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Effectiveness of audio visual modelling on oral hygiene practices and Oral health among children with intellectual disability

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Abstract

The present study investigated the effectiveness of audio visual modelling on oral hygiene practices and oral health among children with intellectual disability in selected special schools of Kottayam district. A quantitative, pre-experimental one group pre-test post-test design was used for this study. Thirty-five samples were selected by simple random sampling. Data were collected using socio personal and clinical data sheets, oral health assessment tool and rating scale for assessing oral hygiene practices. Audio visual modelling, a scenario-based animated video teaching programme on oral hygiene practices and oral health, for 30 minutes duration was given after pre-test, to subjects along with their parents/caregivers, for three consecutive days in two groups, followed by a reinforcement session on day 8. Post test was conducted on day 15. Paired t-test, Karl Pearson's correlation coefficient test and Chi-square test were used for data analysis. The results of the study revealed that audio visual modelling had statistically significant effect on oral hygiene practices ($t = 4.76; p < 0.01$) and oral health ($t = 6.00; p < 0.01$) among children with intellectual disability. The study also revealed that a moderate positive linear correlation ($r = 0.59; p < 0.01$) exists between oral hygiene practices and oral health. A significant association was found between oral hygiene practices and oral health and age ($3.66; p < 0.05$), I Q level ($6.17; p < 0.01$) and dental caries ($7.85; p < 0.02$). In conclusion, audio visual modelling is effective in improving oral hygiene practices and oral health among children with intellectual disability.

Keywords: Oral hygiene practices, oral health, audio visual modelling, children with intellectual disability

1. Introduction

Health and hygiene are two essential aspects of a good life ^[1]. Oral health is an important and proven determinant of overall health and quality of life ^[2]. The oral cavity is known to be a reservoir for pathogens to grow and thrive. Poor oral hygiene can lead to complications such as gingivitis, halitosis, xerostomia, plaque formation and dental caries ^[3]. The WHO global oral health status report shows that 45% (or 3.5 billion people) of the world's population suffer from oral diseases, with three out of every four affected people living in low and middle-income countries ^[4]. Children with intellectual disability often depend on parents and caregivers for oral hygiene practices in comparison with healthy children and these special children suffered from dental disease up to seven times as frequently as healthy children, particularly concerning periodontal disease, oral mucosal pathology, and malocclusion ^[5]. One of the most important factors in oral health care is the maintenance of good oral hygiene, which of course is exceptionally difficult for a person who may be mentally or physically handicapped, to achieve by his or her efforts. Unfortunately, the oral health of this population is compromised by their lack of preventive dental treatment and by their inability to adequately brush and/or floss their teeth ^[6]. Understanding of oral health among them is typically lacking due to inadequacy of oral health programs conducted in institutions or schools for these special children. So, it is important to provide information to them, their parents and caregivers regarding oral health and oral hygiene practices. The present study was undertaken to determine the effectiveness of audio visual modelling on oral hygiene practices and oral health among children with intellectual disability in selected special schools in Kottayam district.

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2. Materials and Methods

2.1 Study design

Quantitative approach was used for the study. Research design selected for the study was pre experimental one group post-test design.

2.2 Sample Characteristics

Thirty-five samples were selected by probability simple random sampling technique using lottery method. Inclusion criteria of the present study were children with intellectual disability, whose parent or caretaker has given consent to participate in the study and who can understand Malayalam. Children with visual or hearing impairment were excluded.

2.3 Tools

Tools were used for data collection socio personal data sheet, clinical data sheet, oral health assessment tool and rating scale for assessing oral hygiene practices. Socio personal variables include age, gender, IQ level, socio economic status, caregiver of the child, other family members with intellectual disability and sources of health information. Clinical data include the dental characteristics - alignment of teeth, missed teeth, dentures and dental caries. Oral health assessment tool is a screening tool was prepared by the investigator for assessing the oral health of children with intellectual disability consisting of 12 categories (Lips, Temporomandibular joint, Buccal Mucosa, Gingiva, Tongue, Hard & soft Palate, Teeth, Plaque, Saliva, Oral Hygiene and Halitosis, Toothache). Score Interpretation: Max Score: 24 Good: 16-24, Poor: 0-15 Rating scale was prepared by the investigator to assess the oral hygiene practices among children with intellectual disability through reported practice from parents/ caregivers. It consists of 25 items categorized under brushing and flossing techniques, dietary habits and dental checkup. Score interpretation: Max score: 38 Good: 26-38 Poor: 0-25.

2.4 Data collection process

Initially, good rapport was established with participants and their parents and caregivers. They were informed about the purpose of the study and assured the confidentiality of the responses. After obtaining written consent from the parents or caregivers, they were instructed to provide appropriate answers regarding the socio personal data sheet. The investigator examined each participant and collected the clinical data needed for the study. Data regarding oral health and oral hygiene practices were collected using oral health assessment tool and rating scale for assessing oral hygiene practices.

After completion of the pre-test, audio visual modelling was administered. It includes 2 sessions. The first session was playing a scenario-based animated video teaching programme along with an interactive session, of a total duration of 30minutes for 3 consecutive days. The second session, a reinforcement session conducted on day 8. Post test was conducted on day 15. The data collected was analysed using descriptive and inferential statistics based on the objectives of the study. The confidentiality of the collected data was assured throughout the study.

3. Results

The present study aimed to determine the effectiveness of audio visual modelling on oral hygiene practices and oral

health among children with intellectual disability. The results of the present study were discussed under the following headings:

3.1 Socio personal and clinical data of children with intellectual disability

Sample characteristics showed that majority (65.7%) of children with intellectual disability were in the age group of 12-18 years and were males. The majority of children with intellectual disability were males (65.7%) and 34.3% were females. Regarding I Q level, 57.1% of children with intellectual disability had an I Q between 66-75 and 42.9% of children had an I Q between 55-65. Regarding socio economic status, majority (74.3%) of children belonged to APL category and 25.7% belonged to BPL category. Regarding dental characteristics, majority (80%) of children with intellectual disability had normal teeth alignment, 11.4% of children had overcrowded teeth and only 8.6% of children had excessive spacing between teeth. Regarding missed teeth, majority (71.4%) of children had no missed teeth. Among subjects, none of children had dentures and regarding dental caries 22.9% had no dental caries. Children with one caries teeth were 31.4% and those with more than one caries teeth were 45.7%.

3.2 Oral hygiene practices and oral health among children with intellectual disability

Among 35 participants, majority (54.3%) of children with intellectual disability had poor oral hygiene practices and 45.7% had good oral hygiene practices. With regard to the domain wise oral hygiene practices, 51.4% had good brushing and flossing technique and 48.9% had poor brushing and flossing technique. Regarding dietary habits, 51.4% followed poor dietary habits and only 48.6% followed good dietary habits. Regarding dental check-up, most (97.1%) followed poor dental check-up and only 2.9% followed good dental check-up. Among the subjects, majority (71.4%) had poor oral health and 28.6% had good oral health.

3.3 Effectiveness of audio visual modelling on oral hygiene practices and oral health among children with intellectual disability

Table 1: Mean, standard deviation and t value of pre-test and post test scores of oral hygiene practices among children with intellectual disability (n=35)

Oral hygiene practices	Mean	SD	t	p
Pre-test	22.06	4.40	4.76	0.01
Post-test	27.26	2.73		

This table reveals the obtained t value was 4.76 which was significant at 0.01 level. This shows that there is a statistically significant difference in oral hygiene practices among children with intellectual disability after the audio visual modelling.

Table 2: Mean, standard deviation and t value of pretest and post-test scores of oral health among children with intellectual disability (n=35)

Oral health	Mean	SD	t	p
Pre-test	14.91	1.75	6.00	0.01
Post-test	17.14	1.68		

The table shows the obtained t value (6.00) was significant at 0.01 level. This shows a statistically significant difference in oral health among children with intellectual disability before and after the audio visual modelling.

3.4 Correlation between oral hygiene practices and oral health among children with intellectual disability

Table 3: Correlation between oral hygiene practices and oral health among children with intellectual disability (n=35)

Variables	r	p
Oral hygiene practices	0.59	0.01
Oral health		

Table 3 depicts that the r value (0.59) is significant at 0.01 levels, which indicates a moderate positive linear co-relation between oral hygiene practices and oral health among children with intellectual disability and it is inferred that improvement in oral hygiene practices will result in improvement of oral health.

3.5 Association between oral health among children with intellectual disability and selected variables

Table 4: Chi-square value and degree of freedom of oral health among children with intellectual disability and selected variables (n=35)

Variables	DF	χ^2	p
Age	1	3.66	0.05
Gender	1	1.13	0.28
Socio economic status	1	0.24	0.63
IQ level	1	6.17	0.01
Alignment of teeth	2	3.51	0.17
Missed teeth	2	2.85	0.24
Dental caries	2	7.85	0.02

Table 4 revealed a significant of oral hygiene practices and oral health among children with intellectual disability with age, IQ level and dental caries.

4. Discussion

In the present study, sample characteristics showed that majority (65.7%) of children with intellectual disability were in the age group of 12-18 years and were males. This study finding was congruent with the findings of a quantitative cross-sectional study on oral health evaluation in special needs individuals, conducted in Passo Fundo, Brazil with a non-probability sample composed of 47 students with intellectual disability in which the predominant age group was 12-25 years (46.8%) and most patients were male (55.3%)^[7]. The findings of the present study showed that majority of subjects (54.3%) had poor oral hygiene and 45.7% of study participants had good oral hygiene practices. These findings are consistent with the findings of a cross-sectional study carried out among Brazilian children on factors associated with the Oral Health-Related Quality of Life in children with Intellectual Disabilities from specialized institutions which revealed that majority (64.10%) of subjects had poor oral hygiene practices^[8]. The present study findings revealed that majority, 71.4% of children with intellectual disability had poor oral health and 28.6% had good oral health. The results of this study correspond with the findings of an institution based cross-sectional study conducted among intellectually

disabled subjects aged 3-5 years residing in an institution at Sri Ganganagar, Rajasthan indicating that mean dmft for intellectually disabled children was 3.066 ± 2.84 ($p < 0.043$) which indicated poor oral health among intellectually disabled children^[9]. The present study gains strength from a similar study done to determine the effectiveness of oral hygiene education programme for intellectually impaired students attending a special school. The results found that effect was seen in moderately intellectually impaired individuals who showed a statistically significant improvement, (mean 1.48, $p < 0.05$) on plaque removal^[10].

5. Conclusion

The study aimed to determine the effectiveness of audio visual modelling on oral hygiene practices and oral health among children with intellectual disability in selected special schools in Kottayam district. The present study found that children with intellectual disability had poor oral hygiene practices and oral health and audio visual modelling as an educational intervention was found to be effective in improving the poor oral hygiene practices and oral health among children with intellectual disability. About a million new cases of poor oral hygiene are being diagnosed each year making it about 2000 children every day or one child each minute for a day. It is concluded that health education and proper brushing technique is very effective in improving oral health among children with intellectual disability.

6. Conflict of Interest

Not available

7. Financial Support

Not available

8. References

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