ISSN: 0975-833X

Available online at http://www.journalcra.com

International Journal of Current Research
Vol. 12, Issue, 03, pp.10562-10565, March, 2020

DOI: https://doi.org/10.24941/ijcr.38171.03.2020

INTERNATIONAL JOURNAL OF CURRENT RESEARCH

RESEARCH ARTICLE

ORAL HEALTH STATUS AND TREATMENT NEED OF CHILDREN WITH SPECIAL HEALTH CARE NEEDS: CROSS-SECTIONAL STUDY

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ARTICLE INFO

Article History:
Received 24th December, 2019
Received in revised form
20th January, 2020
Accepted 18th February, 2020
Published online 28th March, 2020

Key Words:
Oral Health, DMFT,
Special Child.

ABSTRACT

Aim: This study was conducted to assess and compare the oral health status and treatment need of hearing and speech impaired children and normal children. **Materials and Methods:** A cross-sectional descriptive survey was conducted among 250 children with ages ranging from 6 to 13 years. Out of that 125 children's had hearing and speech impairment and 125 children were normal with no disabilities. Data were collected using a standard method recommended by WHO for the oral health survey in 1977. Oral health status was assessed using OHI-S, Loe and Sinless Gingival index, Silness and Loe plaque index, DMFT and def Index for dental caries and dental malocclusion using Dental aesthetic index(DAI). Statistical analysis was performed with chisquare test and student's unpaired t test using the SPSS software package (version 22.2). **Results:** The mean Plaque Index was found to be 0.85 for normal children and 1.53 for Deaf and Dumb Children. Mean Oral Hygiene Index was found to be 1.39 for normal children and 2.36 for Deaf and Dumb Children. Mean Gingival Index was found to be 0.85 for normal children and 1.52 for Deaf and Dumb Children. p-value for Dental Caries Index was found to be p=0.0004. Mean Dental Aesthetic Index score was found to be 22.92 for normal children and 28.24 for Deaf and Dumb Children. **Conclusion:** These findings suggest that children with hearing disabilities can also have good oral hygiene comparable to normal individuals of the same age group. These results may be attributed to the fact that the study sample was taken from a single school of a private organization with a well-equipped dental setup.

Citation: ***Sumit Rajewar, Arunkumar Sajjanar, Sadanand Kulkarni and Milind Wasnik.*** **2020.** "Oral Health Status and treatment need of Children with Special health care needs: Cross-sectional study.", *International Journal of Current Research*, 12, (03), 10562-10565.

INTRODUCTION

The disability is a substantial part of our community. There are a predicted about 500 million people with disabilities all over the world. Enhanced survival, sophisticated medical care, and increased longevity help to increase in the number of disabled individuals (Giardino, 2000). There are so many social misconceptions like "breed apart" and it is the greatest challenge that people with disability have to face, therefore they have been pitied, ignored, vilified, or even hidden away in institutions. So providing special health care services for those types of children is a challenge in the 21st century (Hennequin, 2000). The term disability has recently been defined as an impairment that restricts or limits daily activity in some way. Disability is the functional limitation within the individual caused by physical, mental, or sensory impairment and can be developmental in origin or acquired (World Health Organization, 1980). Individuals with the disability - according to the definition given by WHO - have a disadvantageous condition arising from deficiency or disability, restricting their fulfillment of a role that is normal or within the normal limit of a human being. Hearing loss can result from prenatal and postnatal infections, anoxia, prematurity, and exposure to ototoxic agents and trauma.

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Hearing impairment primarily influences communication, which in turn can have a devastating effect on the individual[4]. Emotional, psychological, and social disturbances generally become more pronounced due to an increase in the degree of loss. It also depends on the age of onset, acceptance of disability and many other factors. The general health and quality of life may be affected due to poor dental health among children's and elders (Sheiham, 2000). According to the data from the National Sample Survey Organization 2006, about 0.3 million children in the age group of 0 to 6 years have hearing impairment in India and over 21,000 children are born deaf every year, it suggests that 1 child per 1,000 live births has a hearing impairment. There is an insufficiency of literature on the oral health status of children who are deaf in India. This study was designed to determine the oral health status of deaf and dumb children and compare it with the oral health status of normal children with no disability in Nagpur, India.

MATERIALS AND METHODS

A cross-sectional descriptive survey was conducted among 250 children, 125 of whom were deaf and dumb (50%) and 125 of whom were normal with no disability (50%) having ages ranging from 6 to 13 years and studying at a school for deaf and mute children in Nagpur, Maharashtra, India. Conducted in the first week of October 2018, this study was approved by the intuitional ethical committee. Clinical examination was performed by a single trained examiner with standard sterilized explorer, mouth mirror.

The help of trained teachers was taken for communication with the students. The prevalence of dental caries was determined using Caries Index; the scores for DMFT and deft index were calculated to assess the oral health status. The oral hygiene variable of each subject was assessed using the Simplified Oral Hygiene Index (OHI-S). A total of 250 children's were assessed for their oral hygiene status. Based on the OHI-S score, oral hygiene status was categorized as good (0-1.2), fair (1.3-3), and poor (3.1-6.0). Gingival inflammation was considered for gingival health. Dental Aesthetic Index was recorded to assess the dental malocclusion of children and scored according to Standard dental aesthetic index scoring table (Table 1). The data obtained were computed, and the mean values of Oral health status was assessed using OHI-S, Loe and Sinless Gingival index, Silness and Loe plaque index, DMFT and def Index for dental caries and dental malocclusion using Dental aesthetic index (DAI) and its component were estimated. Data was analyzed using the statistical software SPSS, (version 22.2).

RESULTS

This study targeted 250 children, 125 of whom were deaf and dumb and 125 of whom were normal with no disability with ages ranging from 6 to 13 years. All the data obtained after a detailed clinical examination were computed, and the mean values of OHI-S, Gingival index, Plaque index, DMFT and def Index and dental malocclusion using Dental aesthetic index (DAI) were measured. All the results are presented in Tables 1 to 5.

Sr. no.	DAI component	Rounded weight
1	Number of missing visible teeth (incisors, canines, and premolars in maxillary and mandibular arch)	6
2	Crowding in incisal segment (0 = no segments crowded, 1 = 1 segment crowded, 2 = 2 segments crowded)	1
3	Spacing in incisal segment (0 = no spacing, 1 = 1 segment spaced, 2 = 2 segments spaced)	1
4	Midline diastema, in millimetres	3
5	Largest anterior maxillary irregularity, in millimetres	1
6	Largest anterior mandibular irregularity, in millimetres	1
7	Anterior maxillary overjet, in milimetres	2
8	Anterior mandibular overjet, in millimetres	4
9	Vertical anterior openbite, in millimetres	4
10	Anteroposterior molar relationship, largest deviation from normal either left or right (0 = normal, 1 = ½ cusp mesial or distal, 2 = 1 full cusp or more mesial or distal)	3
11	Constant	13
	Total	DAI Score

Table 1. Comparison of Plaque Index Score in two groups Student's unpaired t test

Group	N	Mean	Std. Deviation	Std. Error Mean	t-value	p-value
Normal Children	125	0.85	0.84	0.07	6.92	0.0001,S
Deaf and Dumb Children	125	1.53	0.71	0.06		

Table 2. Comparison of Gingival Index Score in two groups Student's unpaired t test

Group	N	Mean	Std. Deviation	Std. Error Mean	t-value	p-value
Normal Children	125	0.85	0.99	0.08	6.03	0.0001,S
Deaf and Dumb Children	125	1.52	0.75	0.06		

Table 3. Comparison of Oral Hygiene Index in two groups Student's unpaired t test

Group	N	Mean	Std. Deviation	Std. Error Mean	t-value	p-value
Normal Children	125	1.39	1.36	0.12	5.50	0.0001,S
Deaf and Dumb Children	125	2.36	1.44	0.12		

Table 4: Comparison of dental caries index score in two groups Chi-square test

Dental Caries index score	Normal Children	Deaf and Dumb Children	χ2-value
Present	60(48%)	87(69.6%)	12.04
Absent	65(52%)	38(30.4%)	p=0.0004,S
Total	125(100%)	125(100%)	

Table 5: Comparison of dental aesthetic index score in two groups Student's unpaired t test

Group	N	Mean	Std. Deviation	Std. Error Mean	t-value	p-value
Normal Children	125	22.92	4.49	0.40	8.56	0.0001,S
Deaf and Dumb Children	125	28.24	5.27	0.47		

DISCUSSION

According to literature, there are 278 million people worldwide who have hearing loss in both ears. In developing countries around 80% of deaf or hearing-impaired people are living. Such type of people generally neglect their general health as well as oral health may be because of lack of proper communication or due misconception of society regarding these type of people (http://www.allcountries.org/health/ deafness_and_hearing_impairment.html). The status of gingival health was determined using the gingival index. In present study we found a relatively high prevalence of poor gingival health in the children with hearing and speech impairment with the mean at 1.52 as compared with normal children at 0.85. Poorer oral hygiene and gingival health in the studied children are consistent with the findings of other studies also, which can be attributed to environmental, systemic and local factors (Tesini, 1981; Ajami, 2007). The majority of children with hearing and speech impairment in study population had poor to moderate type of gingivitis. In this study, the mean OHI-S score among hearing and speech impairment children was found to be 2.36 and 1.39 in normal children, and the difference was statistically significant (p value = 0.0001).

These findings differ from the findings obtained by Santhosh kumar[9.] And Manish Jain, et al[10], who reported that the mean OHI-S score among children with hearing impairment was 1.88 and 2.0, respectively. The study conducted by Sudaduang Gherunpong, et al. (2004) reported the mean OHI-S score to be 2.5, which was slightly lower compared to this study. In this study, the prevalence of dental caries in hearing and speech impairment children was found to be 69.6% and 48% in normal children. And there was significant difference at p value of 0.0004. The study conducted by Shyama, et al. (2001) and Manish Jain, et al. (2008) reported the prevalence of dental caries to be 86% and 83.92%, respectively, among hearing-impaired children. The study conducted by Rao et al. (2001) among disabled children found the prevalence of dental caries to be 86%. The study conducted by Sudaduang Gherunpong, et al. (2004) reported dental caries prevalence of 43.1%. The study conducted by Murray, J.J., and Macleod, J.T. the prevalence of dental caries was 58.5%. The study conducted by Dr. Harry Ames (Dr. Harry Ames. Indigenous Child Health, 2000) reported the prevalence of dental caries to be 58%. In this study we found that amongst the deaf and dumb children 49.6% had definite malocclusion. Similarly, in normal children the prevalence was 22.4%. This could be because deaf/mute children's had a less flexible tongue during speech production than normal children. This difference could disrupt tongue function just as abnormal habits would. The study conducted by Kanika Avasthi et al 32.57% blind children had crowding/spacing, 2.28% had cross bite, 15.7% had over jet >2mm , while 6.85% were categorized as any other. Similarly, in deaf/mute children the prevalence was 37.5%, 6.43%, 15.53% and 4.16% in respective categories[16].

Conclusion

In Pediatric dentistry two-way communication is essential tool for safe and effective practice. Nonetheless, that conference speaks to just piece of the procedure, with non-verbal correspondence, discernment, and seeing additionally making significant commitments. Consequently, a meeting disabled individual with sharp powers of perception, great discernment, and comprehension may convey similarly as regularly as people with ordinary hearing do. A dental instruction program should likewise be set up by associations especially for instructors with the goal that they can teach hard of hearing and quiet youngsters and influence them to comprehend the significance of oral wellbeing and at last help them in accomplishing the objective of dental wellbeing. Current study concluded that oral health status of children with special health care needs is compromised when compared with normal children. It also states that they have more treatment needs as compared to normal children. Regular training on oral health is very important for children with special healthcare needs.

Limitations and Recommendations of the Study

- The study was conducted on only 250 children.
- A large sample size is required from different strata of schools to determine the oral health condition of children with hearing and speech impairment.
- Different government and nongovernment associations ought to be considered for an examination on the job of the association.
- Need to build up a preparation asset on Primary Ear and Hearing Care for essential social insurance specialists.

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