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Prevalence of Dental Caries and Traumatic Injuries of Teeth in Children with Special Health Care Needs In And Around Tirupathi City

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ABSTRACT

Children with special health care needs (CSHCN) are those who have a physical or mental impairment which substantially limits one or more major life activities such as caring for one's self, performing manual tasks, walking, seeing, hearing, speaking, breathing, learning and working. Handicapped children are unable to maintain a perfect oral hygiene and so they have high prevalence of dental caries and periodontal disease. The prevalence of dental caries is generally considered to be similar to that of the population at large but the proportion of the untreated tooth decay is higher, indicating dental neglect. One of the first steps towards the planning of dental services is to obtain up to date information on the prevalence and incidence of dental diseases. Hence the current study is aimed to assess the prevalence of dental caries and frequency of fracture anterior teeth in persons/children with special health care needs and to compare the achieved data from these parameters with that from the group of normal children. The study was done in 545 handicapped children of age group 3-15 years and a control population consisted of 103 normal children of same age group. Prior consent was obtained from the respective school authorities and from the parents/guardians through the schools to conduct the study. The oral cavity examination was done by a single investigator using mouth mirror and Community Periodontal Index of Treatment Needs (CPITN) probe for dental caries. The prevalence of fracture anterior teeth was assessed in both the groups (controlled and CSHCN group). The incidence of fracture anterior teeth was recorded using Ellis and Davis classification. Data for each subject were recorded on a specially designed proforma, exclusively designed for recording all the required and relevant information.. The examination for dental caries was made according to the WHO criteria (1997). The levels of oral hygiene of children with special health care need are significantly poorer than normal children. The caries experience among this school population with disabilities is clearly higher than among the respective age groups of normal schoolchildren.Caries experience is highest in subjects with hearing impairment and least in visually impaired children in primary dentition. Caries experience among 6-12 year age group was high in physically handicapped and least in visually impaired children. Caries experience among permanent dentition was high in medically compromised and least in hearing impaired children. Traumatic injuries are more prevalent among these subjects with disabilities than among the healthy population. The highest incidences of traumatic experience were the physically handicapped and lowest in visually impaired children. The oral health of these children is poor and a majority of the children in the study are in need of specific dental care. Like other oral health conditions, traumatic dental injuries are preventable and preventive measures can only be applied when factors that contribute to the injuries have been identified. So, providing comprehensive dental care for these children with special health care (CSHCN) is not only rewarding but also a community service that health care providers are obligated to fulfill. Comprehensive dental care, Decayed-Missing-Filled Tooth Index, Tooth injuries, visually impaired person, children with special health care (CSHCN).

INTRODUCTION

Handicapped individuals are "one who, over an appreciable time, is prevented by a physical or mental condition from full participation in the normal activities of his age group including those of a social, recreational, educational and vocational nature[1]. Children with special health care needs (CSHCN) are those who have a physical or mental impairment which substantially limits one or more major life activities such as caring for one's self, performing manual tasks, walking, seeing, hearing, speaking, breathing, learning and working[2].

Handicapped children are unable to maintain a perfect oral hygiene and so they have high prevalence of periodontal disease and dental caries but the proportion of the untreated tooth decay is higher, indicating dental neglect[1]. Handicapped patients are more susceptible to dental trauma, result from sudden onset of seizures, poor motor coordination or a slower response to surrounding obstacles[3,4].

One of the first steps towards the planning of dental services is to obtain up to date information on the prevalence and incidence of dental diseases[5,6]. This study was carried out to find out the prevalence of dental caries and traumatic injuries of teeth in medically compromised, mentally retarded, physically handicapped, visually impaired and hearing impaired children attending various special schools of Tirupathi andhrapradesh, India.

The aims of the present study were:

- To assess the prevalence of dental caries in persons with special health care needs
- To investigate the frequency of traumatic injuries in persons with special health care needs
- To compare the data from these parameters with that from a group of children attending normal schools

Objectives of the present study were:

- To describe the prevalence of dental caries and traumatic injuries among special children
- To describe the association between dental caries experience and traumatic injuries of special children with socio economic background and oral health practices

MATERIALS AND METHODS

The present study was conducted in the Department of pedodontics and preventive dentistry, C.K.S teja dental college in association with various Special Schools for Handicapped children in and around tirupathi city. A total number of 542 children in the age groups of 3-18 years were selected from 8 different special schools of tirupathi city as study population and 104 normal children were selected from elementary and middle schools as control population to evaluate the prevalence of dental caries, oral hygiene practices and fractured anterior teeth. Prior consent was obtained from the respective school authorities and from the parents/guardians through the schools to conduct the study.

The handicapped children were examined at their respective schools, seated on an ordinary chair, unless they were confined to a wheel chair, under natural light using the mouth mirror and C.P.I probe. A single investigator, assisted by a previously trained recording clerk conducted all examinations. The examination procedure and criteria used were those recommended by W.H.O in 1997. The obtained data was subjected to statistical analysis with one-way analysis of variance (ANOVA) and Pearson,s chi square test.

RESULTS

A total number of 542 children in the age groups of 3-18 years were selected from 8 different special schools of tirupathi city as study population and 104 normal children were selected from elementary and middle schools as control population to evaluate the prevalence of dental caries, oral hygiene practices and fractured anterior teeth.

The distribution of total subjects according to the primary dentition, mixed dentition and permanent dentition is showed in Graph II. Graph III revealed the brushing frequency among the primary, mixed and permanent dentition. The twice daily brushing frequency was reported to the maximum in the control/normal children group as (26.9%) followed by hearing impaired children (16.1%), mentally retarded children (15.1%), physically handicapped children (8.7%), visually impaired children (6.3%) and least being the medically compromised children (1.9%).

Fig. 4 declared the brushing habits of the children using various modes like tooth brush, finger or other things like neem stick and the results of the present study revealed that most of the children irrespective of their condition brushed their teeth with tooth brush Various agents used for brushing like tooth paste, tooth powder and miscellaneous materials like charcoal, salt and brick powder were used by study

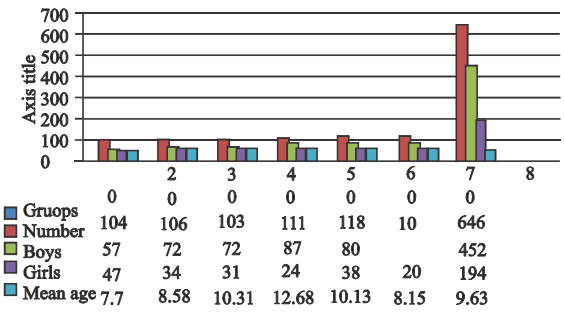

Fig. 1: Shows the distribution of the subjects according to age and sex

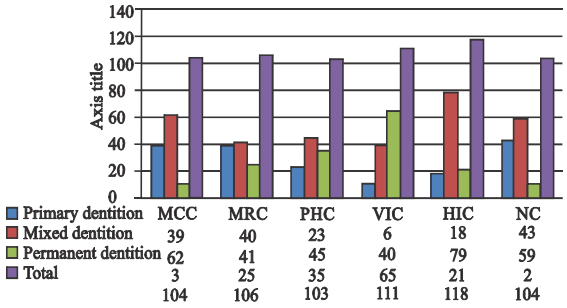

Fig. 2: Dentition and permanent dentition is showed

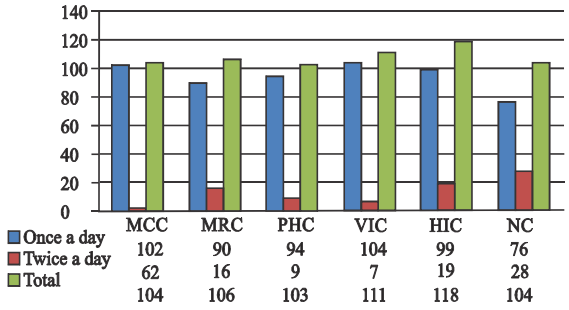

Fig. 3: Revealed the brushing frequency among the primary, mixed and permanent dentition

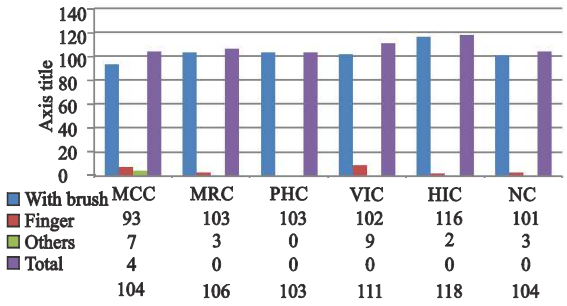

Fig. 4: Declared the brushing habits of the children using various modes like tooth brush

population are depicted in Fig. 5 and irrespective of their condition children brushed their teeth with tooth paste followed by tooth powder and others.

Fig. 6, 7 and 8 declared the DMFT and deft values of all the groups. In primary dentition group, mean DMFT value was 0.17 and 0.06 in physically handicapped (PHC) and hearing impaired children (HIC). The mean deft value was reported to be higher in hearing impaired children (HIC) (3.33) and least in visually impaired children (VIC) (0.33). In mixed dentition group, mean DMFT value was higher in in medically compromised children (MCC) (0.95) and least in mentally retarded children (MRC) (0.32) and the mean deft value was reported to be higher in physically handicapped children (PHC) (2.02) and least

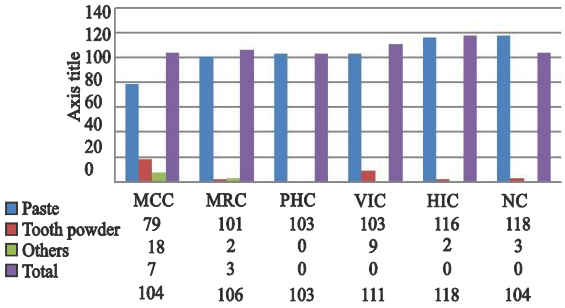

Fig. 5: and irrespective of their condition children brushed their teeth with tooth paste followed by tooth powder and others

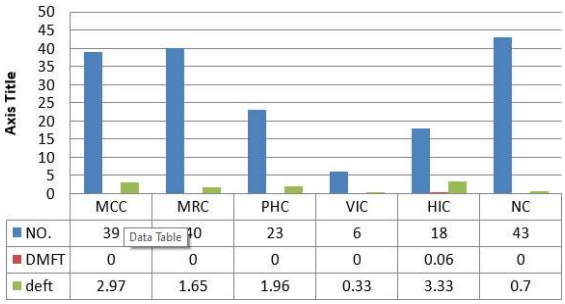

Fig. 6: Declared the DMFT and deft values of all the groups

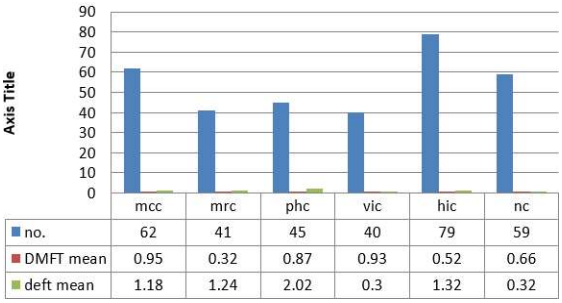

Fig. 7: Declared the DMFT and deft values of all the groups

in visually impaired children (VIC) (0.3). In permanent dentition, mean DMFT value was higher in medically compromised children (MCC) (3.33) and least innormal children (NC) (0.47). Where as mean deft value was reported 0.2, 0.11, 0.06 and 0.05 in MRC, PHC, VIC and HIC groups respectively.

Fig. 9 the decayed (D), missing (M) and filled (F) components in each group. Highest decayed component percentage was scored by visually impaired children (40%) followed in decreasing order by physically handicapped children (35.9%), medically compromised children (31.7%) hearing impaired

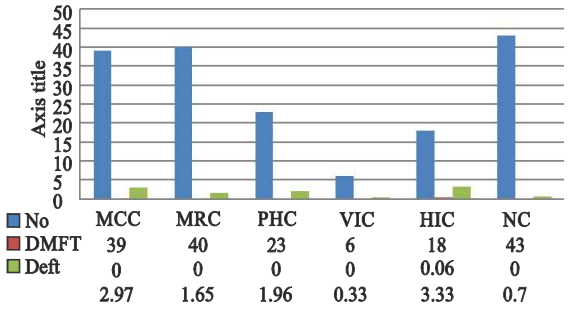

Fig. 8: Declared the DMFT and deft values of all the groups

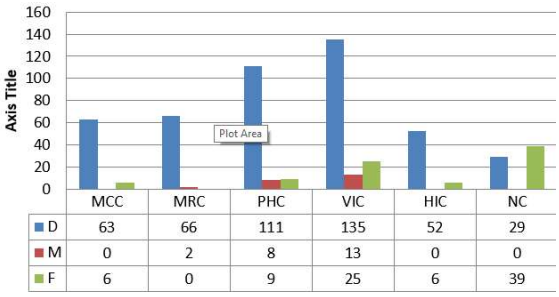

Fig. 9: The decayed (D), missing (M) and filled (F) components in each group. Highest decayed component

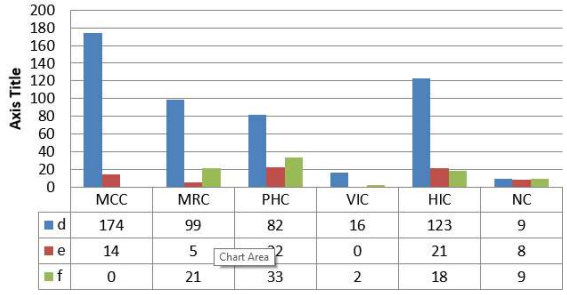

Fig. 10: The decayed (D), missing (M) and filled (F) components in each group. Highest decayed component

children (21.2%), mentally retarded children (16%) and least being in control group or normal children (11.5%). Fig. 10 revealed the decayed (d), indicated for extraction (e) and filled (f) components in each group. Highest decayed component percentage was scored by medically compromised children (40.4%) followed in decreasing order by physically handicapped children (29.1 %), mentally retarded children (28.3%), hearing impaired children (26.5%), visually impaired children (7.2%) and least being by control/normal children (6.7%). Fig. 11 show the trauma to anterior teeth and Results of present study indicated that the children

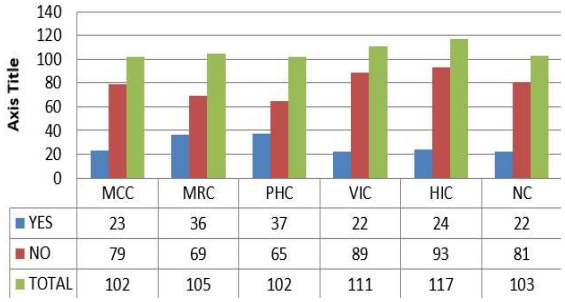

Fig. 11: Revealed the decayed (d), indicated for extraction (e) and filled (f) components in each group

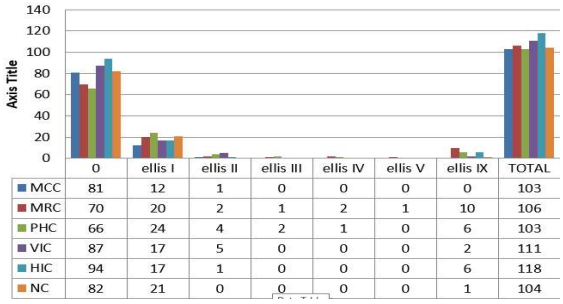

Fig. 12: Show the trauma to anterior teeth and Results of present study

with special health care needs had higher incidence of fractured anterior teeth. Although the fracture experience was reported to be higher in all type of dentition (primary, mixed and permanent dentition), for CSHCN the physically handicapped children (36.3%) showed higher experience than other groups with Ellis class I fracture being the most common injury.

DISCUSSION

"Every child has a fundamental right to his total oral health care." Children with special health care needs (CSHCN) is the current descriptor term used to characterize children who have or are at increased risk for a chronic physical, developmental, behavioral, or emotional condition and who also require health and related services of a type or amount beyond that required by children generally[7].

The oral hygiene status of individuals with disabilities tends to have specific problems that affect their ability to perform oral hygiene these problems include manual dexterity, coordination, self-help skills and the inability to comprehend complex tasks and overall hygiene care tends to be prioritized and may be influenced by the experience, ability and available time of the caregivers[8,9]. The results of the present study showed that more than 80% children in all the study

groups brush only once daily with tooth paste and brush, with the medically compromised group toping the chart with 98.1%. These results are in accordance with the study conducted by Nandhini[5] on visually impaired children, where 89.3% brushed their teeth once daily, 85.3% of the subjects used tooth brushes and 80% used toothpaste. Vinay Suresan on visually impaired children the caries prevalence was 69.2% with a caries experience[17] In spite of the efforts put in by the care providers, it is unfortunately that these (CSHCN) still shows a higher DMF, def.

In present study, When caries experience (deft) was noted among 3-6 year group children, deft was high in hearing impaired children group (3.3) followed by physically handicapped (1.96), mentally retarded (1.65) and least in visually impaired children (0.33). Results are correlating with the study conducted by Rao, Hegde and Munshi[8] on handicapped children in south canara district, Karnataka, the mean deft in primary dentition high in mild mental subnormality (4.42) followed by severe mental subnormality (3.00), hearing impaired children (2.6) and least being by multiple handicapped children (2.50). In present study Caries experience (deft/DMFT) among 6-12 year age group was high in physically handicapped (2.02/0.87) followed by medically compromised (1.18/0.95) and least in visually impaired children (0.30/0.93) and caries experience (DMFT) among 12-15 year age group was high in medically compromised (3.33) followed by physically handicapped (2.57) and mentally retarded (2.12) group and least in hearing impaired children group (0.67).

The results of this study correlate with the results of a study conducted by Bhavsar and Damle[11] on handicapped children in Bombay, the mean DMFT was 3.3 in mentally retarded children(CP) and 2.7 in the physically handicapped children. A study conducted by Rao, Hegde and Munshi[10] on handicapped children in south canara district, Karnataka, the mean deft/DMFT in mixed dentition was high in moderate mental subnormality children (4.18/0.82), where as in permanent dentition DMFT being high in multiple handicapped children (6.69). It was also noticed that most of deft/DMFT component was dominated by decay component and least with filled component. The decay D-component was highest in visually impaired group (40%) and least in control/normal children (11.5%) and d-component was highest in medically compromised (40.4%) and least in visually impaired group (7.2%).

Considering filled (F) components in permanent dentition, highest number was reported in normal/control group children (14.4%) where as in mentally retarded children not one decay teeth was restored. In primary dentition filled (f) components are more in hearing impaired children (5.9%) but in medically compromised children ‘f’ component failed to make a score, being at zero. In case of missing (M) components in permanent dentition, highest no. was seen in physically handicapped children (5.8%) and no missing teeth were recorded in medically compromised children, hearing impaired children and normal/controlled group children. Where as in primary teeth ‘e’ components was highest in physically handicapped children (6.8%) and in hearing impaired children (6.8%), without any ‘e’ component in visually impaired children.

Nevertheless the d and D components were higher than e, f and M and F respectively. The interpretation of this findings is that the decayed teeth were much more in the all dentition (primary, mixed and permanent dentition), then the missing or the filled teeth[9]. These results correlated with those of Mitsea *et al*[5] conducted a study on cerebral palsy, mental retardation and visually impaired children. He reported that the d-component was least in the mentally retarded children. The results of the present study are substantiate with the results of other studies like, study undertaken by Malhotra *et al*. Showing that the D component was high in the physically handicapped children and least in the mentally retarded group. The results of the Study conducted by Rao, Hegde and Munshi on handicapped children in south canara district, Karnataka, revealed that d components in primary dentition was high in severe mental subnormality (100%) and the least being hearing impaired children (96.15%) and in mixed dentition D and d components were high in moderate mental subnormality (100%/92.75%) and least being in physically handicapped children (100%/85%) and in permanent dentition decayed component being high in medically compromised children (93.5%) and least being by visually impaired children (66.19%).

Lack of knowledge about good oral hygiene practices among the concerned authorities, lack of motivation, low priority given to dental care in society, lack of facilities for early and regular oral health checkup and prompt treatment, poor socioeconomic status of the parents or guardians and cost of treatment may be the reasons for the accumulated treatment needs[12]. It is important to note that not only caries but even the incidence of traumatic injuries to the anterior teeth of CSHCN has been reported to be higher. The results of this study reveal that groups showing the highest incidence of fractured anterior teeth were the physically handicapped (36.3%) and the mentally retarded group (34.3%) and lowest in visually impaired children (19.8%). However, the fractured anterior teeth were greatest in the mixed dentition age group for the physically handicapped children and in the permanent age group in the mentally retarded

children with Ellis class I fracture was the most commonest injury[14,17]. Tooth fractures occurred more often in the maxillary teeth and central incisors because these teeth are at greater risk of being traumatized due to their vulnerable position, frequent protrusion and inadequate lip coverage. Increased anterior over jet and poor neuro muscular co-ordination in the physically handicapped[18,158,17]. In a society that increasingly places emphasis on improved dental health and awareness of appearance, injury to the anterior teeth of young children is an emotional as well as physical experience for both children and parents[16]. Uncontrolled head movements, that are characteristics to these individuals are a common cause for dental injuries as bumped against hard objects located in the individual's vicinity[16].

Like other oral health conditions, traumatic dental injuries are preventable and preventive measures can only be applied when factors that contribute to the injuries have been identified[13]. So, providing comprehensive dental care for these children with special health care (CSHCN) is not only rewarding but also a community service that health care providers are obligated to fulfill.

CONCLUSION

The present study was conducted on 646 children (542 children with special health care need and 104 normal children) aged 3-18 years to assess the prevalence dental caries and fractured anterior teeth in CSHCN.

From the results of this study, the following conclusions were made:

- The levels of oral hygiene of children with special health care need are significantly poorer than normal children
- The caries experience among this school population with disabilities is clearly higher than among the respective age groups of normal schoolchildren
- Caries experience is highest in subjects with hearing impairment and least in visually impaired children in primary dentition
- Caries experience among 6 -12 year age group was high in physically handicapped and least in visually impaired children
- Caries experience among permanent dentition was high in medically compromised and least in hearing impaired children
- Traumatic injuries are more prevalent among these subjects with disabilities than among the healthy population. The highest incidences of traumatic experience were the physically handicapped and lowest in visually impaired children.
- The oral health of these children is poor and a majority of the children in the study are in need of specific dental care

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