



COMPARISON OF ORAL HEALTH STATUS AMONG NORMAL AND DISABLED CHILDREN OF KARACHI, PAKISTAN.

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ABSTRACT... Objectives: To compare the oral hygiene status of normal children with hearing and speech impaired and Down syndrome children. **Study Design:** Cross-sectional study. **Setting:** Special needs children school, Deaf Reach School & a public school of Karachi, Pakistan. **Period:** 6 months from October 2017 to April 2018. **Material and Methods:** A total of 210 children of age 7-15 years of either gender were enrolled in the study; 70 hearing & speech impaired children, 70 Down syndrome children and 70 normal children were randomly selected for comparison. After taking informed consent the subjects were examined for dental status. Oral hygiene status was assessed by using oral hygiene index-simplified (OHI-S). The data was analyzed using SPSS version 23. **Results:** Out of 70 hearing and speech impaired children, majority had fair hygiene status (41.4%), 38.6% had good hygiene status and only 20% had poor hygiene status. Out of 70 Down syndrome children, majority had good hygiene status (45.7%), 28.6% had fair hygiene status and only 25.7% had poor hygiene status. Out of 70 normal children, majority had good hygiene status (68.6%), 20% had fair hygiene status and only 11.4% had poor hygiene status. **Conclusion:** The high proportion of poor oral health was observed among children with hearing and speech impairment and Down syndrome as compared to normal children. Hence, there is a high need for an epidemiological survey followed by the comprehensive dental care programs for disabled children as well as efforts should be made to spread the awareness and importance of oral health among these children and their family because everyone deserves the opportunity of good oral health and hygiene.

Key words: Deaf, Down Syndrome, Hearing and Speech Impaired Children, Normal Population, Oral Health, Oral Hygiene Status.

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INTRODUCTION

Oral health has strong psychological, biological and social projections, because it affects communication and aesthetics, and the quality of life is affiliated with oral health status.¹ Oral health of disabled children is noted to be the most common issue & unmet need. Disabled children are at greater risk of poorer oral health due to other major disease such as frequent oral infections, moderate to severe malocclusion, periodontal disease & craniofacial birth defects.² The oral needs among them may be compromised due to limited access to facilities of oral health care, neglect of parents or care takers, socio-economic status or communication barriers.³ Therefore, the disabled children appear to have more worsen oral health as compared to normal population.⁴

Hearing and speech impairment is the common disability in childhood. Almost two to three children per 1000 have some level of permanent congenital hearing loss.⁵ According to WHO estimate there are 360 million people globally with hearing impaired, among them 9% of these are children under the age of 15.⁶ Whereas, Down syndrome is a congenital autosomal anomaly caused due to the changes in the sequence of DNA of chromosome 21. According to WHO the global incidence of Down syndrome (DS) is estimated as 1 out of 600-1000 live births.^{7,8} Children with such disabilities has the greatest barrier of communication and understanding. They cannot understand or cooperate with dental healthcare providers easily.

Hence, there is no current data available on the

oral status of children with hearing and speech impairment & Down syndrome in comparison with normal children of Karachi, Pakistan. Therefore, the present study was designed to provide primary data for development and planning of regional or national oral health programs for these children.

METHODOLOGY

It was a cross-sectional study conducted at the Special needs children school, Deaf Reach School & a public school of Karachi, Pakistan and duration of study was 6 months. A total of 210 children of age 5-15 years of either gender were enrolled in the study; 70 hearing & speech impaired children, 70 Down syndrome children and 70 normal children were randomly selected for comparison. Participants exhibiting other forms of systematic diseases, compound disability or extremely uncooperative individuals were excluded from the study.

Informed consent was taken from school admin and parents of the children to participate in the study. The clinical examination was carried according to World Health Organization (WHO) techniques⁹ in the OPD of Integrated Occupational Health Services (IOHS) by the examiner. The demographic information such age, gender, weight & height of the children was recorded. Other related information regarding previous dental visits, frequency of tooth brushing & material used for brushing were obtained under the supervision of school interpreters.

The children were then examined for oral status by making them sit on the upright chair in adequate light using autoclaved instruments. Each surface of mouth was checked by using plain mouth mirror and WHO probe. Caps, gloves, masks and gauze were used in accordance with infection control guidelines. Oral hygiene was evaluated by using the simplified oral hygiene index (OHI-S) introduced by Green and Vermilion.¹⁰ OIH-S score was labelled for oral cleanliness as "good" for score between 0.1–1.2, "fair" between 1.3–3.0 and "poor" between 3.1–6.0.¹¹

Data analysis was carried out using the SPSS

Version 23. Frequencies and percentages was calculated for all the qualitative variables. Mean & SD was calculated for all the quantitative variables.

RESULTS

The study sample was consisted of 210 children with mean age as 12.43 ± 4.21 years. Out of 210, 134 were males and 76 were females. Majority of the children had never visited the dentist (54.8%). About 61% of them brushed once daily, 26.7% of them brushed twice a day, 8.1% of them brushed after every meal and only 4.3% of them brushed less than one time. Majority of the subjects (91%) were using toothpaste to clean their teeth, tooth power was used by 5.2% & no material was used by 3.8% of the children. Among 70 children with hearing and speech impairment, the mean age was reported as 11.79 ± 2.59 years. Out of 70, 47 were males and 23 were females. Majority of the children had never visited the dentist (57.1%). About 54.3% of them brushed once daily, 31.4% of them brushed twice a day, 8.6% of them brushed after every meal and only 5.7% of them brushed less than one time. Majority of the subjects (88.6%) were using toothpaste to clean their teeth, tooth power was used by 7.1% & no material was used by 4.3% of the children. Among 70 children with Down syndrome, the mean age was reported as 14.20 ± 5.91 years. Out of 70, 45 were males and 25 were females. Majority of the children had never visited the dentist (51.4%). About 52.9% of them brushed once daily, 31.4% of them brushed twice a day, 8.6% of them brushed after every meal and only 7.1% of them brushed less than one time. Majority of the subjects (90%) were using toothpaste to clean their teeth, tooth power was used by 5.7% & no material was used by 4.3% of the children. Among 70 normal children, the mean age was reported as 14.0 ± 1.30 years. Out of 70, 42 were males and 28 were females. Majority of the children had never visited the dentist (55.7%). About 75.7% of them brushed once daily, 17.1% of them brushed twice a day and 7.1% of them brushed after every meal. Majority of the subjects (94.3%) were using toothpaste to clean their teeth, tooth power was used by 2.9% & no material was used by 2.9% of the children. (Table-I)

Out of 70 hearing and speech impaired children, majority had fair hygiene status (41.4%), 38.6% had good hygiene status and only 20% had poor hygiene status. Out of 70 Down syndrome children, majority had good hygiene status (45.7%), 28.6% had fair hygiene status and only 25.7% had poor hygiene status. Out of 70 normal

children, majority had good hygiene status (68.6%), 20% had fair hygiene status and only 11.4% had poor hygiene status. (Figure-1)

The age, gender, dental visits, frequency of brushing and material used wise distribution of oral hygiene status has been shown in Table-II.

Variables	Overall	Children with hearing & speech impairment	Down Syndrome Children	Normal Children
Age in years	12.43±4.21	11.79±2.59	14.20±5.91	14±1.30
Gender				
Male (%)	134(63.8%)	47(67.1%)	45(64.3%)	42(60%)
Female (%)	76(36.2%)	23(32.9%)	25(35.7%)	28(40%)
Dental Visits				
Haven't visit (%)	115(54.8%)	40(57.1%)	36(51.4%)	39(55.7%)
Visited at least once (%)	95(45.2%)	30(42.9%)	34(48.6%)	31(44.3%)
Brushing Frequency				
Once a day (%)	128(61%)	38(54.3%)	37(52.9%)	53(75.7%)
Twice a day (%)	56(26.7%)	22(31.4%)	22(31.4%)	12(17.1%)
After every meal (%)	17(8.1%)	6(8.6%)	6(8.6%)	5(7.1%)
Less than once a day (%)	9(4.3%)	4(5.7%)	5(7.1%)	0
Material Used for Brushing				
Toothpaste	191(91%)	62(88.6%)	63(90%)	66(94.3%)
Tooth powder	11(5.2%)	5(7.1%)	4(5.7%)	2(2.9%)
No material	8(3.8%)	3(4.3%)	3(4.3%)	2(2.9%)

Table-I. Baseline characteristics of study variables

Variables	Hearing & speech impaired children			Down Syndrome Children			Normal Children		
	Good	Fair	Poor	Good	Fair	Poor	Good	Fair	Poor
Age groups									
5-10 years	8(40)	7(35)	5(25)	9(50)	1(5.6)	8(44.4)	12(52.2)	6(26.1)	5(21.7)
11-15 years	19(38)	22(44)	9(18)	23(44.2)	19(36.5)	10(19.2)	36(76.6)	8(17)	3(6.4)
Gender									
Male (%)	18(38.3)	19(40.4)	10(21.3)	20(44.4)	11(24.4)	14(31.1)	26(61.9)	11(26.2)	5(11.9)
Female (%)	9(39.1)	10(43.5)	4(17.4)	12(48)	9(36)	4(16)	22(78.6)	3(10.7)	3(10.7)
Dental Visits									
Haven't visit (%)	12(30)	19(47.5)	9(22.5)	19(52.8)	9(25)	8(22.2)	29(74.4)	4(10.3)	6(15.4)
Visited at least once (%)	15(50)	10(33.3)	5(16.7)	13(38.2)	11(32.4)	10(29.4)	19(61.3)	10(32.3)	2(6.5)
Brushing Frequency									
Once a day (%)	16(42.1)	15(39.5)	7(18.4)	19(51.4)	12(32.4)	6(16.2)	38(71.1)	9(17)	6(11.3)
Twice a day (%)	8(36.4)	11(50)	3(13.6)	9(40.9)	6(27.3)	7(31.8)	7(58.3)	4(33.3)	1(8.3)
After every meal (%)	1(16.7)	2(33.3)	3(50)	1(16.7)	2(33.3)	3(50)	3(60)	1(20)	1(20)
Less than once a day (%)	2(50)	1(25)	1(25)	3(60)	0(0)	2(40)	0	0	0
Material Used for Brushing									
Toothpaste	26(41.9)	25(40.3)	11(17.7)	28(44.4)	19(30.2)	16(25.4)	46(69.7)	13(19.7)	7(10.6)
Tooth powder	1(20)	3(60)	1(20)	3(75)	0(0)	1(25)	1(50)	0(0)	1(50)
No material	0(0)	1(33.3)	2(66.7)	1(33.3)	1(33.3)	1(33.3)	1(50)	1(50)	0(0)

Table-II. Distribution of variables between groups

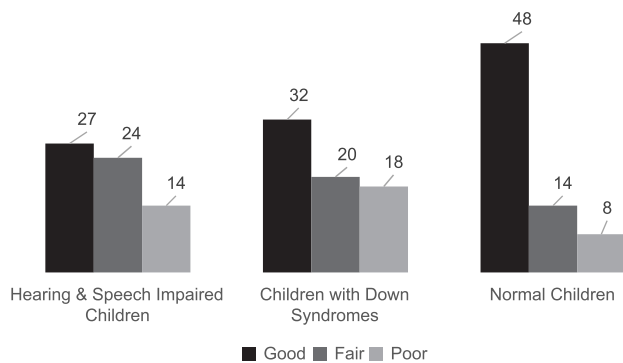


Figure-1. Comparison of oral health status between groups

DISCUSSION

The disabled children experiences high levels of dental disease as compared to normal population because it is difficult for them to access oral health care. In the current study, majority of the disabled children had never went for dental checkups. The similar proportions was presented in previous literature of the disabled children.^{4,12,13} In the present study of proportion of haven't visited to dentist is high for normal population as well. "The reasons for not seeking dental services are individuals themselves (such as the lack of perceived need, anxiety or fear, financial considerations, and lack of access), dental profession (inappropriate manpower resources, uneven geographical distribution, training inappropriate to changing needs and demands, and insufficient sensitivity to patient's attitudes and needs) and society (insufficient public support of attitudes conducive to health, inadequate oral health care facilities, inadequate oral health manpower planning, and insufficient support for research).¹⁴

In our study, low proportion has been seen among disabled and normal children for didn't brush their teeth whereas majority of the children brushed their teeth once daily (61%), 26.7% of the children brushed twice a day and 8.1% of the children rinsed their mouth after every meal. Majority of the children used toothpaste & tooth brush as cleaning material. The similar findings was observed in study by Prashanth ST et al. at Bangalore among disabled children. About 62.35% children brushed their teeth only once in

the morning & 37.65% children responded that they brushed twice a daily & 98.82% of children clean their teeth with toothbrush.¹⁵ In the study by Bhambere SD for visual impaired children found 29.41% of the children brushed their teeth twice a day and about 64.7% children brushed only one time in morning. About 98.82% responded that they used tooth brush to clean their teeth whereas only 9 children used finger to clean their teeth. The frequency using tooth paste along with cleaning tool was observed as 100%.¹⁶

In the present study, most of the disabled children had fair & good hygiene status, however the proportion of good oral hygiene was observed high among normal children. In the study by Sinha N et al. found higher poor oral hygiene among disabled children as compared to controls. Another study by Shaw et al reported that there was a greater prevalence of dental caries and poorer oral hygiene in handicapped children attending special schools.¹⁷ Data from a study of 12-year-old disabled children in Flanders (Belgium) showed poor oral hygiene in 31.8% of children, with no significant differences found among disability types.¹⁸ A study of oral hygiene among mentally retarded female children in Riyadh also showed very poor oral hygiene.¹⁹ Several other studies have also found poor results for periodontal health and oral cleanliness among children with disabilities.^{18,20,21} These results may be due to low physical abilities, which could cause difficulties in tooth brushing among disabled children.

In the present study, with increase in age of the disabled and normal children the good hygiene practice has also increased. However the frequency of good hygiene status was high among males as compared to females. Good & fair oral status are prevalent among disabled and normal children who brushed their teeth at least one time daily. The most frequent material used for practicing good oral hygiene is tooth paste by all the children.

CONCLUSION

The high proportion of poor oral health was observed among children with hearing and




speech impairment and Down syndrome as compared to normal children. Hence, there is a high need for an epidemiological survey followed by the comprehensive dental care programs for disabled children as well as efforts should be made to spread the awareness and importance of oral health among these children and their family because everyone deserves the opportunity of good oral health and hygiene.”

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AUTHORSHIP AND CONTRIBUTION DECLARATION

Sr. #	Author(s) Full Name	Contribution to the paper	Author(s) Signature
1	Marium Azfar	Conception & Study design, Developed the methodology.	
2	Sameer Quraeshi	Data collection, Literature search.	
3	Syed Ahmed Omer	Review it critically for important intellectual content.	
4	Khadijah Abid	Analysis is interpretation of data, wrote the manuscript & made the final changes.	