



## RESEARCH ARTICLE

### ASSESSMENT OF ORAL HEALTH STATUS AMONG VISUALLY IMPAIRED INDIVIDUALS IN CHENNAI, TAMIL NADU - A DESCRIPTIVE STUDY

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#### ABSTRACT

Visual Impairment is one of the most common disabilities in India. However, very little light has been shed on the oral status of these individuals. This descriptive study aims to determine the oral health status of visually impaired individuals in Chennai, Tamil Nadu. A total of 88 study subjects were selected from the Institute for the Visually Impaired, Chennai, Tamil Nadu. The results showed that majority them had untreated dental caries and gingivitis. It can be concluded that being unable to visualize the condition of the oral cavity, caries and other abnormalities is left unnoticed. Hence, method to maintain oral health has to be taught to these individuals.

## INTRODUCTION

The World Health Organization estimated that globally the number of people of all ages visually impaired is 285 million, of whom 39 million are blind, the major causes being uncorrected refractive errors and cataract. Also, visual impairment in 2010 was categorized as a major global health issue with preventable causes as high as 80% of the total global burden (Pascolini, 2011) A good oral hygiene status of a person not only helps in everyday activities such as phonetics and mastication but also positively impacts on the overall outlook and behavior of an individual. It is an inevitable fact that visual impairment greatly affects the oral hygiene status of a person. Despite the relatively high prevalence of visual impairment, there is very little information available regarding their dental health care needs. Some reports support the statement that oral health is indeed compromised in individuals with a visual impairment whilst others contradict this (Chang, 2004) However, it is understood that the inability to visualize plaque, calculus, dental caries or any other problem related to the oral cavity makes it almost impossible for them to detect if their oral cavity condition could be destructive. This in turn has a capability to become a more serious issue when left unnoticed.

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The current available data on oral hygiene statuses of blind individuals are scarce. Also, according to these current reports, the overall result of oral hygiene in visually handicapped people is poor. With the current insufficient data, it is difficult to establish a conclusion and to work on their oral health care needs. Hence the aim of this study is to assess the oral health status among the visually handicapped individuals in Chennai, Tamil Nadu.

## MATERIALS AND METHODS

### Study population

The study population consisted of 88 visually impaired individuals who were selected from the National Institute for the Visually Handicapped, Chennai, Tamil Nadu - Department of Empowerment of Persons with Disabilities, Ministry of Social Justice and Empowerment, Govt. of India.

### Inclusion Criteria

- Residents of the National Institute for the Visually Handicapped, Chennai from 16 to 54 years old.
- Residents with partial visual impairment (PVI) and complete visual impairment (CVI)
- Residents who are willing to participate.

## Exclusion Criteria

- Residents suffering from known systemic conditions that does not permit oral examination
- Residents with other physical disabilities and cognitively impaired residents.

## Preparing survey protocol

A written protocol for the survey was prepared to provide provisional time table of main activities.

## Obtaining approval from the authorities

Ethical clearance was taken from the Ethical Committee of Saveetha Dental College and Hospital, Tamil Nadu. Permission to examine the study subjects was obtained from leaders of National Institute for the Visually Handicapped, Chennai, Tamil Nadu.

## Informed consent

Informed consent was taken from study subjects before beginning of examination by discussing with them the purpose of the study.

## Scheduling

The study was conducted in the month of May 2016.

## Referral

Appropriate referrals were made according to the treatment needs of the patient.

## Training and calibration of examiner

Before conducting the survey, the training and calibration of examiner was done in the Department of Public Health Dentistry, Saveetha Dental College and Hospital, Chennai. Training for the use of structure program was done on 20 adult subjects with wide range of levels of oral diseases over a period of 1 week. The Intra-examiner reliability was assessed using kappa statistic, which was in range of 0.8 for various oral health parameters studied, showing a high degree of conformity in the observations.

## Statistical Analysis

Statistical methods: descriptive statistics that include mean, standard deviation and percentage were calculated with the help of the SPSS software package (Statistical Package for Social Sciences version 13.0) for each category.

## RESULTS

**Table. Distribution of study population according to age and visual impairment**

| Age Group (Yrs) | Partial Visual impairment<br>n (%) | Complete visual Impairment<br>n (%) |
|-----------------|------------------------------------|-------------------------------------|
| 16-24           | 12 (22.2)                          | 5 (14.7)                            |
| 25-34           | 22 (40.7)                          | 14 (41.1)                           |
| 35-44           | 11 (20.4)                          | 7(12)                               |
| 45-54           | 9 (16.7)                           | 8(23.5)                             |

Table 1 shows a total number of 88 subjects in which 66 (75%) were males and 22 (25%) of them were females. The age group was between 18-54 years old with a mean age of 29 years. Partially visually impaired (PVI) individuals (61%) represented a relatively large number of the study population. In the present study, 68% of them had dental caries and 63% of them had gingivitis. Periodontitis, malocclusion, missing tooth and fluorosis accounted to about 18% - 30% of the total finding. Least number of people was affected by mucosal lesion (1%) and erosion (5%) The dental findings were further divided based upon the gender, age group and type of visual impairment. The dental findings were also measured in accordance to the severity of visual impairment - either partial or complete visual impairment. Out of the 88 participants, 54 had partial vision and 34 were completely visually handicapped. The DMFT findings were the highest in both the groups, irrelevant of the degree of visual impairment. On contrary to the other scales, there was a higher percentage of completely blind individuals with gingivitis (74%) and malocclusion (26%) in contrast to those with partial visual impairment where only 56% were affected by gingivitis and 13% of them had malocclusion. Nevertheless, fluorosis remained as a persistent finding, where it was present in 18% of subjects with complete visual impairment and 26% of the subjects with partial visual impairment.

| Oral Health status | PVI n (%) | CVI n (%) | Total n (%) |
|--------------------|-----------|-----------|-------------|
| Gingivitis         | 30 (56)   | 25 (74)   | 55 (62.5)   |
| Periodontitis      | 21 (38)   | 12 (35)   | 33 (37.5)   |
| Dental Caries      | 45 (83)   | 23 (68)   | 68 (77.2)   |
| Filled             | 10 (19)   | 5 (15)    | 15 (17)     |
| Missing            | 21 (38)   | 5 (15)    | 26 (29.5)   |
| Unerupted          | 9 (16)    | 3 (9)     | 12 (13.6)   |
| Malocclusion       | 7 (13)    | 9 (26)    | 16 (18.2)   |
| Fluorosis          | 14 (26)   | 6 (18)    | 20 (22.7)   |
| Dental Erosion     | 4 (7)     | 0 (0)     | 4 (4.5)     |
| Trauma             | 8 (15)    | 4 (12)    | 12 (13.6)   |

## DISCUSSION

It was found that 68% of them had dental caries and 63% suffered from gingivitis. Thus it becomes apparent on how negligent they are towards dental care. It was also evident that a significant number of participants (22.7%) in this study had fluorosis. This may be due to that fact that they were from the state of Hyderabad which has high prevalence for fluorosis. Visually impaired patients generally have difficulty in detecting the cardinal signs of inflammation such as reddened, gingival swelling and recession. Early signs of dental caries as well as occlusal wear due to bruxism is also usually left undetected. In this study a total of 62.5% of the population suffered from gingivitis and the rest of them had periodontal disease. When these patients fail to detect these signs for, they do not report to the dentist unless there is an adverse problem that has to be dresses i.e. dental pain. Placing the tooth paste on tooth brush and practicing traumatic brushing strokes may damage their periodontium (Al-Ansari *et al.*, 2003) People who have assimilated oral health knowledge and feel a sense of personal control over their oral health are more likely to adopt self care practices (AL- Ansari *et al.*, 2003). An inability to visualize any changes or improvement in the oral hygiene can make it tougher to establish compliance. Hence, they must be motivated through other means such as having them to run their tongue run across their teeth before and after oral prophylaxis and subsequently thought about the differences in surface texture.

This is done so that they can evaluate for themselves every now and then to check for any plaque or calculus deposits. Models and toothbrushes help in aiding people with visual impairment as they have an increased tactile and kinesthetic sense. Hence, they will be able to feel and understand better the dental components and the correct brushing techniques (Kendall, 1992). Studies have also shown that electric tooth brush or conventional toothbrush with crisscross bristles are highly effective for plaque removal for visually impaired individuals (Jongenelis *et al.*, 1997; Sharma *et al.*, 2012). In case of children, finding the oral aid which the child likes to use will also help in increasing the likelihood of the child using it more often. An effective method for proper flossing is to demonstrate the technique and advise them to listen to the “squeaky noise” ([http://www.thefreelibrary.com/Vision impairment: treating the special needs patient with a sensory...-a0207643087](http://www.thefreelibrary.com/Vision+impairment:+treating+the+special+needs+patient+with+a+sensory...-a0207643087)). This type of feedback will help them access all surfaces in addition to reaching the base of the gingival sulcus. Effective home care instructions and audio instructions are also other means of which a visually impaired person can develop proper oral hygiene knowledge and take necessary measures to maintain them.

### Conclusion

Oral health can have a significant impact on the overall well-being of an individual. It is evident from this study that visually impaired individuals have an increased risk of developing dental caries, periodontal diseases and potential dental trauma due to their inability to visually assess the effectiveness of plaque control and to detect and recognise the early signs of periodontal disease in addition to the lack of knowledge and infrequent dental visits. As a result, they may be unable to take necessary steps to prevent the or treat the particular disease. Hence, it is necessary to educate them on the importance of oral health and provide an access for treatment

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