

EFFECTIVENESS OF ORAL HEALTH EDUCATION IN IMPROVING ORAL HYGIENE STATUS AMONG MENTALLY CHALLENGED CHILDREN IN BANGALORE CITY

Jyoti Byakodi¹ and Pushpanjali K²

¹Department of Public Health Dentistry, Vasantdada Dental College and Hospital Kavalapur Sangli,

²Department of Public Health Dentistry, M S Ramaiah Dental College and Hospital Bangalore

ARTICLE INFO

Article History:

Received 15th June, 2019

Received in revised form 7th

July, 2019

Accepted 13th August, 2019

Published online 28th September, 2019

Key words:

Oral health, mentally challenged, oral hygiene, oral health education.

ABSTRACT

Aim: To evaluate effectiveness of oral health education program in improving oral hygiene status of mentally challenged children.

Methods: A field study was conducted among mentally challenged children attending special school in Bangalore city. 44 children of age between 3 to 15 yrs were enrolled in the study. Data was collected regarding socio demographic factors, knowledge, and attitude of parents towards oral health and children IQ level, oral hygiene practice. Oral health education was given to the teachers; parents using power point presentation, posters, flip charts followed by demonstration and supervised brushing after breakfast.

Clinical assessment of oral hygiene status at baseline and after 6 months was done using **Quigley and Hein's Plaque Index**, as Modified by Turesky et al.

Statistical Analysis: Paired t-test and ANOVA

Results: Mean difference 1.1328 in the plaque index with CI of 0.9537-1.3120 ($p < 0.0001$.)

Conclusion: The oral health education program for parents and teachers was effective in improving the oral hygiene status of the mentally challenged individuals.

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INTRODUCTION

One of the greatest challenges of the twenty first century is to facilitate smooth access to oral health care for all who need and want dental care. Differently abled are one section of the population who are one among people with special health care needs.

Differently abled is a wider term which includes all those children who suffer from malformations, deformities and other deficiencies - physical or mental which prevent their normal functioning. There are 21.9 million differently abled people in our country, which constitutes about 2.13 percent of the total population. 1.03 % visually impaired, 0.16% speech impaired, 0.12% hearing impaired, 0.59% movement impaired and 0.22% mentally disabled of the total national population.¹ As mentally challenged people are different from other disabled due to the lack of neuromuscular skills (characterized by limitation in both intelligence and adaptive skills).

A majority of published studies have reported that people with mental disabilities have poor oral hygiene, leading to two major oral disease i.e dental caries and gingival disease.^{1,2,9,11} Oral health of these children depends upon the knowledge, attitude and behaviour of care takers towards oral health. Studies have shown that supervised tooth brushing and health education to children, parents, and teacher was effective in

reducing plaque and gingivitis scores³. The main aim of the study is to evaluate the effectiveness of oral health education to parents, teachers in improving oral hygiene status of mentally challenged children. Objective was to develop health education material and generating and improve oral health knowledge and attitude of the disabled children, parents and school teachers by providing health education using different communication methods and medias. Which may lead to the adoption of favorable oral health behaviour that contribute to better oral health.

MATERIAL AND METHODS

A field study was conducted to see the effectiveness of oral health education in improving oral hygiene status of mentally challenged children attending Balajyoti school for disabled in Bangalore city. Ethical clearance was obtained from ethical committee for research of M. S. Ramaiah Dental College and Hospital Bangalore. Informed consent was taken from the parents or guardians. Permission to conduct the study was obtained from school Principal. Study period was 6 months (1st June 09 to 6th December 09) Convenient sampling technique for both school and subject selection. All the children diagnosed with mental retardation like Downs syndrome, autism, cerebral palsy were included in the study and extremely unco-operative children were excluded.

*Corresponding author: Jyoti Byakodi

Department of Public Health Dentistry, Vasantdada Dental College and Hospital Kavalapur Sangli,

METHODOLOGY

A special proforma was designed for recording data pertaining to:

- Socio-demographic factors of parents (education level, income)
- Knowledge and attitude of parents towards oral health at baseline and after 6 month
- Information regarding children (age, sex, IQ level, oral hygiene practice)
- Clinical findings (plaque index) at base line and after 6 months

Training and calibration of investigator for clinical examination of plaque index was done prior to conducting the study to check the intra-examiner reliability (Kappa coefficient value was 0.94)

Base line data collection

Prior to baseline data collection there was a rapport building session with subjects, parents and teachers, this led to free exchange of ideas and was beneficial in breaking the communication barriers with the parents and children. Parents knowledge and attitude towards oral health was assessed by 8 statements on different aspects and about importance of oral health using questionnaire at base line and after 6 month in the class room. Excepted answer was yes or no (Table 1)

Table 1 Assessment of knowledge and attitude of parents towards oral health

Knowledge	Attitude
1. Eating sweet food causes tooth decay	1. Dental problems can be serious.
2. Microbial plaque causes cavities and gum disease	2. Teeth of your child are not important as his general health
3. Regular tooth brushing helps in preventing dental caries and gum disease.	3. Dental problems can affect general health.
4. It is beneficial to visit a dentist for regular check up	4. Milk teeth are not important because they fall out soon.

The clinical examination of the subjects was conducted in the class rooms under natural light, with the subjects seated on a chair, or a wheel chair with mouth mirror using erythrosine plaque disclosing agent to disclose the presence of plaque according to the Quigley and Hein's Plaque Index, as Modified by Turesky et al.

Intervention – Oral Health Education Sessions

Every month parents and teachers received Oral health education lectures using power point presentation, the objective of each lecture was to give comprehensive oral health information (content table 4). Lecture was followed by group discussion, each group consisted of 5 to 6 members, informative dental health posters and flip chart were used that summarized lecture to achieve oral health. People who were not able to follow lectures and group discussion were approached individually with special attention. Children received only oral hygiene instruction along with parents and teacher.

First lecture: Included description about tooth anatomy and different dentition, importance of each type of dentition {milk and permanent dentition} and benefits of healthy oral hygiene practices. Emphasis was given to brush twice daily and regular dental visits with more importance to preventive care over therapeutic care like fluorides and fissure sealants.

Second lecture-Describing the role of plaque and sugar in oral health. Dental plaque which increases the risk of dental caries and gingivitis. They were explained about healthy food and unhealthy food.

Third lecture - About common diseases of oral cavity like dental caries, periodontal diseases, traumatic injuries and oral mucosal lesions. Training on early identification (signs and symptoms) of oral diseases.

Same lectures were repeated for next three month.

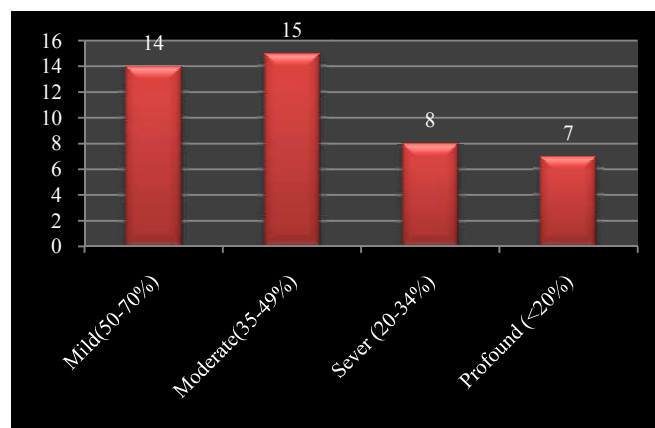
Demonstration of brushing technique

Fones technique which was found to be easy to follow was thought. Children were grouped according to their learning abilities and allowed them to practice first with model and brush and then supervised tooth brushing sessions were conducted in the classrooms after breakfast.

Statistical Analysis: The data obtained was compiled, tabulated and subjected to statistical analysis. Paired t-test was used to find significant difference between plaque index at baseline and after 6 month and ANOVA was used to mean difference between groups.

RESULT

Total number of children in school was 48, in which 4 were excluded. At the baseline of the study we had 44 children and at the end of the study 39 children had remained 5 of them missed follow up. Males 26 (59.1%) and females 18 (40.9%). Children were classified into four groups (mild, moderate, severe and profound mentally retardation) depending on their IQ level recorded in the institutional registers (Graph 1).



Graph 1 Distribution of subjects according to IQ LEVEL

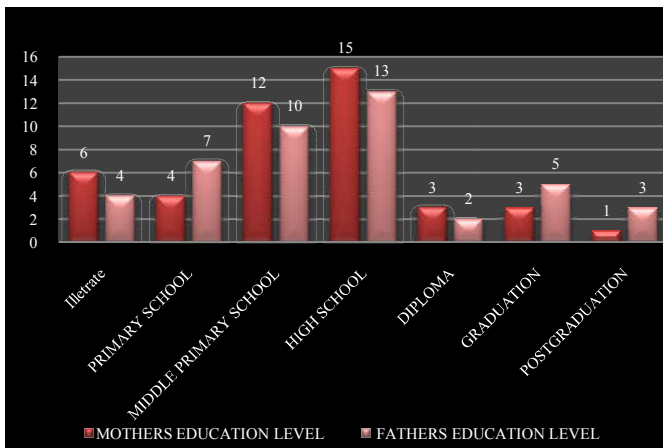
Oral hygiene practice of children at base line (table no 2).

Table 2 Oral hygiene practice

Variable	Frequency	Percentage	
Daily tooth brushing	YES (regular)	40	90.9
	NO (irregular)	4	9.1
Brushed by	Self,	17	38.7
	Supervised by other	4	9.09
	By mother/father	23	52.3
	Finger and powder	1	2.3
Material used	Brush and paste	39	88.6
	Other aids used	-	-
Frequency of brushing	Once	38	86.4
	Twice	2	4.5
	More than twice	-	-
Method of brushing	Circular	4	9.1
	Vertical	9	20.43
	Horizontal	31	70.37
Difficulty in	Yes	15	34.0

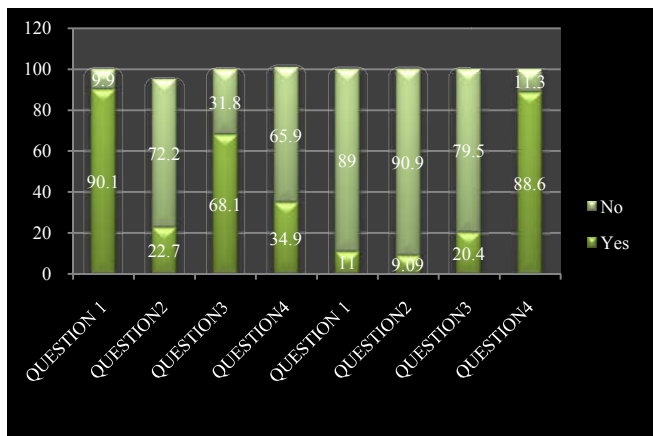
spitting the tooth paste	No	29	65.9
Tongue cleaning after brushing	Yes	5	11.36
	No	39	88.63
Mouth rinsing with water after meals	Yes	2	4.54
	No	42	95.45
Visit to dentist	Yes	5	11.4
	No	39	88.6

Education level of parents was classified according to Kuppa Swamy scale for urban population majority of the parents had completed their high school (graph no 2).



Graph 2 Distribution of mothers and fathers according to education levels.

There was significant difference between Pre and Post assessment of knowledge and attitude of parent towards oral health (graph 3 and 4). There was statistical significant difference in plaque index at base line 2.2387 mean (SD 0.55199) and 6 month 1.1059 mean (SD 0.37181) (table no 3). Mean difference of 1.1328 in the plaque index with 95% confident interval (0.9537-1.3120 p < 0.0001.) There was no significant difference between plaque index in between groups and with in group at base and after 6 months (p>0.340 and p>0.276).



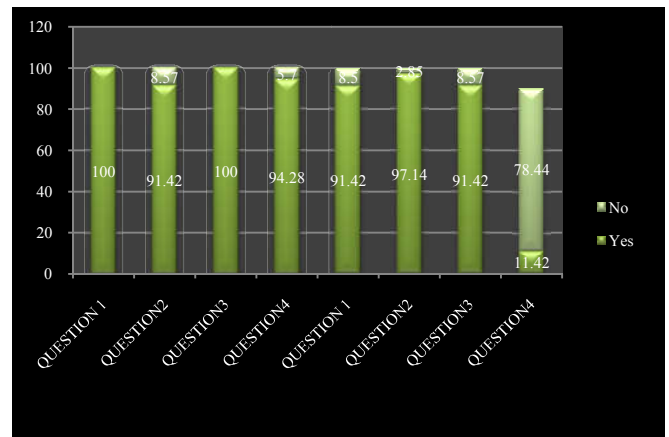
Graph 3 Pre intervention assessment of knowledge and attitude of parents towards oral health

Table 3 Paired sample statistics

Plaque index	Mean	N	Std. Deviation	Std. Error Mean
Plaque index at baseline	2.2387	39	0.55199	0.08839
After 6 months	1.1059	39	0.37181	0.05954

Table 4 Oral health education lecture

Lecture	Content
First and fourth lecture	Description about tooth anatomy and different dentition, importance of each type of dentition {milk and permanent dentition} Benefits of healthy oral hygiene practices. Emphasis was given to brush twice daily and regular dental visits with more importance to preventive care over therapeutic care like fluorides and fissure sealants.
Second and fifth lecture	Describing the role of plaque and sugar in oral health. Dental plaque which increases the risk of dental caries and gingivitis. They were explained about healthy food and unhealthy food.
Third and sixth lecture	About common diseases of oral cavity like dental caries, periodontal diseases, traumatic injuries and oral mucosal lesions. Training on early identification (signs and symptoms) of oral diseases.



Graph 4 Post intervention assessment of knowledge and attitude of parents towards oral health

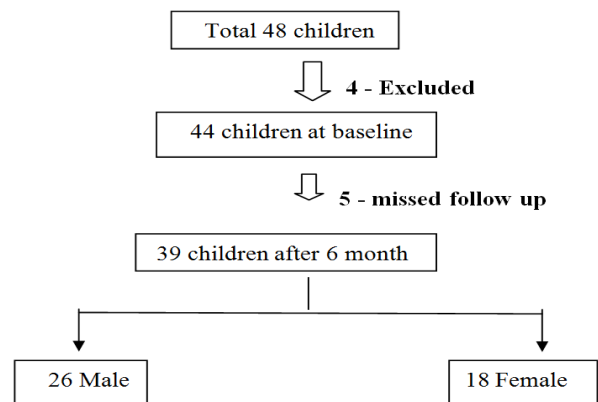


Fig 1



Figure 2



Figure 3

DISCUSSION

Oral diseases of mentally challenged children do not differ from normal children where as oral health status of the mentally challenged has been reported to be poor. In this perspective a comprehensive oral health education program was planned for parents, teachers and children and the effectiveness of the program was evaluated in children.

Turesky et.al modified Quigley G and Hein Plaque index was selected to record plaque, since this was the suitable index for the present study.⁴ Teachers were involved in the health education sessions and were encouraged to take an active role in motivating the children. Parental linked factor, such as education, oral health knowledge, attitude and behavior may be consider to shape the oral health of their children⁵. Assessment of their baseline knowledge, attitude, education level of parents and Oral hygiene practice of the children helped us to know their present status and in planning health education sessions. After analyzing baseline data, 98% of children brushed only once a day and 38.7% children brushed without assistance. So parents were motivated to supervise and encourage their children to brush twice daily However our findings were much lower compared to a study conducted in Belgium by Gizani et al, which reported that 91% of the mentally challenged did not receive any help during brushing.⁶ 88% of them did not visit dentist even once. This may be due to barriers to access dental care⁷. Only 9.09% of them brushed under the supervision, 34% had difficulty in spitting may be due to uncontrolled neuromuscular coordination. Hence herbal tooth paste was prescribed (no harm even they swallow). During discussion session we found that, 25% of the parents had problem with continuous mouth opening or inadequate mouth opening of their children during brushing, Hence acrylic finger guards were fabricated, which prevented finger injury of parents fig (2). Few children had problem in holding brush; so brush was modified in width and thickness with acrylic material fig (3). During school break time we noticed that children were having unhealthy food like chips, chocolates, cake and bakery items. So school break time policy was made to change dietary habits from unhealthy to healthy. A statistically significant improvement in the means of score at base line 2.2387 and 1.1059 after 6 month. which was similar to study done by Maddi Shyama et.al 2003³

There was no statistically significant difference between groups at baseline and after 6 months. These findings are in contrast with the findings made by Tesini 1982, and S Kumar 2009.²

Limitations of the study

1. A limitation in the study design was that the same examiner conducted both the baseline and the final clinical assessments and was also involved with the intervention.

2. No control group was used in this study for ethical reasons.

CONCLUSIONS AND RECOMMENDATIONS

The results of the present study showed that oral health education for parents and teachers and oral hygiene instructions for children was

Effective in improving the oral hygiene status of the mentally challenged children and knowledge and attitude of parents towards oral health

With a small investment of time dental personnel and school teachers together can provide a valuable service by teaching good oral hygiene behaviors to people with disabilities. This kind of intervention can be easily applied to any disabled population.

Recommendation-For caretakers (parents) and teachers

1. Training on oral health and hygiene.
2. Training on early identification (signs and symptoms) of oral diseases for referral.
3. Prevention of oro-facial trauma and first aid.
4. Information on available Dental health care facilities in the vicinity.

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