

Correlative Analysis of Reinforced Oral Health Teaching on Children with "Specific Learning Difficulties"

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Abstract

The outcome of oral health teaching to children with "special learning difficulties" who are going to a special school, by schoolteachers and pediatric dentists is compared and evaluated. The study included 224 students with "specific learning difficulties" who attend special schools. For all subjects, the standard oral hygiene index-simplified (OHI-S) was noted. Education of educators was done on audiovisual and spoken platforms. Three groups of students were created at random: Group A: Neither the school personnel nor the dental practitioners will provide any further dental health education after the preliminary oral health education. Group B: Trained instructors provided instruction in this group. Instructor emphasized the students for significance of oral health using the same brushing motion at 1-month, 3 months and 6 months. Group C: At intervals of 1-month, 3 months and 6 months, dental professionals taught these students about dental health and demonstrated proper brushing practices. A second evaluation was carried out 12 months after the intervention to complete to determine the oral health scores. Data analysis was performed using the one-way ANOVA analysis. All the groups show significant difference among the pre-intervention oral health score and the post-intervention scores. Group B showing a significant drop in oral health scores following intervention. Teachers can be effectively used to reinforce dental health instruction among students with "special learning difficulties."

1. Introduction

“Children who display a disorder in one or more fundamental psychological functions, such as understanding or using spoken or written language, are now referred to as learning handicapped. Between 3 and 15% of people have learning difficulties”.^[1]

As Mc Donald mentioned, “A specific learning disability (SLD) is a disorder in which one or more of the fundamental psychological functions involved”.^[1] 80% of people who are classified as having dyslexia are learning-disabled.^[2] It has been estimated that 2-18% of primary school students in India have dyslexia, 14% have dysgraphia, and 5.5% have dyscalculia.^[3]

Oral hygiene has significant biological, psychological, and social implications because it influences one's appearance and communication. Unfortunately, one of the most significant unmet medical requirements among disabled persons is dental health care.^[4] Plaque removal from teeth is a talent that can only be learned by someone with the ability to use a toothbrush and comprehension of the goals of this activity.^[5] As per the available data, people with learning disabilities are less likely to use screening services and have poorer oral health when compared to the general population.^[6] The inability of children with SLDs to comprehend and remember the difficulties that need to be overcome makes it difficult for them to maintain their oral hygiene.^[7]

The purpose of this study was to analyze the oral health teaching and the outcome of repetition of the same by school teachers and pediatric dentist for children with "special learning requirements".

2. Materials and Methods

224 students who were enrolled in a special education school and were between the ages of 6 to 15 in total took part in the study. All of the participants' parents gave their informed consent after receiving thorough information about the study's methodology. The Institutional Ethical Committee gave its approval for the conduct of this study. The “oral hygiene index-simplified (OHI-S)”^[8] were used to assess the oral health of all participants prior to any sort of intervention. Modified OHI-S used to record the data for primary dentition. Each child was examined by using a set of autoclaved diagnostic instruments.

For the purpose of reinforcing oral hygiene practices with the children, the teachers underwent training in dental health information utilizing verbal and audiovisual techniques. All of the children received oral health education through verbal and video means.

The preliminary examination was carried out by two skilled dental health professionals to gauge the students' level of oral health. On 15 patients, the investigators' OHI-S application skills were tested. The investigators were given a detailed explanation of the examination procedure and the criteria for index recording by a skilled public health dentist. The first investigator examined a total of 15 chosen students, noting their oral health score on a data recording form. The examination was finished in the same way by the other pediatric dentist. The inter examiner agreement, which was determined by comparing the oral hygiene scores provided by the two investigators for the same patients, was reported to be nearly similar. The pupils were allocated into three groups at random:

Group A: Following the initial oral health education, these students will not receive any dental health education.

Group B: Here, educated teachers reinforced the magnitude of oral health to students at 1-month, 3-month and 6 month intervals. Teachers exhibited tooth brushing techniques also.

Group C: At 1-month, 3-month and 6 month intervals, pediatric dentists provided oral health education. Pediatric dentists exhibited tooth brushing techniques also.

The same investigators performed the 12-month follow-up assessment for the status of oral health using the same protocol and data collection form. All students were instructed to dress in their everyday attire for the follow-up exam, which took place in an auditorium to eliminate researcher bias. The pupils were examined without any demarcation by the investigators. Oral hygiene status was evaluated by clinical examination among all the students. The change in oral hygiene status of all the pupils following dental health education was noted. The paired t-test was used to compare the mean OHI-S scores in each group between the initial and follow-up examinations. To evaluate the disparity in the mean OHI-S scores across all groups the one-way analysis

Journal of Coastal Life Medicine

of variance (ANOVA) was used. Here the statistical significance level was set at 0.05.

3. Results

Oral health score before oral hygiene instructions Examination for the Three Groups

The participants' mean pre intervention OHI-S score was 4.12 ± 0.86 (mean SD), indicate ailing oral health. It was no statically significant difference in the oral health of all the students including all groups, prior to oral hygiene education (OHI-S: $p > 0.502$, Table 1).

Baseline oral health score			
Group code	Boys (SD)	Girls (SD)	Boys and Girls combined (SD)
Group A	4.18 (0.9)	4.21 (0.83)	4.19 (0.90)
Group B	4.05 (0.58)	4.11 (1.08)	4.08 (0.84)
Group C	4.11 (0.57)	4.09 (0.93)	4.10 (0.85)
p-value	$p < 0.312$	$p < 0.498$	$p < 0.502$

SD: Standard deviation

Oral health Score comparison among all the Three Groups,

12 Months post Intervention

The sample's mean OHI-S attain after 12 months post intervention assessment was 3.26 ± 0.78 (mean SD), indicating that oral health was satisfactory. Group A had the highest OHI-S score (4.12 ± 0.96), indicating reduced oral health, followed by Group C ($3.84 \pm$

0.98), shows fair oral hygiene. B group had the lowest score (1.83 ± 0.42), shows superior oral cleanliness. The mean OHI-S score differed statistically significantly between the three groups of students ($p < 0.0001$, Table 2). Tukey's post hoc assessment shows a significant disparity among groups A and B, as well as among groups B and C, (Table 2).

Journal of Coastal Life Medicine

Table 2: Association of mean oral health score amongst groups, 12 months after subsequent to the intervention in the Group B and Group C.

Oral hygiene index-simplified			
Group code	Boys (SD)	Girls (SD)	Boys and Girls collective (SD)
Group A	4.06 (0.98)	4.16 (0.94)	4.12 (0.96)
Group B	1.87 (0.92)	1.71 (0.34)	1.83 (0.42)
Group C	3.54 (0.95)	4.16(0.94)	3.84 (0.98)
p-values	p < 0.0001	p < 0.0001	p < 0.0001
Tukey's post hoc	First group vs second group : p < 0.0001		
Test for boys and girls	First group vs third group : p < 0.749		
	Second group vs third group : p < 0.0001		

SD: Standard deviation

Oral health score of all groups, Before and after intervention

Follow-up examination results of all groups reveals a major difference in the mean OHI-S. Participants in

Group B improved their oral hygiene status more than other children of remaining two groups. In this group, the mean value of oral health score was reduced by 2.27 points in comparison to the baseline scores (Table 3).

Table 3: evaluation of oral health status among pre intervention and post intervention in all three groups

"Oral hygiene index-simplified"			
Group	Pre interference (SD)	Post interference (SD)	Statistical Conclusion
Group A	4.18 (0.9)	4.1 (0.96)	t = 3.012 df = 37 p < 0.012
Group B	4.08 (0.84)	1.83 (0.42)	t = 16.039 df = 39 p < 0.001

Journal of Coastal Life Medicine

Group C	4.1 (0.85)	3.84 (0.98)	t = 4.135 df = 41 p < 0.001
Overall	4.12 (0.84)	3.25 (1.40)	t = 9.992 df = 121 p < 0.001

SD: Standard deviation

4. Discussion

Children with “learning disabilities” may be the world's most underserved population, with disparities in the accessibility of health and outcomes [9] When compared to the general population, people with “learning disabilities” have reduced oral health.^[10]According to research, this population occasionally has greater caries rates than children with no disability.^[10]Furthermore, it was noted that populace with learning disabilities have poor oral hygiene and more periodontal difficulties compared the general population.^[12]The promotion of oral health is interdisciplinary and involves the local level, such as the parents, teachers, and local health care professionals.

India is an emerging nation. A nation with a growing population with a higher younger population percentage (as of 1980, 320 million, in 2011, 333.4 million and by 2021 is reached about 371.4 million). Considering that dental caries is the most common paediatric problem, there is a pressing need in order to shield our people from this issue. As the dentist population ratio is negative in rural places of India, dentists are not readily available in remote places, even for dental emergency services. The alternate routes to provide youngsters with dental health education could be accomplished by teachers. In terms of competence and utility, schoolteachers outperform dentists in educating students about dental health, according to the literature. The goal of the current experiment was to assess and contrast the efficiency of oral health promotion among children with "special

learning difficulties" when carried out by the dental team and schoolteachers.

The three groups' oral hygiene level had improved, according to the current study's follow-up exams. The fact that oral hygiene among participants in the group taught by the instructors has significantly improved shows that the teachers' repeated oral health instruction has resulted in the desired change in these students' oral hygiene status. The teachers' one-on-one interactions with the child may have indirectly inspired them to do better. The fact that the oral hygiene status of the other two groups did not differ from one another suggests that even infrequent dental health education provided by a dental professional may not result in a substantial shift in the students' oral hygiene behaviour when repeated by their teachers.

A teacher can also evaluate a student's performance and have an impact on them. The child who has best oral hygiene is already an inspiration for the youngster to practice better oral hygiene practices. Goel et al. ^[13] evaluated, there was a comparative improvement in oral hygiene knowledge after providing dental health education among students. There was almost similar outcome from various socioeconomic groups. The dental health education program was quite in raising the knowledge levels of the majority of students. As per the authors end results, single-lecture method seemed to be insufficient. Thus reinforcement of oral health education could be the effective way to get the sustainable change in the oral hygiene practices. Our results agree with the study's conclusion, which was presented earlier.

Journal of Coastal Life Medicine

The results of our study are in agreement with those of Shenoy and Sequeira^[14], who discovered that repeated oral health education talk, given at different intervals in the intervention schools, resulted in appreciable improvements. They found significant change in students overall understanding of oral health maintenance. Schools, where more number of dental health related events organized did better in oral health test than schools with less number of events. Contrary to the findings of the current investigation, a study by Chachra et al.^[15] indicated that members of social organizations and schoolteachers were both more effective at spreading oral health information indirectly than dentists were at doing so directly. These results might be explained by the various approaches to oral hygiene teaching used in their study, which substituted a pictorial story for the current study's visual brushing demonstration. A significant amount of research has been done over the past 40 years to establish a way to quantify the quality of life for people with compromised mental and physical health.^[16,17]

5. Conclusion

It is most definitely viable and more effective to regularly teach "special difficulties" children about oral health through teachers rather than through experts. In emergent countries like India, schoolteachers can play a magnificent role in oral health education. The continued help of public health authorities and health experts is required for the use of school teachers to effectively promote oral health in special schools for children with special problem.

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Journal of Coastal Life Medicine

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