Research Article

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Effectiveness of Oral Health Education on Plaque Score Among Students with Intellectual and Developmental Disability

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ABSTRACT

Introduction: Oral health is a mirror of overall health. The maintenance of oral health of children with intellectual and developmental disability is a challenging problem due to lack of communicative skills and access to dental care.

Objective: To determine the impact of oral health education intervention on the plaque score among students with intellectual and developmental disability.

Materials and Method: An analytical cross-sectional study was conducted at Gograha Higher Secondary School, Biratnagar after obtaining ethical clearance from the institutional review committee of Nobel Medical College. Convenience sampling technique was utilised for data collection from 2019 January to February. A total of 75 intellectual and developmental disability individuals (55 males and 20 females) with the age ranging from 14-20 years were included in the study. Prior consent to the study was obtained from respective school authority and verbal informed consent was obtained from the participating students and their guardians. Information regarding oral hygiene practices was gathered through personal interaction by the interviewers. Oral hygiene status was assessed by using Silness and Loe Plaque Index.

Result: All the questions showed statistically significant improvement in knowledge and self-reported behaviour. Paired t-test was used, $P < 0.005$ was accepted as indicating statistical significance. Before oral health education mean plaque index score 0.708 ± 0.2404, which reduced to 0.453 ± 0.2327 ($P < 0.001$). This was a significant reduction in oral health education.

Conclusion: Oral health educational intervention was effective in reducing plaque score among the participating students with intellectual and developmental disability.

Keywords: Oral health education; plaque; tooth brushing.

INTRODUCTION

Oral health is a mirror of overall health. The maintenance of oral health of children with intellectual and developmental disability is a challenging problem due to lack of communicative skills and access to dental care. Plaque indices in disabled children after mechanical plaque control were significantly different compared with those of non-disabled children.[1] Lack of access to dental services for this growing segment of population is

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reaching critical levels.[2] Good oral hygiene practices lead to effective plaque control, improved gingival health, and caries prevention, and regular twice-daily tooth brushing with fluoridated toothpaste is widely recommended for all age groups. This program included an educational approach for students with intellectual and developmental disabilities with the consistent practice of tooth brushing at school for three weeks. The objective of this study was to determine the impact of oral health education (OHE) intervention on the plaque score among students with intellectual and developmental disability.[3]

MATERIALS AND METHOD

The present analytical cross-sectional study was conducted at Gograha Higher Secondary School, Biratnagar, Morang, Nepal. Ethical approval was obtained from the institutional review committee, the ethical board of Nobel Medical College Teaching Hospital, Biratnagar (Ref. 335/2019). Convenience sampling technique was utilised for data collection from 2019 January to February. Currently, the study site is the only school in eastern Nepal which provides education for students with intellectual and developmental disability. It is a residential school where at the time of this study, 75 intellectual and developmentally disabled students studied. The age of the participants ranged from 14 years to 20 years. They were examined by a single examiner to control the interexaminer variability. Prior consent to the study was obtained from respective school authority. Verbal informed consent was obtained from the participating students and their guardians. The subjects under study were examined at their respective school under natural light while seated on an ordinary chair. The questionnaire was used to collect data on personal information, oral hygiene habits, and clinical observation on plaque status of the student with intellectual and developmental disability.

Face to face interviews were conducted using the questionnaire. The purpose and procedure of the study were explained to each student and asked whether they agree to participate or not. The verbal agreements were taken as consent. 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) were used and OHE along with modified bass brushing technique was demonstrated using toothbrush and tooth model. Oral hygiene status were reassessed after 21 days. The data for plaque index were collected using sterile mouth mirror and explorers and William's periodontal probe to assess the gingival status. Data was analysed using SPSS Statistics for Windows, version 16.0 (SPSS Inc., Chicago, Ill., USA) and a paired t-test and one-way analysis of variance was done.

RESULT

The study included a total of 75 students with intellectual and developmental disability of Gograha Higher Secondary School, Biratnagar, Nepal. Among them, 55 (73.33%) were males and 20 (26.67%) females with ages ranging from 14 years to 20 years.

All respondents reported cleaning their teeth either with toothbrush or finger (Figure 1). Before oral health education intervention 64 (85.33%) used toothbrush as their cleaning aid and after 21 days of oral health education intervention 71 (94.67%) used toothbrush as their cleaning aid.

About the bristle type of toothbrush, before oral health education, 66 (88%) of the intellectually and developmentally disabled students used hard type of toothbrush, 6 (8%) used medium type of toothbrush and 3 (4%) used soft type of toothbrush (Figure 2). This changed after 21 days of oral health education, when 2 (2.67%) were found to use toothbrush with hard bristles, and 31 (41.33%) used medium bristled toothbrush.

When asked about method of tooth brushing, majority (54, 72%) of the participating students used vertical technique, followed by horizontal technique, and modified bass technique (Figure 3). After oral health education, only 12 (16%) followed vertical technique and majority (56, 74.67%) followed modified bass technique.

The mean plaque index score before oral health education was 0.708±0.2404 which reduced to 0.453±0.2327 after oral health education (Table 1). This was a significant reduction in the plaque score of the participating students ($P < 0.001$).

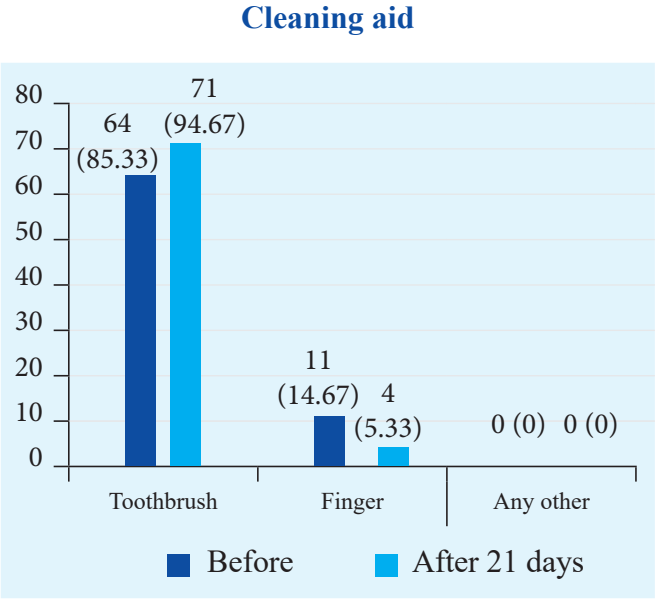
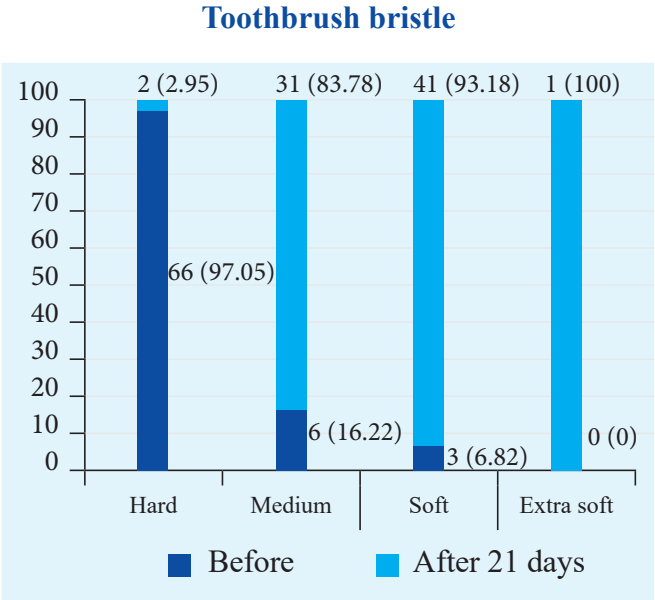


Figure 1: Cleaning aid used before and after oral health education, n (%).



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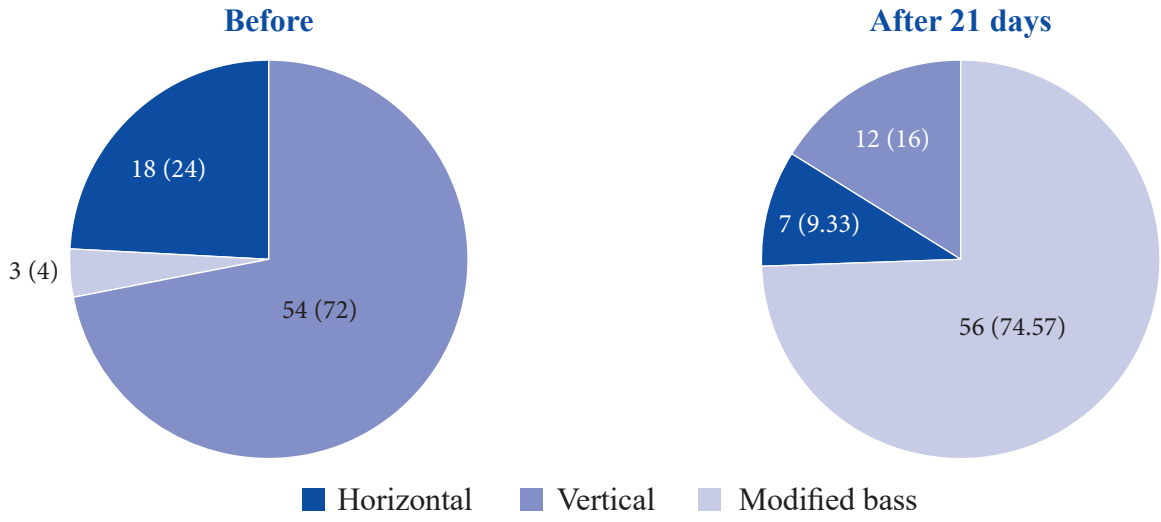

Figure 3: Brushing technique before oral health education and after 21 days, n (%).

Table 1: Mean plaque scores before and after oral health education.

	Before	After	P value
Male	0.709±0.2359	0.447±0.2062	<0.001
Female	0.705±0.2585	0.470±0.2993	<0.001
Total	0.708±0.2404	0.453±0.2327	<0.001

Paired t-test

DISCUSSION

The aim of the present study was to determine the impact of OHE intervention on the plaque score among students with intellectual and developmental disability. In the present study, the higher plaque score before OHE showed poor oral hygiene status in intellectual and developmental disability student which is similar to the study reported by Alse et al.[1] and Alsmark et al.[4] Hence the main aim of the study was to give proper oral health education to those students.

The present study reported that majority of the students cleaned their teeth by using toothbrush which is in accordance with study among similar population as reported by Solanki et al.,[5] Tavargeri and Kudtarkar.[6] Current study observed that oral health behaviour was acceptable for frequency of brushing. After oral health education there was increase in frequency by the children as they brushed their teeth twice daily. This may be due to the fact that they stayed in residential school and were motivated by each other.

Majority (54, 72%) of the students with intellectual and developmental disability brushed their teeth by vertical method before oral health education but after oral health education 56 (74.67%) of the students used horizontal scrub method which is similar to the study conducted by Alse et al.[1] and Rugg-Gunn and Macgregor.[7] They also concluded that most of the disability children used horizontal scrub technique. The patient brushing technique should be checked. This is because improper brushing technique may cause periodontal problem and other oral health diseases. It is recommended that proper brushing technique need to be taught to this group of population.

In the present study, it was seen that there was a significant plaque reduction in students with intellectual and developmental disability similar to that reported by Alse et al. Aung and Nyan.[1,8]

Thus, this study showed that the OHE program was effective in improving the plaque levels of students with intellectual and developmental disability.

CONCLUSION

To maintain a good oral hygiene practice in students with intellectual and developmental disability it is very important to provide these children oral health education and teacher can be utilised effectively as health educators as they can be. Dental personnel can provide the technical information for correct instruction in oral hygiene and these children are able to develop the basic skills for maintaining oral hygiene which reduce their plaque score significantly.

Conflict of Interest: None.

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