

Oral Hygiene and Periodontal Status of Visually Impaired Individuals of a Residential School in Eastern Nepal

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ABSTRACT

Introduction: Gingival and periodontal diseases are a matter of serious concern in Nepalese population. These diseases may also be present in visually impaired individuals. So, the scientific fact is necessary to unmask this and the pathogenesis behind it.

Objective: To assess the oral hygiene and periodontal status of visually impaired individuals of a residential school in Eastern Nepal.

Methods: A study was conducted at Gyanchakchu Vidyalaya in Dharan-15. A total of 130 visually impaired individuals (88 males and 42 females) with the mean age of 6-20 years were included in the study. Information regarding oral hygiene practices was gathered through personal interaction by the interviewers. Oral hygiene status was assessed by using Plaque Index of Silness and Loe (1964) and Gingival Index of Loe and Silness (1963) and to assess the periodontal status, Community Periodontal Index was used.

Results: A total of 112 (86.2%) participants, brushed their teeth with the help of toothbrush and toothpaste, 101 (77.7%) of them brushed once a day in morning, 83 (63.8%) of the students used horizontal brushing technique and 90 (69.2%) of the students rinsed their mouth after meal. Periodontal and gingival status of visually impaired individual show that majority 90 (69.2%) had no periodontal pocket and 83 (63.8%) had slight loss of attachment.

Conclusion: The oral hygiene status and periodontal status of visually impaired individuals can be improved more through an in-service educational programmes.

Keywords: Oral hygiene; periodontal disease; visually impaired individuals.

INTRODUCTION

Disability is defined as a permanent or long term condition that limits an individual's ability to perform usual tasks. Visual impairment is one of them that is categorised as sensory impairment.¹ Periodontal disease is an inflammatory process resulting from the imbalance of the interaction between dental biofilm microorganisms and components of the immune response in susceptible individuals that may lead to irreversible damage to the periodontal supporting tissues.²

The World Health Organization (WHO) in 2010 estimated that globally the number of visually impaired people of all ages is estimated to be 285 million, of whom 39 million

are blind.³ So, in order to reduce the prevalence of dental caries and periodontal disease, among visually impaired individuals, there is an utmost need for individual training by creating awareness in oral care and plaque control.^{4,5} Hence, it requires a change in attitude and practice of parents' and/ or care takers' to include oral health as the part of routine care.⁶ The lack of hand eye-coordination, inadequate parental supervision and a lack of input from peers can reduce attention to oral health.⁷

Therefore, this study attempted to assess the oral hygiene status and periodontal status of visually impaired individuals of the residential school "Gyanchakchu Vidyalaya" in Eastern Nepal.

METHODS

The present descriptive cross-sectional study was conducted at the Gyanchakchu Vidyalaya in Dharan-15. This is the only school in eastern Nepal which provides education for visually impaired children up to class-10. It is a residential school where 130 blind students study. Out of total, 88 were males and 42 were females. They were examined by single examiner to control the examiner variability. Prior consent to the study was obtained from respective school authority.

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The subjects under study were examined at their school under natural light while seated on an ordinary chair. This study was approved by the ethical committee of the Nobel Medical College Teaching Hospital, Biratnagar. The study duration was from October to December 2019. The questionnaire based proforma was used to collect data on personal information, oral hygiene habits and clinical observation of gingival status and periodontal status of the visually impaired individuals. Face to face interview technique was for the data collection. The purpose and procedure of the study were explained to each participant and asked whether they agree to participate or not. Expressed consents were obtained from the participants. Each interview took five to 10 minutes.

The status of periodontal health provides an indication of oral hygiene status. For this Plaque Index of Silness and Loe (1964) and Gingival Index of Loe and Silness (1963) were used. The data for Plaque Index were collected using sterile mouth mirror, explorer, and William's periodontal probe to assess the gingival status. The Community Periodontal Index (CPI) was used to assess the periodontal status with a CPI probe. The teeth examined were 16, 17, 11, 26, 27, 31, 36, 37, 46, and 47.

The first and second molars in each posterior sextant are paired for recording and if one was missing there was no replacement and the score for the remaining molar is recorded. If no index teeth or tooth is present in a sextant qualifying for examination all the remaining teeth in that sextant were examined and the highest score was recorded as the score for the sextant.

RESULTS

The study included a total of 130 visually impaired individuals of Gyanchakchu Vidyalaya in Dharan, Eastern Nepal. Table 1 shows that distribution of study participants according to age and gender of the sample. Out of the total, 78 (60%) participants were 6-12 years and 52 (40%) participants were 13-20 years. Among the participants, 88 (67.7%) were male and 42 (32.3%) were female.

Respondents reported that they clean their teeth using toothbrush and finger (Table 2). Among them 112 (86.2%) were used toothbrush as their cleaning aid and 18 (13.8%) used finger. Of the total visually impaired students 111(85.4%) used hard type of toothbrush (Table 3).

When asked about frequency of tooth brushing, 101 (77.7%) of them brushed once daily followed by 28 (21.5%) twice daily and 1 (0.8%) occasionally (Table 3).

When asked about method of tooth brushing majority of visually impaired students 83 (63.8%) followed horizontal technique (Table 3). On being asked whether rinsing after

meal, 90 (69.2%) visually impaired students said they did, 39 (30%) did seldom and 1 (0.8%) never rinsed after meal (Table 3).

Table 4 shows periodontal and gingival status of visually impaired individuals. Majority 90 (69.2%) had no periodontal pocket, followed by 37 (28.5%) had shallow pocket and 3 (2.3%) had deep pocket. Majority 83 (63.8%) had slight loss of attachment, 44 (33.8%) had moderate loss of attachment and 3 (2.3%) had severe loss of attachment.

Table 1: Distribution of the study participants according to gender and age groups.

Age groups in years	Male n (%)	Female n (%)	Total n (%)
6-20 years	88 (67.7%)	42 (32.3%)	130 (100%)

Table 2: Tools for cleaning teeth.

Oral hygiene behaviours	n (%)
a) Toothbrush	112 (86.2)
b) Finger	18 (13.8)
Total	130

Table 3: Responses on oral hygiene behaviour.

Oral hygiene behaviour	n (%)
Toothbrush bristle	
a) Hard	111 (85.4)
b) Medium	14 (10.8)
c) Soft	5 (3.8)
Total	130
Frequency of brushing	
a) Once	101 (77.7)
b) Twice	28 (21.5)
c) Occasionally	1 (0.8)
Total	130
Brushing method followed	
a) Yes	90 (69.2)
b) No	39 (30.0)
c) Don't Know	1 (0.8)
Total	130
Technique of brushing	
a) Horizontal	83 (63.8)
b) Vertical	31 (23.8)
c) Circular	4 (3.1)
d) Haphazard	12 (8.5)
Total	130
Rinsing after meal	
a) Yes	90 (69.2)
b) Seldom	39 (30.0)
c) No	1 (0.8)
Total	130

Table 4: Periodontal status.

Pocket measurements	n (%)
Valid Absent (0-3 mm)	90 (69.2)
Shallow (4-5 mm)	37 (28.5)
Deep (6 mm or more)	3 (2.3)
Total	130
Loss of attachment	n (%)
Valid slight (0-3 mm)	83 (63.8)
Moderate (4-5 mm)	44 (33.8)
Severe (6 -8 mm)	3 (2.3)
Total	130

DISCUSSION

The aim of the present study was to assess the oral hygiene and periodontal status of visually impaired individuals in a residential school of eastern Nepal. The study is limited by moderate response rate and sample size. Its finding can be seen to confirm that in this particular poor oral hygiene, moderate level of periodontal disease and unmet treatment need was evident where similar results was reported by Azrina et al.,¹ Alghamdi et al.,⁸ and Mohd-Dom et al.⁹

The present study reported that majority of them cleaned their teeth by using toothbrush where similar to the same population as reported by Ameer et al.⁴ and Tavargeri and Kudtarkar et al.¹⁰ Our study observed that oral health behaviour was acceptable for frequency of brushing. Almost all the children brush their teeth daily. This may be due to the fact that they stayed in residential school and were motivated by each other.

Majority 63.8% of the visually impaired individuals brushed their teeth by horizontal scrub method. Similarly, study conducted by Parkar et al.⁴ also concluded that most of the blind individuals used horizontal scrub technique. The patient brushing technique should be checked. This is

because toothbrush wear is influenced more by brushing methods than other factor such as type of toothbrush and frequency of brushing. It is recommended that proper brushing technique need to be taught to this group of population.

In this study 37 (28.5%) had shallow periodontal pocket of 4-5 mm depth and deep pockets of 6 mm and more were 3 (2.3%). In contrast, study conducted by Mohd-Dom et al.⁹ shows more less results in shallow and deep periodontal pockets. In comparison with the general population, there was a smaller proportion of individuals in this study who have healthy periodontium yet a much higher proportion with the most advanced periodontal condition. This indicates that many had poor oral hygiene which would require dental scaling procedures to clean the affected tooth surfaces and some actually need specialist care.

In the present study, loss of attachment of up to 4-5 mm was found in visually impaired individuals whereas another study conducted by Ameer et al.⁵ showed that highest loss of attachment was 6-8 mm in their study. The higher plaque score and incidence of periodontal disease can be attributed to lack of manual dexterity.

CONCLUSION

After carefully conducting the survey and analysing the results, it can be concluded that visually impaired individuals have moderate to low grade of oral hygiene status, with low prevalence of periodontitis. The individuals belonging to visually impaired groups learn the habits of maintaining oral hygiene under the influence of caretakers. Dentist approach is needed to achieve satisfactory periodontal health in this subject.

Conflict of Interest: None

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