

Assessment of Traumatic Dental Injuries Among Special Children of North India: A Cross-Sectional Study

Neha^{1*} Sanjana Arora² Gagandeep Kaur³ Sudhir⁴

¹Reader, Department of Pediatric and Preventive Dentistry, Maharaja Ganga Singh Dental College & Research Centre, Sri Ganganagar, Rajasthan, India.

²PG Student, Department of Pediatric and Preventive Dentistry, Maharaja Ganga Singh Dental College & Research Centre, Sri Ganganagar, Rajasthan, India.

³Professor and Head, Department of Pediatric and Preventive Dentistry, Maharaja Ganga Singh Dental College & Research Centre, Sri Ganganagar, Rajasthan, India.

⁴PG Student, Department of Oral and Maxillofacial Surgery, Maharaja Ganga Singh Dental College & Research Centre, Sri Ganganagar, Rajasthan, India.

ABSTRACT

Background: Children with disabilities deserve the same chances to improve their oral health and hygiene as children those who are healthy. Therefore, the present cross-sectional study was conducted with the objective to assess traumatic dental injuries among special children of North India.

Material and methods: The present cross-sectional study was conducted among 500 children aged 5-13 years old from special schools of North India from January 2019 to August 2019 to assess traumatic dental injuries among special children of North India. The study was conducted on the pre-decided days, investigators visited the schools and the clinical examination was carried out. WHO oral health assessment form 2013 was used to record traumatic injuries. Statistical Package for Social Science version 22 Chicago: SPSS Inc. was used to analyse the data. Paired t-test to compare the mean values and Chi-square test to compare the proportions were used. p-value was considered significant if less than 0.05.

Results: The results of the study showed that 366 males and 134 were females were involved in the study. It was observed that 217 participants belonged to age group of 5-10 years and 283 belonged to age group >10 years. Mean age of the participants was 10.49±2.35. It was observed that in 465 study subjects dental trauma was absent. In 35 study subjects dental trauma was present. In 1 study subjects treated injury was present. In 11 study subjects enamel fracture was present. In 21 enamel and dentinal fracture was present. In 1 study subjects pulp involvement was present. In 1 study subjects tooth was missing due to trauma.

Conclusion: It is concluded from the study that subjects dental trauma was less in the study subjects. Dental home, regular dental visits may be a rational solution to overcome the dental problems by carrying out prompt diagnosis, referrals, systemic follow-up and comprehensive treatment for disabled children.

Keywords: Special children, traumatic, dental injuries.

INTRODUCTION

A person is considered disabled when a long-term mental or physical disorder or condition affects the ability of performing daily activities with a real

difficulty, as well as consideration is paid to possible recurrences, progressive impairing conditions, cancer, HIV infection, multiple sclerosis, blindness

Received: Oct. 23, 2019: Accepted: Dec. 5, 2019

*Correspondence Dr. Neha.

Department of Pediatric and Preventive Dentistry, Maharaja Ganga Singh Dental College & Research Centre, Sri Ganganagar, Rajasthan, India.

Email: Not Disclosed

and former suffering from disabilities.¹ Children with special health care needs (SHCN) refers to children with any physical, developmental, mental, sensory, behavioral, cognitive, or emotional impairment or limiting condition that requires medical management, health care intervention, and/or use of specialized services or programs.² As per WHO, disabilities are an umbrella term, covering impairments, activity limitations, and participation restrictions.³ As per WHO report it is estimated that the total disability in the world is about 10%. According to the Census 2001, there are 21.9 million persons with disabilities in India who constitute 2.13 percent of the total population.⁴ This includes persons with visual, hearing, speech, locomotor and mental disabilities.⁵ 650 million people worldwide, making up approximately 10% of the total, live with a disability. This figure is increasing through population growth; medical advances and the ageing process.⁶ According to the National Sample Survey Organization (NSSO), there are 18.49 million persons with disabilities in India which constitutes around 1.8% of the total population.⁷ 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.⁸ The most common oral health problem would be traumatic dental injuries. Visually impaired children are considered to be at higher risk to traumatic injuries owing to multiple factors such as falls, accidents met at home or outside, increased overjet, and inadequate lip coverage. The consequences of incisal trauma include alteration in physical appearance, speech defects, and psychological or emotional impacts, thus affecting the child's quality of life.⁹ Therefore, the present cross-sectional study was conducted with the objective to assess traumatic dental injuries among special children of North India.

MATERIAL AND METHODS

The present cross-sectional study was conducted among 500 children aged 5-13 years old from special schools of North India from January 2019 to August 2019 to assess traumatic dental injuries among special children of North India. The study protocol was reviewed by the Ethical Committee of Maharaja Ganga Singh Dental College and Research Centre and was granted ethical clearance and prior to conduct the study written permission was taken from school authorities. Children with informed

consent from their parents/guardians and institutional authorities in which children were enrolled were selected for the study. Children under medications for any illness for 15 days and Uncooperative Children were excluded from the study. The study was conducted on the pre-decided days, investigators visited the schools and the clinical examination was carried out. Sufficient numbers of instruments and required amount of material were made available to have smooth uninterrupted examination. WHO oral health assessment form 2013¹⁰ was used to record traumatic injuries. The sterilization of the instruments was done. Clinical examination was carried out using clean mouth mirrors and community periodontal probe under adequate natural illumination. Participants were made to sit on the chair with a comfortable arm rest in an upright position. The examiner was seated next to the participant. All the examination was carried out by a single examiner. They were examined for traumatic injuries. A trained recorder was made to stand close to the examiner so that the instructions could be heard easily. The survey data so obtained from the study subjects was compiled, calculated and tabulated. Statistical Package for Social Science version 22 Chicago: SPSS Inc. was used to analyse the data. Paired t-test to compare the mean values and Chi-square test to compare the proportions were used. p-value was considered significant if less than 0.05.

Results: Table 1 shows the total population of study group of 500. The gender distribution of the study showed that there were 366 males and 134 were females.

Table 1: Gender distribution among the study subjects

Gender	N	%
Male		73.2
Female	134	26.8
Total	500	100

Table 2 shows the age groups of participants of study. It was observed that 217 participants belonged to age group of 5-10 years and 283 belonged to age group >10 years. Mean age of the participants was 10.49 ± 2.35 .

Table 2: Age distribution among the study subjects.

Age (in years)	N	%
5-10	217	43.4
>10	283	56.6
Mean	10.49	
SD	2.35	

Table 3 shows the no. of teeth involved in dental trauma among the participants. It was observed that in 465 study subjects dental trauma was absent. In 35 study subjects dental trauma was present.

Table 3: No. of teeth involved in dental trauma among the study subjects.

Variable	N	%
Absence	465	93
Presence	35	7

Table 4 shows the status of dental trauma among the study subjects. It was observed that in 465 study subjects dental trauma was absent. In 1 study subjects treated injury was present. In 11 study subjects enamel fracture was present. In 21 enamel and dentinal fracture was present. In 1(0.2%) study subjects pulp involvement was present. In 1 study subjects tooth was missing due to trauma.

Table 4: Status of dental trauma among the study subjects.

Status	N	%
0	465	93.0
1	1	0.2
2	11	2.2
3	21	4.2
4	1	0.2
5	1	0.2

DISCUSSION

The physically challenged population comprises a substantial section of the community, and it is estimated that there are about 500 million people with disabilities worldwide and they are on the increase in proportion to the general population.¹¹

Special children are prone to have the more untreated dental disease, higher incidence of dental caries, poor oral hygiene status, and traumatic dental injuries. This was the comprehensive study conducted among special children of North India. This study had provided us with the data regarding the burden of traumatic injuries which can help in planning treatment services for these children.

In the present study total population of study group was 500. The majority of the participants (73.2%) who participated were males which are similar with the studies conducted by Reddy *et al*¹² (81.2%), Solanki *et al*¹³ (50.5%), and Suresan V *et al*¹⁴ (58.4%). However, contradictory results were found in studies carried out by Priyadarshini *et al* (90.69%).¹⁵

The majority of participants belonged to age group >10 years (56.6%). Mean age of the participants in the study was 10.49 ± 2.35 . A study by Oredugba FA *et al* in 54 subjects aged 3–26 years the mean age was 12.28 ± 6.82 years.¹⁶ A study by Rahman NA *et al* in 63 hearing impaired children of aged 7-14 years the mean age was 11.5 ± 2.39 .¹⁷

In 35 study subjects dental trauma was present. In 1 study subjects treated injury was present. In 11 study subjects enamel fracture was present. In 21 enamel and dentinal fracture was present. In 1 study subjects pulp involvement was present. In 1 study subjects tooth was missing due to trauma. The reason of less traumatic injuries might be due to improvement in physical environment, closer supervision of children and adaptation of health safety policies such as providing safe environment to play and provision of specific and appropriate public places for sports activities which could minimize injuries when children fall.

The results of the study by Suresan V *et al*¹⁴ showed the prevalence of traumatic dental injuries 4.62%. A study conducted by Al-Alousi¹⁸ showed the prevalence of traumatic injuries of 6%. However,

higher scores of traumatic injuries were obtained in a study conducted by Agrawal A *et al* (34.95%).¹⁹

CONCLUSION

It is concluded from the study that subjects dental trauma was less in the study subjects. Dental home, regular dental visits may be a rational solution to overcome the dental problems by carrying out prompt diagnosis, referrals, systemic follow-up and comprehensive treatment for disabled children.

CONFLICTS OF INTEREST

The authors declare they have no potential conflict of interests regarding this article.

REFERENCES

1. UK Disability Discrimination Act (DDA) 2005. [last access January, 3rd, 2010]. Available at <http://www.opsi.gov.uk/acts/acts2005/20050013.htm>.
2. Largent BA. The American Academy of Pediatric Dentistry and the specialty of pediatric dentistry. *J Am Coll Dent* 2009;76:18-22.
3. World Health Organization. [homepage on internet] <http://www.who.int/topics/disabilities/en/>
4. Census of India: 2001. Government of India.
5. Charlotte Lewis, Andrea S. Robertson and Suzanne Phelps. Unmet Dental Care Needs Among Children With Special Health Care Needs: Implications for the Medical Home. *Pediatrics* 2005;116:426-431.
6. Purohita BM, Singh A. Oral health status of 12-year-old children with disabilities and controls in Southern India. *WHO South-East Asia Journal of Public Health* 2012;1(3):330-338.
7. Government of India. Disabled persons in India. Report No. 485 (58/26/1). New Delhi: National Sample Survey Organisation, 2003.
8. Purohit BM, Acharya S, Bhat M. Oral health status and treatment needs of children attending special schools in South India: a comparative study. *Spec Care Dentist* 30(6) 2010.
9. Varghese RK, Agrawal A, Mitra A, Fating C. Anterior teeth fracture among visually impaired individuals, India. *J Adv Oral Res* 2011;2:39-43.
10. Oral Health Surveys-Basic Methods. Who 5th Edition.
11. Sanjay V, Shetty SM, Shetty RG, Managoli NA, Gugawad SC, Hitesh D, *et al*. Dental health status among sensory impaired and blind institutionalized children aged 6 to 20 years. *J Int Oral Health* 2014;6:55-8.
12. Reddy VK, Chaurasia K, Bhambal A, Moon N, Reddy EK. A Comparison of Oral Hygiene Status and Dental Caries Experience among Institutionalized Visually Impaired and Hearing Impaired Children of Age Between 7 And 17 Years in Central India. *J Indian Soc Pedod Prev Dent* 2013;31:141-5.
13. Solanki J, Gupta S, Arya A. Dental Caries and Periodontal Status Of Mentally Handicapped Institutilized Children. *Journal Of Clinical And Diagnostic Research: Jcdr*. 2014 Jul;8(7):Zc25.
14. Suresan V, Das D, Jnaneswar A, Jha K, Kumar G, Subramaniam GB. Assessment of Dental Caries, Oral Hygiene Status, Traumatic Dental Injuries and Provision of Basic Oral Health Care Among Visually Impaired Children of Eastern Odisha. *Journal of Indian Society of Pedodontics And Preventive Dentistry*. 2017 Oct 1; 35(4):284.
15. Priyadarshini P, Pushpanjali K, Sagarkar A, Shenoy S. Assessment of Oral Health Status among Visually Impaired Children. *Journal of Dental and Orofacial Research*. 2015;11(1):3-6.
16. Oredugba FA, Akindayomi Y. Oral Health Status and Treatment Needs of Children and Young Adults Attending A Day Centre For Individuals With Special Health Care Needs. *BMC Oral Health*. 2008 Dec;8(1):30.
17. Rahman NA, Yusoff A, Daud MK, Kamaruzaman FN. Salivary Parameters,

- Dental Caries Experience And Treatment Needs Of Hearing-Impaired Children In A Special School For Deaf In Kelantan, Malaysia. Arch Orofac Sci. 2015 Jan 1;10(1):17-23.
18. Al-Alousi JM. Oral Health Status and Treatment Needs among Blind Children in Iraq. Mustansiria Dental Journal. 2009;6(4):313-24.
 19. Agrawal A, Bhatt N, Chaudhary H, Singh K, Mishra P, Asawa K. Prevalence of Anterior Teeth Fracture Among Visually Impaired Individuals, India. Indian Journal of Dental Research. 2013 Nov 1;24(6):664.