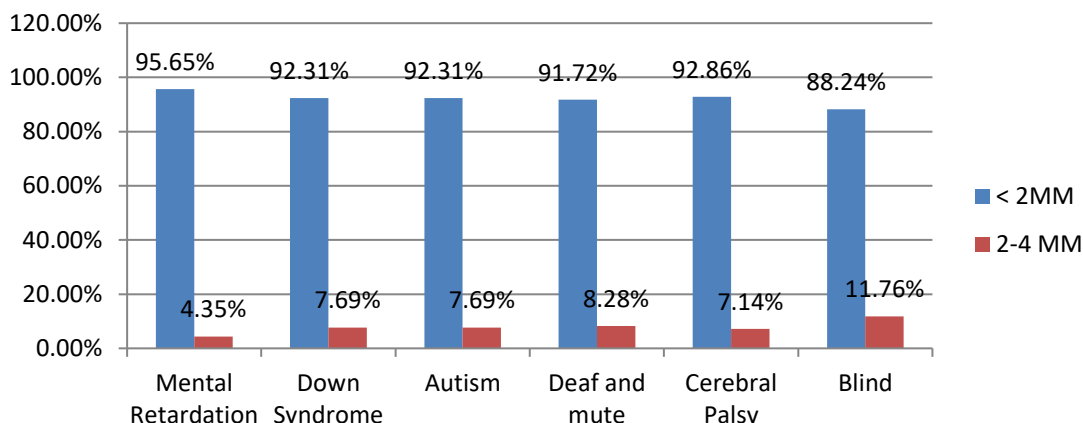
Diastema based on disability represented in graph 17(E), shows that 4.35% case in Mentally Retarded children, 4.46% case in Deaf & Mute and only 5.89% case in Blind children had diastema.



GRAPH 17(E) DIASTEMA BASED ON DISABILITY

Maxillary irregularity based on disability represented in graph 17(F), which shows that

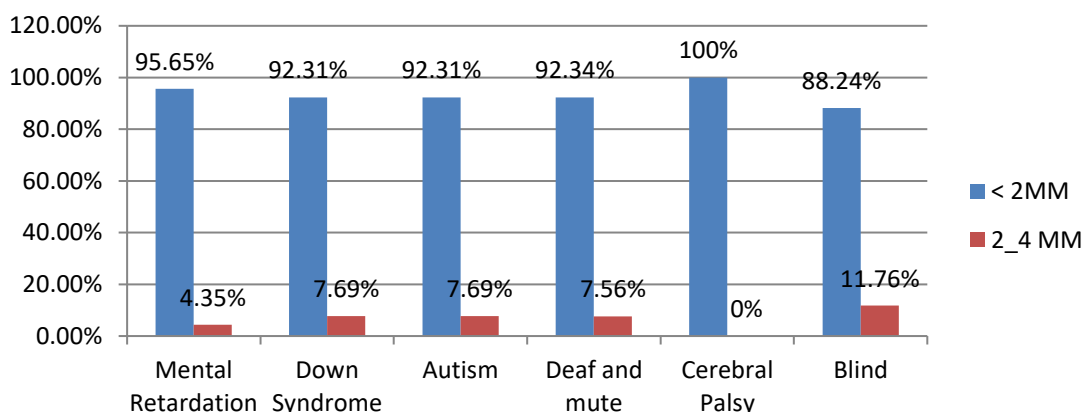
maximum subjects showing maxillary irregularities less than 2mm in all type of disabilities



GRAPH 17 (F) LARGEST ANTERIOR MAXILLARY IRREGULARITY BASED ON DISABILITY

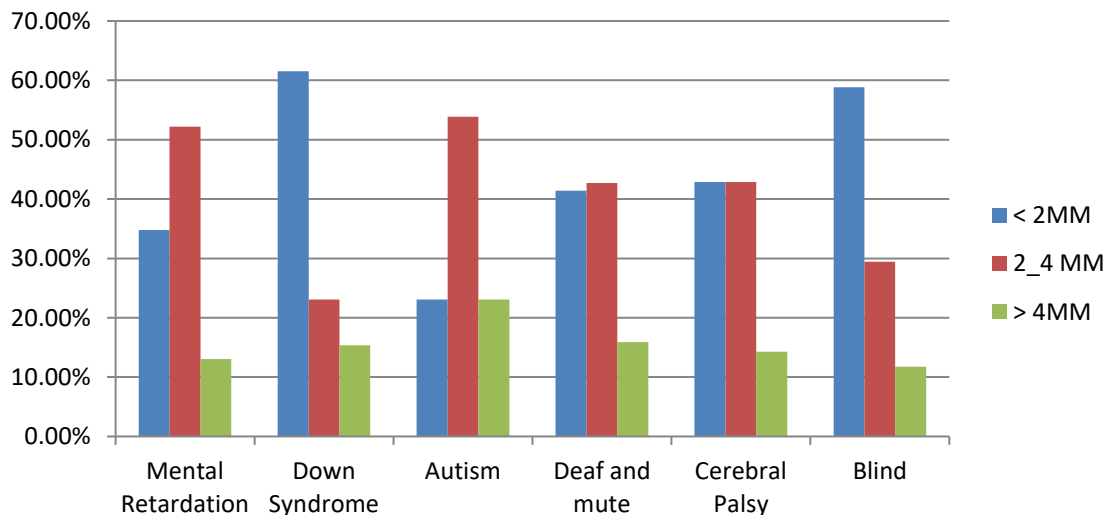
Anterior mandibular irregularity based on disability represented in graph 17(G), which shows that maximum subjects showed mandibular

irregularities less than 2mm in all type of disabilities



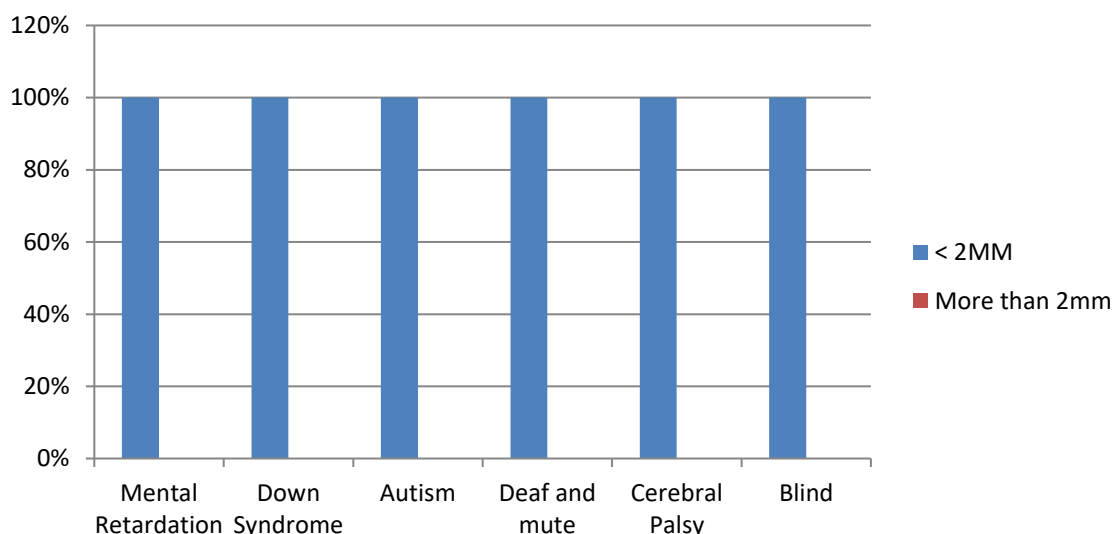
GRAPH 17(G) LARGEST ANTERIOR MANDIBULAR IRREGULARITY BASED ON DISABILITY

Maxillary overjet based on disability represented in graph 17(H)



GRAPH 17 (H) MAXILLARY OERJET BASED ON DISABILITY

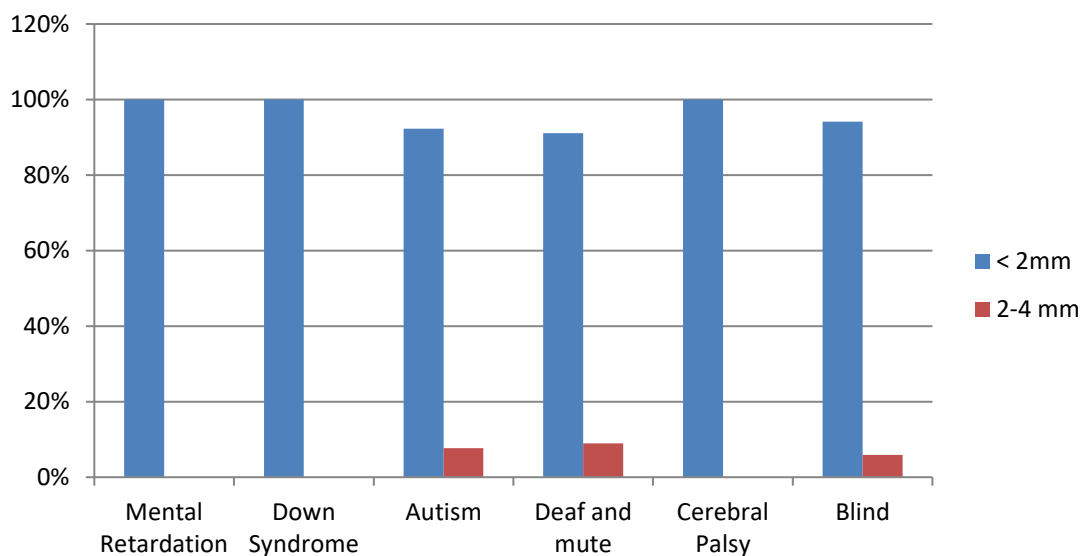
Mandibular overjet based on disability represented in graph 17(I), shows that most of disabled children had mandibular overjet less than 2mm in study.



GRAPH 17 (I) MANDIBULAR OVERJET BASED ON DISABILITY

Graph 17(J), shows that vertical anterior open bite was less than 2mm, this finding was commonly observed in all type of disabilities. 2-4mm vertical

anterior open bite in 8.92% Deaf & Mute children and 7.69% in autistic children.



GRAPH 17 (J) VERTICAL ANTERIOR OPEN BITE

Discussion

Attitudes to oral health, oral hygiene and dental attendance and the relative value placed upon these factors must be viewed in the context of illness, disability, socioeconomic status and stresses imposed upon daily living for the individual, family and care takers.¹

The gender distribution in current study was 218(72.7%) male and 82 female (27.3%), this is in accordance with Newacheck et al.⁴² studied that boys are one-third more likely to have a special

health need than girls. Similar studies by Ceyhan Altun et al.³ also showed that on special health needs children have also shown significant difference in gender proportions, showing majority of subjects as male 92 (67.6%), Siddibhavi M B⁴ included 155(58.93%) males subject & 108 (41.07%) females subject in the study, Alaki S M⁶ 44 (51.16%) males subject & 42 (48.84%) females subject, C Y Chen et al.³⁹ 62 (64.6%) boys subject & 34 (35.4%) girls subject and Folakemi et al.²⁴ males subject 37 (72.2%) & females subject 15 (27.8%). These all findings are also in tandem with my study.

The most common type of disability seen in present study was of Deaf & Mute children, with prevalence of 52.33%, which is similar to the study done by Shyama et al.¹³ in which deaf & mute subjects was 37.5% out of 832 study sample. After Deaf & Mute children the second group was of Mental Retardation children which is about 15.3%, Down Syndrome 8.7%, Autism 8.7%, Cerebral Palsy 9.3% and Blinds 5.67. Different authors have found different prevalence of disabilities in their studies. Ceyhan Altun et al.³, Bharathi et al.³⁰ and Manish Jain et al.⁵ have shown increase prevalence of Mentally Retarded, C. Y. Chen et al.³⁹ as well as Folakemiet al.²⁴ found Autism as the most common disability in their study, Ana Cristina et al.⁷ found maximum subjects of disabilities with Down syndrome.

With regards to oral hygiene status, individuals with Down Syndrome had shown 46.15% fair score which was similar with study by Rani Somani et al.⁵⁴ 69%, and dissimilar results in studies done were Manish Jain et al.⁵, Cohen et al.⁸ and Johnson and Young⁵⁵. Mentally Retarded children in current study shows 60.87% fair OHI-S these results differs from studies done by AL- Qatitani Z¹⁷ and Manish Jain⁵ which showed poor OHI-S score. In Cerebral Palsy children our study showed 92.86% fair OHI-S which is in accordance with the study done by Rani Somani et al.⁵⁴ but differs from studies of Manish Jain et al.⁵ who showed poor OHI-S. In our study subjects with Autism showed 61.54% fair OHI-S which was in accordance to Subramanian P³² and Gagandeep M et al.⁵⁶

In this study, the CPI score showed that Cerebral Palsy subjects had highest percentage for calculus presence followed by Mentally Retarded, Deaf & Mute, Autism, Down Syndrome and Blinds. The most probable reason for this difference was the physical limitations of physically handicapped and inability of the mentally handicapped to master the techniques required for brushing. The proportion of whole subjects with healthy periodontium was lowest 12 % similar to the findings by Siddibhavi⁴, Vigild et al.⁵⁷ showed healthy periodontium only 17.30%, Shyama et al.¹³ only 39% and Bhavasar JP et al.⁵⁸ 11.85%. In current study proportion of study subjects having poor periodontal index having calculus was much higher 67.33% which was different with the study done by Nazia Ameer et al.¹, Bhavasar JP et al.⁵⁸, Pieper K et al.⁵⁹, Manish Jain et al.⁵, Shyama et al.¹³, Shaw et al.¹¹, Nunn et al.⁶⁰, Gizani et al.⁴⁵ and Bharathi et al.³⁰. This high score for CPI might be attributed to the frequency of

brushing and improper techniques. Certain studies which differ from current results were of Evan DJ⁴³ and National Children Oral Health Survey⁶¹ which shows higher percentage of healthy periodontium among study subjects. In current study bleeding on probing was found 20.66% this finding was near to similar results given by Siddibhavi et al.⁴ 31.93%, Vignesh H et al.⁶² and Nunn J H.⁶⁰

The acceptable DMFT score as per the WHO guideline in year 2000 is less than 3.00. Therefore, the DMFT index reported in this study was within the acceptable limits. The mean DMFT score for Deaf & Mute in present study was 1.10±1.26. The study done by Shivilal et al.⁴⁹ found mean to be 2.53 (SD 1.72). The study conducted by Manish Jain et al.⁵ shows the mean DMFT score at 2.61 and Navneet Singh et al.⁴¹ showed mean DMFT to be 1.60. The study conducted by Balwant Rai, et al.⁶⁴ and Rao D.B. et al.² found that the mean DMFT score was 2.82 and 2.48 respectively.

A large proportion of the children had malocclusion in which treatment is considered to be mandatory. Unfortunately, the orthodontic treatment needs of these children may not be met due to environmental factors and individual characteristics. Especially those with mental retardation often lack ability to recognize health problems. Since in present study subjects consisted of special children who either had grossly decayed or missing molars or were also uncooperative so it was tedious to measure the molar relationship. Therefore we have measured only basic malocclusion criteria's like crowding, spacing, missing, diastema, maxillary irregularities, mandibular irregularities, maxillary overjet, mandibular overjet and vertical anterior open bite.

Incisal crowding was noted 67.3 %, spacing 11.3%, diastema 1.3%, maxillary irregularities 42.0%, mandibular irregularities 49.3%, maxillary overjet 99.3%, mandibular overjet 1.4% and vertical anterior open bite 6.8% of the sample in our study which differs from the findings of Ultomi et al.²⁰ Interestingly, the data suggested that malocclusion varies according to whether the disability is physical or mental in origin similar to Dinesh et al.² On the whole, the literature reported by Orelan A & Vignesh H et al.²⁰ that those with intellectual disabilities had a higher prevalence of malocclusion compared to those with visual or hearing impairments, more common in persons with Mentally Retarded than those with generalized handicaps. Patterns of malocclusion in individuals with Mentally Retarded were attributed to similar

sources as those with CP and DS. Vittek et al.⁷² also noted that the severity of mental status correlated with high incidence of acquired and hereditary orthodontic anomalies.

Conclusion

The poor oral hygiene of disabled individuals, in comparison with age- matched non-disabled groups, has been widely reported. Moreover, some investigators have shown that the situation worsens with increasing age. Furthermore, Murray and McLeod, Shaw et al have identified a correlation between level of oral hygiene and severity of disability.

Oral health is a vital component of overall health, which contributes to each individual's well-being and quality of life by positively affecting physical and mental well-being, appearance, and interpersonal relations. The way a society looks after its disabled members is a perceptive reflection of its cultural level. To improve the oral hygiene status of individuals with disabilities is a daunting task, but it can be achieved if the parents or guardians are given suitable health education. Due to the fact that this 'lessfortunate' population is increasing dramatically, advanced and continuing education programs are needed to train general and pediatric practitioners. As both oral health status and disability are related to the patients' social acceptability, it is important for disabled children to have proper oral hygiene.

With proper planning, clear communication, and carefully drawn limits to services provided, the dramatic oral health negligence experienced by so many of the disabled individuals can be successfully alleviated.

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