

## COMPARISON OF CARIES AND GINGIVAL HEALTH STATUS OF DEAF WITH BLIND CHILDREN, KARACHI

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### ABSTRACT:

**Aim:** The aim was to compare the oral health status with regard to habits of tooth brushing and dietary intake of visually impaired and hearing deficient children in Karachi, Pakistan.

**Materials and Methods:** A cross-sectional comparative study among 400 blind and deaf individuals (200 each), between the ages 6-20 years was conducted. The data was collected from 3 different institutes located in different socio-economic areas. It comprised of two parts: one comprising a predesigned questionnaire for diet intake, brushing habits, techniques and demographics and another based on oral examination to evaluate the caries status using dft index in primary and DMFT index in permanent teeth

**Results:** 66% of visually impaired individuals and 80% of hearing disabled people had never been to a dentist. A dmft score of 53% was observed in the hearing disabled whereas it accounted for 67% in visually impaired. This shows that the blind have more difficulty in maintaining good oral health. The component of sugary foods in the diet, ability to brush, use of different aids for oral hygiene, periodontal status and consumption of tobacco in individuals was also recorded.

**Conclusion:** A higher prevalence of caries was seen in blind individuals than in the hearing impaired.

**Keywords:** blind and deaf, Oral health, dmft, dft

### INTRODUCTION:

An estimated 500 million people with disabilities are found worldwide which makes up for a significant part of the community. 1 out of 600 neonates suffer from congenital hearing loss and about 1-3 in 1000 neonates are affected by congenital visual deficiency. Maintaining oral hygiene is the foremost thing important thing for everyone to maintain oral health and ultimate general health. This is particularly important as well as challenging for children especially those having special needs. <sup>[1]</sup>

Several studies have been conducted on the oral health status of the handicapped part of the community over the last few

decades that has shown that the oral health status of the handicapped children is similar to that of the normal children, however, over time, due to their diet, eating habits, usage of medicines, physical shortcomings, inability to maintain hygiene and parental and health care provider's attitude are all contributory factors for poor oral health. <sup>[2]</sup>

The disabled children are born healthy with healthy teeth and gums however their eating, drinking, medication, physical limitation, socio-economic status, education level, lack of parents or health care providers interest leads to

poor oral health. These children are usually dependent on parents or guardians for carrying out daily activities including oral care and brushing habits which results in changes and contribute to poor oral health. Children who are visually impaired have a disadvantage of not having sight thus they cannot see while applying the different techniques of maintaining oral hygiene to control plaque buildup and applying it effectively. [3] The purpose of the study was to compare the oral health status with regard to the habits of tooth brushing and dietary intake of visually impaired and hearing deficient children between the ages 6-20 years in as dental health constitutes a major part of the general health of the body and these individuals are deprived of health care needs. The aim of the study was to determine and compare caries prevalence and its frequency, Compare of gingival health status and lastly teaching these children the correct tooth brushing technique and make recommendations for public dental health care for individuals with disabilities

## **MATERIALS AND METHODS:**

A semi structured cross-sectional comparative study was conducted among 400 visually and hearing impaired individuals (200 each), aged 6-20 years in 3 institutes located in different socio-economic areas of Karachi, Pakistan namely Pakistan Association of the Blind (National), Jahangir Siddiqui Academy for

the Deaf and Ida Rieu School and College for Deaf and Blind.

The study comprised of two parts: firstly a predesigned questionnaire for demographics, dietary & tooth brushing habits and secondly an oral examination for assessment of caries status, using DMFT index in permanent teeth and dft index in primary teeth. Individuals were also taught how to maintain good oral hygiene. The questionnaire consisted of demographic information (age, gender, education, parents' occupation). It also consisted of questions regarding the sugar consumption, tobacco related habits, utilization of dental services, brushing habits and use of oral hygiene aids by the children. All examinations were performed at schools while children were seated on a chair and using torch as light directed towards the mouth.

The diagnosis of dental caries was undertaken by visual examination using Type III clinical examination (with a dental mirror and an explorer) utilizing the criteria recommended by world health organization. Indices used to measure caries experience include dmft and DMFT. The total number of decayed, missing and filled teeth was calculated. Gingival health status was also assessed.

### ***Inclusion Criteria;***

- Age groups (6-25 years).
- Children with either one of the sensory impairments, blindness or deafness.

- Presence of carious, missed and filled teeth in the observed dentitions.
- Children present on the day of examination were included in the study
- Children free from any other form disabilities.

**Exclusion Criteria;**

- Those who were not willing to participate or unwell.
- Patient's above the age of 25 years and below the age of 6 years

All clinically registered information was statistically analyzed by Statistical Package for the Social Sciences version 16.1. The association between dietary and tooth brushing habits in the two groups was calibrated using Pearson's chi-square test. The mean DMFT value and mean decayed, missing, filled teeth were calculated using t-test.

**RESULTS:**

400 children were selected from 3 different deaf and blind schools. 56% of the participants were males and 44% were females. Table 1 shows the prevalence of caries in all children in accordance with the answers provided by them or their caretakers to the questionnaire. 80% of the deaf individuals had never visited a dentist before and 66% of the blind individuals. 82% of the individuals were able to brush independently. Brushing once a day was the most commonly found frequency of tooth brushing. About half of the sample

size used their brush until it was worn out. Tooth paste was the most common type of material used for tooth brushing. Table 2 shows the dmft score in the blind as well as deaf individuals. Relatively lower dmft scores are seen in deaf as compared to the blind. Table 3 shows the comparison of dmft scores between deaf and blind males and females where significant results were obtained (P value; <0.01). Similarly significant results were obtained for dmft scores for deciduous teeth (P value; <0.01).

**DISCUSSION:**

A major health concern among disabled individuals is the presence of oral diseases. [4-7] These individuals show a relatively higher severity as well as prevalence of oral diseases in comparison to the general population. [8] Among oral diseases, poor periodontal status and oral hygiene have been observed in children of this group. [9-12] These changes may be attributed to the decreased physical capabilities and therefore resultant difficulty in brushing teeth. Following factors may affect health of the oral cavity; Inadequate awareness as well as problematic communications regarding oral health needs and its maintenance, [6,13] intake of anticonvulsants that effect periodontal health, [14] and a generalized fear or oral procedures. [15] Adults with disabilities having fear and communication problems are usually treated using physical restraints or under general anesthesia. [16]

The oral health is compromised in the visually impaired as they are disadvantaged in not being able to see and thus inadequately use the techniques that are required for plaque control. [17] In this study, the caries rate was considerably higher in the disabled individuals in comparison to the rest of the population. Solanki et al. showed similar results. [18] Whereas, various researches that have studied the DMFT and dmft in disabled individuals report better scores in this group as compared to the general population. Shaw *et al.*, [19] reported dmft and DMFT values of 1.36 and 1.85, respectively, for children with disabilities; Gizani *et al.*, [10] reported a mean DMFT value of 2.9; and Shyama *et al.*, [9] reported a mean DMFT of 4.5 for this group. The demographic information related to both groups reveals that there was a significant difference between both groups with respect to gender composition. This is in contrast to a study carried out in India in 2013. [20]

The caries prevalence in present study is 62% in blind and 49% in deaf for permanent dentition and 62% in blind and 34% in deaf for deciduous teeth in blind children. Naveen N et al conducted a research in Karnataka on blind children and found the prevalence of caries to be 69.1%. [2] Similarly Singh et al in their study shows that the prevalence of

caries in deciduous teeth was 40% and 65% in teeth of the deaf children. This is in accordance with the present study. However, Singh et al [1] reported a caries prevalence of 92% for permanent dentition and 66% for deciduous teeth in blind children, which is far greater than the present study. [21]

## CONCLUSION:

Caries is most widespread in children all over the world and “dental treatment is the greatest unattended health need of the disabled” especially in those individuals that require special health care. The prevalence of dental caries in visually impaired individuals is greater than that in the deaf individuals. The inability to distinguish and identify oral disease at an early stage as well as the inability to implement any precautionary as well as remedial measures leads to a compromise of the oral health in the visually impaired individuals. On the contrary the normal vision in the deaf individuals enables them to understand and therefore follow the instructions given by the care givers as compare to the blind individuals.

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**TABLES:**

Table 1: Prevalence of caries in all children

Question	Answers		Blind		Deaf		
			Caries Prevalence		Answers	Caries Prevalence	
			Permanent Dentition	Primary Dentition		Permanent Dentition	Primary Dentition
Ability to Brush Teeth	Independent	82%	68%	88%	84%	62%	34%
	Partial Dependent	16%	37%	70%	14%	58%	20%
	Dependent	2%	0%	100%	2%	50%	0%
Frequency of Tooth Brushing	Once a Day	74%	70%	60%	75%	60%	5%
	Twice a Day	18%	39%	67%	24%	66%	8%
	Thrice a Day	8%	50%	75%	2%	100%	0%
Frequency of Changing	1 Month	2%	100%	100%	2%	0%	0%
	2 Month	12%	50%	50%	8%	50%	0%
	3 Month	30%	60%	66%	40%	50%	15%
	Until Brush Worn out	56%	64%	60%	50%	72%	56%
Type of Material for Tooth Brush	Paste	86%	65%	62%	92%	60%	0%
	Powder	14%	42%	57%	6%	66%	0%
	Neem Stick	0%	0%	0%	2%	100%	0%

Table 2: DMFT score in the blind and deaf individuals

Category	Blind		Deaf	
	DMF	DMF%	DMF	DMF%
Caries Prevalence				
Decayed Permanent Teeth	93	62%	74	49%
Missing Permanent Teeth	18	12%	12	8%
Filling Permanent Teeth	8	12%	12	8%
DMFT Permanent Teeth	139	92.6%	92	65%
Decayed Deciduous Teeth	93	62%	62	34%
Filling Deciduous Teeth	6	4%	4	6%
Dft Deciduous Teeth	99	66%	60	40%

Table 3: Association of DMFT scores in blind and deaf males and females

Category	Blind		Deaf	
	Male	Female	Male	Female
Decayed Permanent Teeth	1.37 + 1.38	0.37 + 0.49	1.50 + 1.50	0.87 + 1.39
Missing Permanent Teeth	0.14 + 0.35	0.00 + 0.00	0.07 + 0.25	0.12 + 0.33
Filling Permanent Teeth	0.07 + 0.25	0.62 + 0.87	0.11 + 0.44	0.12 + 0.33
DMFT Permanent Teeth	1.52 + 1.52	1.00 + 1.35	1.69 + 1.70	1.72 + 1.72
Caries Prevalence	67%	38%	67%	37%
<b>P – Value</b>	0.00	0.00	0.00	0.00
Decayed Deciduous Teeth	1.31 + 1.41	1.87 + 1.80	0.90 + 1.54	2.25 + 2.15
Filling Deciduous Teeth	0.02 + 0.15	0.12 + 0.33	0.02 + 0.15	0.25 + 0.44
DFT Deciduous Teeth	1.31 + 1.44	2.00 + 1.76	0.09 + 1.59	2.50 + 2.28
Caries Prevalence	60%	75%	29%	63%
<b>P – Value</b>	0.01	0.00	0.00	0.00