

ORIGINAL ARTICLE

Assessment of the Effectiveness of Video Assisted Teaching Program on Knowledge and Practice Regarding Oral Hygiene Among Preschool Children at a Selected Primary School in Vellore

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Abstract

Background and objective: Dental caries is one of the most common health problems affecting children. Dental exam is recommended in the school health program at least once a year. Nurses take part in teaching parents, kids, and teachers about oral hygiene. However, it has never been demonstrated that sloppy teeth brushing can stop dental cavities. The effectiveness of plaque removal depends on the type of toothbrush used. This study aimed to assess the knowledge and practice regarding oral hygiene among preschool children pre and post intervention of a video-assisted program regarding oral hygiene.

Methodology: A quantitative research approach was adopted for this study. Quasi-experimental design was used in the study to assess the effectiveness of video-assisted teaching program on knowledge and practice regarding oral hygiene among preschool children at a selected school in Vellore. The study was conducted including 60 pre-school children from pre-K.G, L.K.G, U.K.G children from Susan's kinder garden school, Vellore. The researcher selected subjects who fulfilled the inclusion criteria using random sampling. The subjects were interviewed using a semi structured questionnaire to assess the knowledge and an observational checklist to assess the practice regarding oral hygiene and Fones brushing technique. Post test was conducted after one week.

Results: In the experimental group, the mean pre-test score was 7.3 with a standard deviation of 2.8, while the mean post-test score was 15.7 with a standard deviation of 2.12 in the experimental group. The average disparity was 8.4. At the 0.05 level, the obtained "t" value of 14.8 was highly significant. The estimated t value was the same as the mean pretest practice score of 3.4 with SD 1.4 and the post-test practice score of 8.3 with SD 2.9, the calculated t value was 17.5 which was highly significant at $p < 0.05$ level. There was a significant difference between the mean pre-and post-test levels of knowledge and practice among preschool children in the experimental group. Thus the video assisted teaching program was effective in improving the levels of knowledge and practice among preschool children in the experimental group.

Conclusion: The brushing methods used were least efficient, according to this study. Training in oral hygiene should be based on a child's motor skill level and developmental stage. It is crucial to consider variations in tooth-brushing abilities, especially in younger children. Each child needs intense customized training to achieve the technique's desired effects.

Keywords: Periodontal disease, Gingivitis, Oral health, Oral hygiene video assisted teaching program, Dental plaque

Introduction

Dental and periodontal conditions have a significant negative impact on social, economic, and financial factors globally¹ Dental plaque, the root of tooth decay and periodontal disease, is still unknown despite the large range of preventive interventions currently available. The most reliable method to maintain good oral hygiene, prevent tooth decay, and improve gingival health is mechanically removing dental plaque. Out of all the strategies for maintaining oral hygiene, brushing is the most popular. This method can be used to prevent tooth decay, reduce gingivitis, and remove plaque. However, it has never been proven that careless tooth brushing can effectively prevent dental cavities. The effectiveness of plaque removal is influenced by the toothbrush used.

The World Health Organization and the World Dental Federation mentions cleaning your teeth as one of the best ways to avoid tooth decay. When working with schools and school instructors, widespread implementation of affordable treatments like teeth brushing in schools is possible.² For most kids, school serves as a second home, and educating school teachers is a tried-and-tested method for putting pre-school level interventions into practice. Before conducting any survey, it is advisable to educate and train the mother or at least a family member to look for carious lesions or early indicators of demineralization. Teachers can be crucial in encouraging preventive measures, putting them into action, emphasizing healthy eating and dental hygiene routines, and highlighting the value of baby teeth.³ By supporting oral health, it is possible to lessen the burden of oral disease, while maintaining oral health and quality of life. Because dental health has an impact on overall health and quality of life, it is also an essential part of general health promotion.

In countries like India, a small fraction of children may not have access to a toothbrush, and many continue to use antiquated cleaning techniques like salt and oil, locally produced powder made from coal ash, etc. For ten years, the main objective of oral health policy of WHO and Government of India (GOI) Project by 2019, was to attain universal oral health. Reducing dental caries, and

the incidence and prevalence of periodontal diseases, are the main objectives of oral health initiatives. The state of dental problems is worsening daily. As a developing country, India faces numerous difficulties in providing adequate oral health measures and in addressing oral health needs.⁴ The bulk of people in India, who make up 40% of the population reside in rural areas. Rural communities are unable to access all dental health facilities due to the concentration of healthcare facilities in urban areas, lack of financial resources, and lack of public dental health facilities. Consequently, a primary prevention strategy that emphasizes oral health is essential for this demographic.

Oral health education courses conducted in early childhood settings with the use of video programs have the additional advantage of instructing everyone, regardless of socioeconomic position on how to perform primary prevention.⁵ The effectiveness of video teaching program regarding dental hygiene among preschoolers piqued the researcher's interest. Dental cavities also have a detrimental impact on quality of life since they can interfere with chewing, speaking, communicating, sleeping, and socializing.⁶ Given the background the study aimed to assess the knowledge and practice regarding oral hygiene among preschool children pre and post-intervention of a video-assisted program regarding oral hygiene

Materials and Methods

A quantitative research approach was adopted for this study. Quasi -experimental design was used in the study to assess the effectiveness of video assisted teaching program on knowledge and practice regarding oral hygiene among preschool children at a selected school in Vellore. The instrument selected for research should be the vehicle that would best obtain data for drawing conclusions. The researcher developed the tool after an extensive review of literature and with expert opinion. A semi-structured questionnaire and a check list were developed to assess the effectiveness of video assisted teaching program on knowledge and practice regarding oral hygiene among preschool children.

Data collection tool

The tool consisted of two parts:

Part I: Data collection tool consisted of three sections:

- Section A: Assessment of demographic variables
- Section B: Assessment of level of knowledge regarding oral hygiene using a semi structured questionnaire
- Section C: Assessment of practice regarding oral hygiene using a checklist

Section A: Assessment of demographic variables

Demographic variables consisted of age, gender, class, religion, place of residence, father's occupation and education, mother's education, family monthly income, water supply, source of information regarding oral hygiene and practice, family status, and history of dental caries.

Section B: Assessment of knowledge regarding oral hygiene

A semi structured interview schedule was developed by the researcher to assess the level of knowledge regarding oral hygiene. It comprised of 20 dichotomous questions with a maximum score of 20 and a minimum score of 0. Each correct answer was scored one and wrong answer was scored zero.

Score	Percentage of scores	Level of knowledge
≤10	0-50%	Inadequate knowledge
11-15	51-75%	Moderately adequate knowledge
≥ 16	76-100%	Adequate knowledge

Section C: Assessment of practice regarding oral hygiene

It consisted of 10 questions regarding oral hygiene. The checklist included two responses. For 'Yes', a score of one was awarded and for 'No', zero score was given.

Score	Percentage of scores	Level of practice
≤5	0-50%	Inadequate
6-7	60-70%	Moderately adequate
≥8	70-100%	Adequate

Part II: Intervention tool – Video-assisted teaching

To teach about oral hygiene, a video teaching program was created. The expert opinion was taken into consideration while creating the teaching video. The teaching strategy

chosen, the clarity of the language, the topics addressed in the knowledge assessment, and the applicability of the teaching aid were the primary considerations while creating the video assisted teaching.

To improve the school children's understanding of dental hygiene, a video lesson was created and submitted to experts for feedback. Video assisted teaching aimed to help the preschool children to gain knowledge and to develop positive practice towards Fones brushing technique. It comprised of

- Definition of Fones brushing technique
- Importance of oral hygiene
- Features of healthy teeth
- Demonstration on brushing technique

Regular activities on main study

Regular activities like assessing the pretest levels of knowledge and practice regarding oral hygiene and conducting video assisted teaching program. On the 8th day of the study, assessing the post-test levels of knowledge and practice regarding oral hygiene and Fones brushing technique.

Results

Organization of the data

The data collected were edited, tabulated and interpreted and the findings obtained were presented in the form of tables and diagrams as described below.

Section I

A. Frequency and percentage distribution of demographic variables of preschool children in the experimental and control groups.

Section II

A. Frequency and percentage description of pre-test levels of knowledge and practice regarding oral hygiene among preschool children in the experimental and control groups.

B. Frequency and percentage description of post-test levels of knowledge and practice regarding oral hygiene among preschool children in the experimental and control groups.

C. Comparison between pre-test and post-test levels of knowledge and practice regarding oral hygiene among preschool children in the experimental and control groups.

Section III

A. Assessment of effectiveness of a video teaching program regarding oral hygiene among the pre-school children.

B. Correlation between the levels of knowledge and practice regarding oral hygiene among preschool children in the experimental and control groups.

Section IV

A. Association between pretest level of knowledge regarding oral hygiene among preschool children with the selected demographic variables in experimental and control groups.

B. Association between pretest level of practice regarding oral hygiene among preschool children with the selected demographic variables in experimental and control groups.

Table 1: Description of demographic variables of pre-school children in the experimental and control groups

Score	Demographic variables	Experimental		Control	
1. Age of the child					
	3 years	4	13.3	6	20.0
	4 years	11	36.7	7	23.3
	5 years	15	50.0	17	56.7
2. Gender of the child					
	Male	15	50	14	46.7
	Female	15	50	16	53.3
3. Class in which studying					
	Pre K.G	3	10	0	0
	L.K.G	16	53.3	18	60
	U.K.G.	11	36.7	12	40
4. Religion					
	Hindu	24	80	22	73.33
	Muslim	2	6.7	5	16.67
	Christian	4	13.3	3	10
5. Education of the father					
	No primary education	5	16.67	9	30
	Primary education	10	33.3	5	16.67
	Graduate	15	50.0	16	53.33

6. Education of the mother					
	No primary education	0	0	4	13.33
	Primary education	14	46.7	8	26.67
	Graduate	16	53.3	18	60
7. Occupation of the father					
	Professional	22	73.33	20	66.67
	Trained worker	8	26.7	8	26.67
	Untrained worker	0	0.0	2	6.667
8. Monthly income					
	<15000	5	16.67	3	10
	15001-25000	9	30	10	33.33
	Above 25001	16	53.33	17	56.67
9. Place of resident					
	Rural	8	26.67	4	13.33
	Urban	22	73.33	26	86.67
10. Source of water supply					
	Well water	8	26.67	7	23.33
	Tape water	19	63.33	18	60
	Ground water	3	10	5	16.67
11. Type of family					
	Nuclear family	20	66.67	14	46.67
	Joint family	10	33.33	16	53.33
	Extended family	0	0	0	0
12. Sources of knowledge on oral hygiene					
	Mass media	16	53.33	13	43.33
	Friends and relatives	6	20	0	0
	Health professionals	8	26.67	17	56.67
13. Dental caries in child					
	Yes	2	6.667	4	13.33
	No	28	93.33	26	86.67

Table 2: Comparison of pre-and post-test levels of knowledge among preschool children between the experimental and control groups

Level of knowledge	Experimental group				Control group			
	Pre-test		Post-test		Pre-test		Post-test	
	F	%	F	%	F	%	F	%
Inadequate	24	80	0	0	25	83.3	23	76.67
Moderate	6	20	9	30	5	16.7	7	23.33
Adequate	0	0	21	70	0	0	0	0

The pre-test levels of knowledge in the experimental group shows that 80% of preschool children had inadequate knowledge, 20% had moderate knowledge, while in the post-test, 70% of preschool children had adequate knowledge, 30% had moderate knowledge and none of them had inadequate knowledge.

In the control group, during the pre-test, 83.3% of preschool children had inadequate knowledge, 16.7% had moderate knowledge, while in the post-test, 76.6% of preschool children had inadequate knowledge, 23.3% had moderate knowledge and none of them had adequate knowledge (Table 2).

This shows that there was a significant difference in pre-test and post-test levels of knowledge in the experimental group after the intervention with video assisted teaching program.

Table 3: Comparison of pre-and post-test levels of practice among preschool children between the experimental and control groups

Level of practice	Experimental group				Control group			
	Pre-test		Post-test		Pre-test		Post-test	
	F	%	F	%	F	%	F	%
In-adequate	26	86.7	0	0	16	53.3	8	26.67
Moderate	4	13.3	7	23.3	14	46.7	22	73.33
Adequate	0	0	23	76.7	0	0	0	0

The pre-test levels of practice in the experimental group shows that 86.7% of preschool children reported inadequate practice, 13.3% reported moderate practice, while in the post-test, 76.7% of preschool children reported adequate practice, 23.3% reported moderate practice and none reported inadequate practice. In control group, 46.7% of preschool children showed moderate adequate practice, 53.3% showed inadequate practice and none showed adequate practice. Whereas in post-test, 26.6% of preschool children showed inadequate practice, 73.3% showed moderate practice and none of them showed adequate practice (Table 3).

This shows that there was a significant difference between pre-test and post-test levels of practice among experimental group.

Table 4 reveals that in experimental group, the mean pre-test score was 7.3 with SD ± 2.8 and the mean post test score was 15.7 with the standard deviation 2.12. The mean difference was 8.4. The obtained 't' value 14.8 was highly significant at $p < 0.05$ level. Similarly, the mean pretest practice score was 3.4 ± 1.4 and the post-test practice score was 8.2 with SD 2.9. The calculated t value was 17.5 which is highly significant at $p < 0.05$ level. There was a significant difference between the mean pre-and post-test levels of knowledge and practice among preschool children in the experimental group. Hence it can be derived that the video assisted teaching program was effective in improving the levels of knowledge and practice among preschool children; thus hypothesis one was accepted.

Table 5 reveals that in control group, the mean pre-test knowledge score was 7.4 with standard deviation 2.5 and the mean post test score was 8.2 with the standard deviation 2.4. The mean difference was 0.4. The obtained 't' value was 2.8 which was significant at $p < 0.05$ level. Similarly, the mean pretest practice score was 5.0 with SD 1.3 and the post-test practice score was 5.6 with SD 1.4. The calculated t value was 6.26 which is highly significant at $p < 0.05$ level. There was slight change in the practice and knowledge scores, but this was less when compared to experimental group.

Table 4: Comparison between mean, standard deviation values of pre-test and post-test levels of knowledge and practice among preschool children in the experimental group

Sl. No.	Area	Experimental group				Mean difference	't'-value
		Pre-test		Post-test			
		Mean	SD	Mean	SD		
1	Level of knowledge	7.3	2.8	15.7	2.1	8.4	14.8*
2	Level of practice	3.4	1.4	8.2	2.9	4.8	17.5*

* Significant at $p < 0.05$

Table 5: Comparison between mean, standard deviation values of pretest and post-test levels of knowledge and practice among preschool children in control group

Sl. No	Area	Control group				Mean difference	't'-value
		Pre-test		Post-test			
		Mean	SD	Mean	SD		
1	Level of knowledge	7.4	2.5	8.2	2.4	0.4	2.8*
2	Level of practice	5.0	1.3	5.6	1.4	0.6	6.26*

* Significant at $p < 0.05$

Discussion

The goal of the present quasi-experiment was to determine how well the preschool students at a selected school in Vellore responded to video assisted education curriculum on oral hygiene. Sixty preschoolers were chosen using a straightforward random sampling procedure, of which 30 were allocated to the experimental group and 30 to the control group. Using a structured interview questionnaire and a check list, preschoolers' knowledge and practice of oral hygiene were evaluated. Only the experimental group received a 10-15 minute video assisted education program. The post test was administered seven days after the pre-test utilizing the same knowledge tool and check list for data collection.

During the pre-test, 80% of preschool children showed inadequate knowledge, 20% had moderate knowledge in the experimental group, While in post-test, 70% of preschool children had adequate knowledge, 30% had moderate knowledge and none showed inadequate knowledge. In the control group, during the pre-test, 83.3% of preschool children had inadequate knowledge, 16.7% had moderate knowledge. Whereas in post-test, 76.6% of preschool children had inadequate knowledge,

23.3% had moderate knowledge and none showed adequate knowledge.

Similarly in the pre-test practice levels, 86.7% of preschool children reported inadequate practice, 13.3% reported moderate practice in the experimental group. Whereas in post-test, 76.7% of preschool children reported adequate practice, 23.3% reported moderate practice and none reported inadequate practice.

In control group, 46.7% of preschool children reported inadequate practice, 53.3% reported moderate practice and none reported adequate practice. In the post test levels, 26.6% of preschool children reported inadequate practice, 73.3% reported moderate practice and none reported adequate practice.

This shows that there was a significant improvement in post-test levels of knowledge and practice among experimental group after the intervention of video assisted teaching program.

In the experimental group, the mean pre-test score was 7.3 with $SD \pm 2.7$ and the mean post test score was 15.7 with a standard deviation 2.12. The mean difference was 8.4. The obtained 't' value 8.4 was highly significant at

$p < 0.05$ level. Similarly, the mean pretest practice score was 3.4 ± 1.3 and the post-test practice score was 8.2 with SD 1.3. The calculated t value was 17.5 which is highly significant at $p < 0.05$ level. Statistical analysis showed that there was a significant difference between mean pre-test knowledge scores and posttest knowledge scores and calculated t value was higher than tabulated value depicting that the structured teaching program was an effective strategy in enhancing knowledge of high school children regarding fluorosis. The correlation coefficient was calculated between the knowledge and practice scores by using Karl Pearson's formula. Results revealed that no significant correlation existed between the pretest and post-test levels of knowledge and practice in both experimental and control groups.

From the findings, a significant association was found between post-test levels of knowledge and demographic variables like sources of water supply, history of dental caries. These findings can be supported by those of Vivek Nehra *et al.* (2020) who conducted a study on the effectiveness of planned teaching program on knowledge regarding dental fluorosis. They reported a significant association between demographic variables like place of residence and source of previous knowledge of respondents and the pre-and post-test knowledge scores among parents of primary school children.

No significant association was found between pre-test levels of knowledge and practice and the selected demographic variables of primary school children.

Conclusion

The video assisted teaching program has a vital role in improving the knowledge and practice of the preschool children regarding oral hygiene. Since school education is an integral part of medical and dental services, teachers can play an important role in health educational programs, making the children an important channel

for disseminating the health information to the families and the community. The student community needs to be strengthened with the treasure of knowledge, especially regarding health related issues. In this study, it was intended to assess the effectiveness of video assisted teaching program regarding knowledge and practice on oral hygiene among preschoolers at Susan kinder garden & primary school, Vellore District. The report of the study can have a significant effect in improving the knowledge on oral hygiene among preschool children.

Conflict of interest

Nil

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