Research Article

# Oral hygiene status among visually handicapped

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## ABSTRACT

**Introduction:** Oral hygiene has a great impact on the overall health and well-being of an individual. Maintenance of oral hygiene is particularly challenging in people with -special needs. Special needs are a term used in clinical diagnostics and functional development to describe individuals who require assistance for disabilities that may be medical or psychological. Visually handicapped refers to those individuals that are unable to carry out normal activities due to the defects of vision. **Materials and Methods:** This study was carried among 45 visually handicapped individuals. A survey was conducted about the awareness and knowledge of oral hygiene and the oral hygiene status was also analyzed for every individual (National Institution for the Blind, Poonamallee). The data were collected and analyzed accordingly. **Results:** About 46% of individuals had fair oral hygiene status and 35% had good hygiene followed by 19% having poor oral hygiene. The majority used toothbrush and toothpaste; among the individuals examined, 90% used manual toothbrush and toothpaste to clean their teeth, whereas 8% used toothbrush and powder. 2% used finger and salt as medium for cleaning their teeth. While a predominant number of sample population 72% brushed only once daily, only 27% of the students brushed twice daily. **Conclusion:** As per the present study, while it is evident that visually impaired individuals have fair oral hygiene status, they lack knowledge about proper brushing techniques which were one of the reasons for high rate of dental caries. Early identification of caries and proper guideline for maintenances of oral hygiene should be well informed to parents, guardians, and school teachers.


**KEY WORDS:** Caries, Health, Oral hygiene, Special needs, Visually handicapped

## INTRODUCTION

Oral hygiene has a great importance on the overall health and well-being of an individual. Maintenance of oral hygiene is particularly challenging in people with special needs. "Special needs" are a term used in clinical diagnostic and functional development to describe individuals who require assistance for disabilities that may be medical, mental, or psychological.[1,2] Blindness may be either complete or partial, which is congenital or acquired. According to Indian sample survey of 2011, about 18.8% are visually impaired followed by disability in speech, hearing, and movement and being mentally handicapped. The 2011 census in India identifies 26,810,557 disabled citizen representing 2.21% of the population.[3]

Oral health education has been shown to have a positive impact in decreasing plaque score.[4]


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The dental health of disabled children is very important for several reasons. Visual impairment may impact on oral health through physical social or information barrier related to the impairment, attendant medical conditions, or lack information in a suitable format. Other obstacles include lack of services, lack of transport, inadequate resources or financial considerations, lack of social awareness or lack of education, and training of service provider. Dental treatment is difficult to perform in these children due to behavioral problems and, often, requires deep sedation or general anesthesia in a hospital setting.[4,5] There are very few studies that have examined the health information needs of visually impaired individuals and even fewer have investigated the dental health information needs of this group.[6,7] Dental caries is the most prevalent disease among children worldwide and dental treatment is the greatest unattended health need of the disabled, particularly more so, in those with special health needs. The presentation of caries is highly variable; however, the risk factors and stages of development are similar.[8-10]

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Visual impairment was the most frequently occurring disability, followed by speech, hearing, movement, and mental disabilities. In poor societies, many disabled persons find it difficult to survive; nutritional status is very low and services are inadequate, and hence, disabled people often live in extreme poverty, misery, and despair, leading to dependency and deprivation.[11,12] People with visual impairment are at an increased risk of developing oral diseases, namely periodontal disease, due to greater difficulty in attaining good oral hygiene. This may be due to the lack of ability to visually assess whether dental plaque has been effectively removed or if their gums bleed during tooth brushing. Often, dental plaque is an important prerequisite for the development of dental caries and periodontal diseases. People with low vision cannot detect and recognize early signs of oral disease and due to this, they may not be able to take the necessary action to prevent or treat a particular oral condition.[13,14]

The usual method of teaching proper tooth brushing is by visual perception; thus, the visually impaired children are deprived of the opportunity to learn by imitation. Plaque is disclosed using disclosing tablet where plaque will be stained red after the patient chewed the tablet. This is usually followed by a demonstration on proper toothbrushing technique in front of a mirror to ensure that the disclosed plaque is totally removed. Unfortunately, this method does not benefit the blind. They depend more on tactile sensation (touching) and hearing to learn. Hence, health-care providers should have a unique and innovative teaching methods as well as effective communication skills to transfer the information and knowledge to these children so that they are empowered to take care of their own oral hygiene in the future.[15]

This is little information regarding the dental health care and needs of such individuals.

Such information is important to improve the oral health in these special need individuals. Hence, this study aims to do a survey on the knowledge and awareness of oral hygiene status among visually handicapped individuals.

## MATERIALS AND METHODS

In this, a survey and a patient examination method was proposed. The population for the study comprised the students of the National Institution for the Blind, Poonamallee. 70 respondents were willing to participate in the survey. Informed consent as obtained. The questionnaire comprised 10 questions eliciting the responses on the knowledge and awareness on oral hygiene.

## RESULTS

A total of 70 visually impaired individuals were examined, of which 68 (97.14%) were male and 2 (2.86%) were female. The mean age of the study subjects was 14.56 years. Chart 1 shows the oral hygiene status of visually impaired individual classified according to the oral hygiene index simplified. While 46% of individuals had fair oral hygiene status, 35% had good hygiene followed by 19% having poor oral hygiene.

Chart 2 shows the medium used to clean their teeth; the majority used toothbrush and toothpaste; among the individuals examined, 90% used manual toothbrush and toothpaste to clean their teeth, whereas 8% used toothbrush and powder. 2% used finger and salt as medium for cleaning their teeth.

Chart 3 shows the frequency of brushing their teeth. While a predominant number of sample population 72% brushed only once daily, only 27% of the students brushed twice daily.

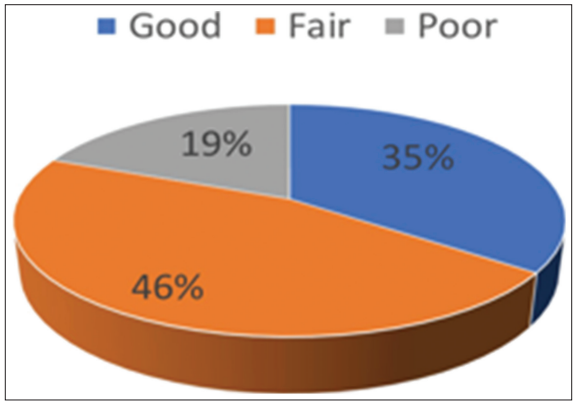


**Chart 1:** Oral hygiene status of the study subjects

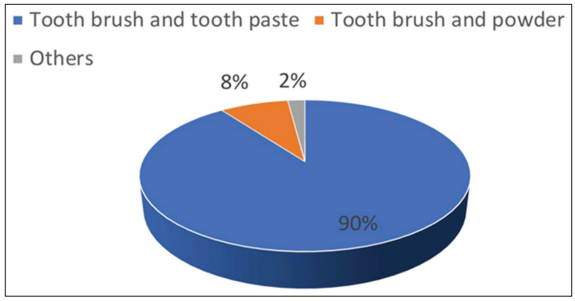


**Chart 2:** Mode of cleaning the teeth among study subjects

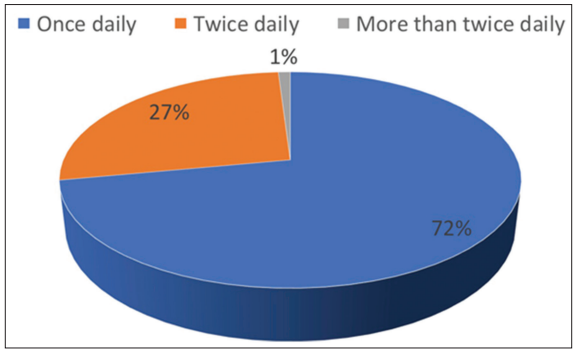


**Chart 3:** Frequency of brushing among study subjects

**Table 1: Knowledge towards oral hygiene among visually handicapped**

| Questions | Yes (%) | No (%) |
|---|---|---|
| Do you rinse your mouth after eating? | 80 | 20 |
| Do you use mouthwash? | 15 | 85 |
| Have you ever visited a dentist before? | 54 | 46 |
| Do you clean your tongue? | 82 | 18 |

The knowledge, attitude, and awareness among visually impaired individuals about oral health care were assessed using the questionnaire which is represented in Table 1. It was observed that a majority of students (80%) performed mouth rinse after meal, but only 15% of them used mouthwash. It is also noticed that only half of the sample population 54% had ever visited the dentist.

## DISCUSSION

In this study, it was shown that visually impaired children exhibit fair to poor level of oral hygiene, which is similar to many other studies done before.[10-16] In contrast to a study done in Chandigarh, India, in 2013, 95% of the visually impaired children had good and fair oral hygiene with mean plaque score of 1.34.[17] This could be due to the caretakers implementing mandatory health care to the children. However, they had a higher prevalence of bleeding sites compared to the sighted students, which perhaps could be explained by the limited ability of the visually impaired student to visualize the existence of plaque.[18]

All of the children in this study stayed in boarding school and their suboptimal level of oral hygiene could be due to lack of assistance or supervision by the caretaker.[16]

About 46% of individuals had fair oral hygiene status and 35% had good hygiene followed by 19% having poor oral hygiene. The majority used toothbrush and toothpaste; among the individuals examined, 90% used manual toothbrush and toothpaste to clean their teeth, whereas 8% used toothbrush and powder. 2% used finger and salt as medium for cleaning their teeth. While a predominant number of sample population 72% brushed only once daily, only 27% of the students brushed twice daily.

The limitation of this study is the small number of subjects, even though we tried to recruit all the students, and at the same time, the age range of the subjects was wide, 6–17 years old. At the age of 6 years, toothbrushing should be assisted and supervised by parents as their manual dexterity and cognitive ability is still low compared to the older subjects, this could be seen in the improvement of the oral hygiene after the intervention.

In addition, the younger subjects are less motivated if compared to the older ones.[19,20] Even though general oral health care is being provided by the nearby government dental clinic, lack of knowledge and experience of the service providers in handling visually impaired students is probably one of the barriers in improving the oral health of these students. A customized awareness program is needed considering the limitation of the visually impaired students.

Improper brushing means and techniques are a significant contributor to periodontal problems and other oral diseases. In a study conducted by Rao *et al*.,[12] it is reported that 54% of the visually impaired used toothbrush and paste. In another study by Solanki *et al*.,[4] 74% of the visually impaired used toothbrush and tooth powder, of which 90.2% of the visually impaired individuals cleaned their teeth once a day, while only 0.9% cleaned their teeth twice. Both the above studies stated that blind individuals had improper brushing means, which highlight the lack of knowledge about effective use of toothbrushes with dentifrices.

The present study shows a positive result of 86.9% of the students using toothbrush and toothpaste to clean their teeth and only 8.2% using tooth powder with fingers. In addition, a majority of the participants (68.6%) brushed at least once a day and 29.5% brushed twice. It clearly states that there is more room for promoting awareness of effective use of tooth brush and tooth paste, but also the proper techniques of tooth brushing.

Oral hygiene of an individual has an essential part in the oral health status. The study shows that 70% of the people rinsed their mouth after each meal, which contributes to the basic method of clearing food debris from the mouth. This finding is consistent with a study conducted by Prashanth *et al*. which reported that the oral hygiene was good for 91.76%, fair for 5.88%, and poor for 2.35% for blind individuals.[15]

The present study shows that the hygiene status was fair for most being 42% and 33% having good hygiene followed by 25% having poor oral hygiene. When comparing all the above studies, it is shown that hygiene status varies from person to person as in normal individuals. Proper technique to maintain oral hygiene has not been effectively communicated to handicapped people as in normal individuals. Presences of plaque and calculus may not be well disclosed among the visually impaired using disclosing agents; thus, the necessity remains untold.

The rate of dental caries has been reported to be higher among the disabled population in comparison to normal population for all age groups. The present study

reported a high prevalence of caries 90%, of which the largest component of DMFT was the decayed teeth index which was estimated to be 3.14 on average and the filed index had the least mean score of 0.54. The findings of high caries rate and DMFT scores are comparable to other studies [12, 16]. When compared to the above studies, dental caries increases with age. With increase in caries prevalence and severity with increasing age, this finding was attributed to the irreversibility and accumulative nature of the disease with age [17].

Various reasons can be put forward to decipher intensity of dental caries such as biochemical difference in salivary buffering to differences in living environment, dietary and habits, differences proportions of salivary components, and possible differences in chemical composition of the saliva. Basic preventive measures such as topical fluoride application, pit, and fissure sealant are not initiated in these students. In addition, parents of blind individuals fail to recognize the importance of early dental care.

The highlights of the study include a healthy amount of sample population with focus on the transitional age groups (teenage to young adult age groups) who were examined to gain insights about the prevalence of caries unlike other studies which focus only on children. The presence of a relatively high caries rate when compared with other studies leaves an alarming state for treatment need. The limitation in the study was that the other sociodemographic and sociocultural predictors for oral hygiene were not accounted. The use of DMFT index among adults could be misleading as adults may have lost teeth for reasons other than dental caries.

In addition, questions regarding dietary practices among the sample population were not included in the study, which could have added more value in regard to their oral hygiene status. Future scope includes incorporation of custom designed health promotion methods such as braille- and/or music-based oral hygiene programs which would encourage active participation and helps promote better oral healthcare toward visually impaired people.

## CONCLUSION

As per the current study, it is evident that visually impaired individuals have a fair oral hygiene status; they lack knowledge about proper brushing techniques which were one of the main reasons for high rate of dental caries. To alter their condition, suitable preventive measures such as comprehensive dental care are an important need. While oral health awareness is provided through media, it is important that these students are taught practically through biannual oral health promotion camps and sequential screening assessments. Early identification of caries and proper guidelines for maintenances of oral hygiene should be well informed to parents, guardians, and school teachers. Primary health centers are to be developed for the welfare of disabled people to promote their oral and general health.

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