

## Oral Health and Dental Care of Children with Visual Impairment -- An Over View

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### Abstract

Visual Impairment is the consequence of the functional loss rather than an eye disorder itself however, sensory alone do not require changes in treatment just modifications in provisions. Blindness is not an all or none phenomenon; a person is considered to be attached by blindness. If the visual acuity does not exceed 20 /200 in the hotter eye, with correcting lenses or if the acuity is greater than 20/200 but accompanied by a visual field of no greater than 20 degrees. Not all visual impairments carry the same degree of blindness. Prevalence of visual impairment in industrialized countries was 0.3 per 1,000 children where as in 1.2 per 1,000 children in developing countries respectively. Some individuals who may be considered blind may not be totally without sight. Prolonged immature swallowing pattern due to a reluctance to consume solid foods, poor oral hygiene related to learning disabilities, as well as hypoplastic teeth. Trauma to the anterior teeth also occurs with a higher frequency than in the normal population. Increased gingival inflammation due to inability to visualize and remove the plaque. They may be able to distinguish images, light, colours, and may even be able to read large print. Low vision is different than legal blindness and covers a wide range of conditions. Tell feel do approach is recommended. Low vision can interfere with a person's ability to perform everyday activities like reading, walking unassisted and cooking. Use audiocassette tapes and Braille dental pamphlets explaining specific dental procedures to supplement information and decrease chair time Announce exits from the entrances to the dental operatory cheerfully. Keep distractions minimal and avoid unexpected loud noises. Limit the patient's dental care to one dentist whenever possible. This article discusses about etiological factors, clinical features and management of visually impaired children.

**Keywords:** Children; Dental Management; Oral Health Status; Visual Impairment

### Introduction

Vision is the most important way to interpret the environment around us, and when this is impaired in early childhood, it can have negative effects on physical, neurological, cognitive and emotional development [1]. WHO considers the visual impairment a priority issue at the international level. The most recent estimates indicate 285 million people with visual disabilities in the world: 39 million are blind, and 246 million have low vision [2].

Visual impairment affects a great number of individuals worldwide. It is not an all or none phenomenon, and a person is considered affected by blindness if the visual acuity does not exceed 20/200 in the better eye, with the correcting lenses, or if the visual acuity is greater than 20/200 but accompanied by a visual field of no greater than 20 degrees [3].

### Prevalence

The prevalence of childhood blindness was 0.3 per 1,000 children in industrialized countries and 1.2 per 1,000 children in developing countries. Based on the estimation, it was found that there were approximately 1.4 million visually impaired children all over the world and India has largest population of visually impaired children among the world i.e. 15 million [4].

## Etiology

- **Prenatal causes:** Optic atrophy, tumours, cataracts, microphthalmus, toxoplasmosis, rubella, syphilis, TB, meningitis etc.
- **Postnatal causes:** Trauma, hypertension, premature birth, diabetes mellitus, glaucoma, leukemia, haemorrhagic disorders [5].

Oral health of disabled patients is frequently recognized as secondary importance to the debilitating disease, according to what is commonly referred to as a “halo effect”. Clinical studies, in fact, show how visually impaired/blind patients generally have a state of compromised oral health, with a high prevalence of caries and/or periodontal problems [6,7]. The hypothesis is that the determinants of health, such as socio-economic or cultural conditions, influence this condition, beyond the disability [8,9]. In fact, the scientific literature shows that these patients often have limited knowledge about oral health. Oral hygiene maintenance is one of the most difficult tasks for visually impaired people because they are not able to detect and recognize oral disease early and could not be able to act promptly, if not adequately informed.

Complete medical history along with the degree of visual impairment is ascertained prior to treatment. Describe in detail about the office settings, office personnel and treatment procedures before starting anything. Make physical contact reassuringly and do not sudden!) Grab or move the patient without prior notice. The dentist can make use of touch, taste and smell rather than the TSD method (using strong tastes in ma” quantities as these may be rejected by the child). Prolonged immature swallowing pattern due to a reluctance to consume solid foods, poor oral hygiene related to learning disabilities, as well as hypoplastic teeth have been identified as possible oral manifestations in visually impaired children.

Trauma to the anterior teeth also occurs with a higher frequency than in the normal population. Increased gingival inflammation due to inability to visualize and remove the plaque.

Keep away from using any signs, expressions of pity and references to blindness as an affliction. Oral hygiene should be explained and the child guided throughout the procedures by the dentist alongside with the make use of audio cassettes and Braille pamphlets [9,10].

The centre towards treatment has to be redirected in the direction of prevention to pay compensation the heavily loaded treatment requirements of the visually impaired population by means of the limited resources [11].

Diet counselling should be done regarding importance of balanced diet and focus on sugar intake in relation to dental caries and fibrous food is recommended in order to avoid dental caries in visually impaired children [12].

The recommended method of brushing technique for these children is horizontal scrub method rather than Fone’s method and Modified Bass method of tooth brushing. Scrub method is superior to other techniques due to its ease of application. Brushing instruction ought to commence with the patient demonstrating his/her current brushing technique, which can further be refined and corrected by physical and verbal guidance [9,13-15].

Multi-tufted nylon brushes with soft bristles rounded tips are ideal for these children and based on the size of the mouth tooth brushed should be selected for easy removal of plaque. Electric tooth brushes are very effective when compared to manual toothbrushes and duration of brushing is about three minutes. Musical jingles or audiotapes are available to teach such a sequence to children with visual impairment [16,17].

Flossing can be made easier if a floss holder is used Use of floss for plaque removal is usually recommended, if the caretaker is performing the flossing. The tactile sensation can be used for the position of the brush or floss in the correct place inside the oral cavity [18-20].

It was stated that, if taught with special customized methods like multisensory approach, along with the creative use of other senses, blind children could maintain an acceptable level of oral hygiene. ‘Audio-tactile performance technique’ (ATP), a multisensory health education method that is specially designed, is a very effective communication tool to educate the visually impaired children regarding oral hygiene maintenance [21].

A multisensory health education method called Audio-tactile performance technique’ (ATP) is introduced recently which is nothing but the development of language and perception is affected by the motor activities. It is very effective communication tool along with the

creative use of other senses. It is proved that these children could maintain an acceptable level of oral hygiene. ATP is more effective when compared to manual tooth brush [22,23].

Timing and frequency are of two important variables for oral hygiene procedures in visually impaired children. The timing of the procedure should be resolute by the life-style of the visually impaired person and his family and the care-taker. Brushing in the evening and after the last meal enough time should be given to carry out the procedure. Child who can perform brushing independently frequent brushing is encouraged to prevent plaque growth [24,25].

Topical fluoride application and pit and fissure sealants are recommended to prevent dental caries and valuable adjuncts for these children. Fluoride dentifrices and rinses should be prescribed to be used daily and depends on individual patients. Fluoride varnish is ideal for children who do not expectorate. It is shown to reduce occlusal caries effectively and should be used whenever indicated. Preventing oral disease is most desirable way of ensuring good dental health for these children.

The key to successful oral hygiene programs with visually impaired persons involves creating adaptations and routines that allow them to be totally independent in oral hygiene care and develop pride in their achievements. This includes purchasing oral hygiene materials, labelling or storing materials so that they won't be lost, brushing all areas effectively, and determining whether they have been performing adequately [26,27].

Guidelines while providing dental treatment for visually impaired children showing in table 1 [28,29].

1.	Maintain a relaxed atmosphere
2.	Remember that your patient cannot see your smile
3.	Ask the patient how he or she prefers to communicate
4.	Face the patient and speak slowly
5.	Keep conversation simple
6.	Provide a well-lit room.
7.	Indicate when you move from one place to another or leave the room.
8.	Avoid startling patient by speaking or touching.
9.	Avoid distractions
10.	Use large print material with 16 to 18 point type size or larger.
11.	Use simple font, not thin, italic or fancy typefaces. Double-space lines
12.	Contrasting words on paper (yellow or off-white paper has less glare than plain white paper).
13.	Give clear, concise instructions slowly
14.	Consider alternative ways of presenting information

**Table 1:** Showing guide lines for treatment.

1.	A distinction should be made between children who at one time had sight and those who have not and thus do not form visual concepts.
2.	More explanation is needed for children in the later category to help them perceive the dental environment
3.	Dentists should realize that congenitally visually impaired children need a greater display of affection and love early in life and that they differ intellectually from children who are not congenitally visually impaired.
4.	Although explanation is accomplished through touching and hearing, reinforcement takes place through smelling and tasting.
5.	The modalities of listening, touching, tasting, and smelling are HE extremely important for these children.

**Table 2:** Showing treatment of children with visual impairment [30].

**Dental management considerations depend upon [31]:**

- Degree of visual impairment
- Age of onset
- Presence of other handicapping conditions
- Degree of independence
- Patient attitude and behavior
- Parental attitude and behaviour.

1.	Determine the degree of visual impairment (e.g. can the patient tell light from dark).
2.	If a companion accompanies the patient, find out if the which companion is an interpreter
3.	If he or she is not, address often the patient.
4.	Establish rapport; offer verbal and physical reassurance.
5.	Avoid expressions of pity or references to visual impairment as an affliction.
6.	In guiding the patient to the operatory, ask if the patient desires assistance. Do not grab, move or stop the and patient without verbal warning.
7.	Encourage the parent to accompany the child.
8.	Paint a picture in the mind of the visually impaired child, describing the office setting and treatment
9.	Always give the patient adequate descriptions before performing treatment procedures.
10.	It is important to use the same office setting for each dental visit to ally the patient’s anxiety
11.	Introduce other office personnel very informally.
12.	When making physical contact, do so reassuringly. Holding the patient’s hand often promotes relaxation.
13.	Allow the patient to ask questions about the course of treatment and answer them keeping in mind that the patient is highly individual, sensitive and responsive.
14.	Allow a patient who wears eyeglasses to keep them on for protection and security.
16.	Avoid sight references
17.	Describe in detail instruments and objects to be placed in the patient’s mouth.
18.	Demonstrate a rubber cup on the patient’s fingernail
19.	Because strong tastes may be rejected, use smaller quantities of dental materials with such characteristics.
20.	Some patients may be photophobic. Ask parents about light sensitivity and allow them to wear sunglasses.
21.	Explain the procedures of oral hygiene and then place the patient’s hand over yours as you slowly but deliberately guide the toothbrush.
22.	Use audiocassette tapes and Braille dental pamphlets explaining specific dental procedures to supplement information and decrease chair time.
23.	Announce exits from the entrances to the dental Operatory cheerfully. Keep distractions minimal and avoid unexpected loud noises.
24.	Limit the patient’s dental care to one dentist whenever possible
25.	Maintain a relaxed atmosphere. Remember that your patient cannot see your smile.

**Table 3:** Showing some recommended treatment modalities for visually impaired children [31].

**Conclusion**

We can create motivation and hope towards life. Therefore dental care of disabled child should be aimed at developing empathy in dental practitioners towards empathy these children. An important aspect in delivering dental healthcare to the handicapped is an understanding of the psychological problems which occur as an adjunct to the conditions. The attitude towards visually impaired children

is component of behavior that both dentists and disabled patient bring to the dental environment. The paediatric dentist must be able to customize the care based on need of the patient. The main goal of the dentist or hygienist should be to train and encourage the blind individuals to achieve these tasks independently. Self-reliance is an extremely essential and sometimes sensitive characteristic of the visually impaired person's life. Achievements, both small and large, have a positive impact on the individual's self-esteem.

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