



Effectiveness of video assisted teaching on dental hygiene among primary school children

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Abstract

Dental Problems are the major problem in many Countries, especially in developing Countries. The Philippines have the worst Decayed, missing and filled teeth. About 90% of their citizens are suffering from tooth decay. India and Australia ranked second and third in the list. Caries is the most prevalent and chronic oral disease specially seen in childhood age. The main objectives of the study is to assess the effectiveness of video assisted teaching on Dental Hygiene Among Primary school children in selected Primary schools, Guwahati. Quantitative research approach was used for this study. The research design was pre-experimental research design. The sample comprised of 50 primary school children. The school children were selected by purposive sampling technique. The study was carried out in Betkuchi High School in Guwahati, Assam. The data collection was done between 12-10-2023 to 10-11-2023. Formal written permission was obtained from the authorities to conduct the study. Data was collected by administering a self-administered knowledge questionnaire. The data was analyzed by using inferential statistics. Karl Pearson correlation co-efficient test was used to find the association between the pre-test level of knowledge with selected socio-demographic variables. The results of the study shown that pre-test level of knowledge were 47(94%) primary school children had inadequate knowledge, followed by 03 (6%) had moderately adequate knowledge and after intervention results of the study shown that post-test level of knowledge 40 (89%) primary school children had adequate knowledge, followed by 10(20%) had moderately adequate knowledge. The overall mean knowledge score of pre-test was 11.32 and post-test was 22.50 and mean difference was 11.180. The obtained 't' value 33.1076 is greater than the table value at 0.05 level of significance. It shows that there was significant difference between pre-test and post-test knowledge scores of school children regarding dental hygiene. Thus the research hypothesis is accepted. The significant association between the pre-test level of knowledge with selected socio-demographic variables like age ($\chi^2=1.754$), gender ($\chi^2=0.086$), religion ($\chi^2=0.187$), educational qualification (constant), type of family ($\chi^2=0.285$), place of residence ($\chi^2=0.891$), number of brushing in a day ($\chi^2=0.114$), duration of brushing ($\chi^2=0.190$), source of information ($\chi^2=1.943$), vany dental caries ($\chi^2=1.579$) were not significant at 0.05 level. Thus it can be interpreted that there is no significant association between the pre-test level of knowledge with the selected socio-demographic variables. Thus, the research hypothesis is rejected. The findings of this study support the need for conducting an awareness on dental hygiene among primary school children. The study proved that majority of the students had imparted adequate knowledge on dental hygiene.

Keywords: Knowledge, primary school children, dental hygiene, primary schools, video assisted teaching

Introduction

Children are the most precious gift who is considered to be a resource for future. Healthy children of today will be a healthy children's of tomorrow. Healthy children are more likely to attend school and are better able to learn. Nowadays, children are more prone to get any diseases which can interrupt with their growth and development. Among them, the most common is Dental problems. Due to the ignorance, lack of knowledge of the parents and children regarding personal hygiene, most of the children are suffering from dental caries due to poor dental care. School is one of the social institutions where the students learn many things that help him grow into a person with

intellectual abilities, positive attitude, matured behavior and a responsible citizen. It is also a perfect setting for children to learn about personal hygiene including maintaining proper oral hygiene. School are organized spaces purposed for teaching and learning, where teachers teach and students learn.

Teachers play a key role in effective oral health promoting schools. They influence many of their pupils because they spend most of their time together in school. School teachers can provide the necessary skills about oral health care to children and also help in the early detection of oral diseases. Studies have shown that teachers can effectively deliver oral health education in schools [1]. At this school age, their

habits are formed. Hence the role of teachers during these developmental stages of the child is critical.

Children are more prone to tooth decay because of their predispositions to foods with high sugar content, poor oral hygiene, and in some cases extended orthodontic treatment with fixed braces [2]. According to Government statistics, Dental caries is a prevalent concern in India, affecting over 70% of school children and more than 90% of adults suffering from periodontal disease [2].

Oral health education helps to develop desirable dental health attitude and habits. It teaches reliable dental health information to people and helps to maintain oral hygiene [2]. Poor dental health can lead to infection, disease or other teeth problems. Poor dental hygiene allows the accumulation of bacteria that cause dental caries. Gingivitis and periodontitis which can eventually lead to loss of teeth. Untreated tooth decay can lead to abscess (a severe infection) under the gums which can spread to other parts of the body and have serious and fatal [3].

The World Global Health Status Report (2022) reported that oral diseases affect close to 3.5 billion people worldwide and about 514 million children suffer from caries of primary teeth [4].

A recent national study by KANTAR IMRB for Colgate Palmolive (India) Limited (2019) revealed that at least 8 out of 10 children in India suffer from oral health issues. High incidence of dental health issues in children was recorded across India, the percentage in the 4 zones were: East India (89%), West India (88%), North India (85%), South India (64%) [5].

Dr. Aravind Sunderavel Kumaravel Kangavelu (2020) conducted a study regarding Oral Hygiene practices and knowledge among children of age 10-13 years in private school Chennai, South India. A cross sectional study was done by randomly selected students from class v to vii standards. Data was collected using a pre designed questionnaire. Out of 210 students, only around 1/3rd of the students used brush and toothpaste, 58.6% students brushed twice a day. The association between the frequency of brushing and the age groups was statistically significant. The study revealed that the oral practices and Knowledge was better in 10-11 years than the 12-13 years and better in girls than in boys [6].

Gitumoni Konwar, Anamita Borah, Angeline (2019) conducted a descriptive study to assess the knowledge of oral hygiene among middle school Students in selected school of Ranchi, Jharkhand. 100 samples were selected by purposive sampling technique. Quantitative research approach was adopted and the research design implies descriptive research design. The data was collected by questionnaire which were divided into 2 sections (sociodemographic variables, knowledge on oral hygiene). The data were completed and analyzed in terms of percentage and frequency distribution. The findings of the study reveals that majority of students 53% (n=100) had an average level of knowledge regarding oral hygiene, it includes that middle school students have moderate level of knowledge regarding oral hygiene. The findings reveals that there is significant association except "Resident" between age, gender, religion, family size, socio economic status. The researcher concluded that majority of students were having average knowledge on oral hygiene and there was no

significant association found between the sociodemographic variables [7].

Strong oral care helps to set good dental habits as the child grows whereas poor oral care can lead to infection, disease, or other tooth problems.

Problem statement

"A study to assess the effectiveness of video assisted teaching on dental hygiene among primary school children in selected Primary School at Guwahati"

Objectives of the study

1. To assess the knowledge regarding Dental Hygiene among primary school children.
2. To evaluate the effectiveness of Video Assisted teaching on Dental Hygiene among Primary school children by comparing pre-test and post-test knowledge score.
3. To find out the association between pre-test level of knowledge with selected socio-emo graphic variables.

Materials and Methods

The study was used Quantitative research approach. The research design was adopted pre-experimental research design. The sample comprised of 50 primary school children. The primary school children were selected by purposive sampling technique. The study was carried out in Betkuchi High School in Guwahati, Assam. Pilot study was conducted from 18th to 22nd September' 2023, it was initiated by using multiple choice questions and was analyzed statistically. Total 5 samples were selected for pilot study. All 5 samples were shown video regarding dental hygiene followed by questionnaire for knowledge. The average time consumed by each sample for answering the question was 30 minutes. And found feasible for further study regarding dental hygiene among primary school students. The reliability of the tool was established by using "Karl Pearson's correlation coefficient method". The reliability was $r=1$, which indicates the tools were highly reliable. The data collection was done between 12-10-2023 to 10-11-2023. Formal written permission was obtained from the authorities to conduct the study. Data was collected by administering a self-administered knowledge questionnaire. On first day, self-administered knowledge questionnaire of 30 multiple choice questions was assessed to collect the data on knowledge regarding dental hygiene. On the same day video assisted teaching on dental hygiene was taught for a period of an one hour after pre-test. On eighth day, the investigators administered post-test and assessed their knowledge regarding dental hygiene on same sample and same questionnaires.

Results

The data collected from the primary school children has been analyzed under the following sections:

- **Section I:** Frequency and percentage distribution of the socio-demographic variables.
- **Section II:** Analysis of pre-test and post-test knowledge on Dental Hygiene among Primary School Children.
- **Section III:** Effectiveness of video assisted teaching on Dental Hygiene

▪ **Section IV:** Association between the pre-test level of knowledge with selected socio-demographic variables.

Section I: Frequency and percentage distribution of the socio-demographic variables.

Table 1: Frequency and percentage distribution of the socio-demographic variables

Socio-demographic variables		Frequency	Percentage
Age in years	9-10	19	38%
	11-12	31	62%
	13-14	0	0%
Gender	Male	27	54%
	Female	23	46%
Religion	Hinduism	20	40%
	Islam	13	26%
	Christianity	16	32%
	Other	1	2%
Educational qualification	3 rd	0	0%
	4 th	0	0%
	5 th	0	0%
	6 th	50	50%
Type of Family	Joint	18	36%
	Nuclear	32	64%
Place of residence	Urban	29	58%
	Rural	21	42%
No. of Brushing time	Three times	9	18%
	Two times	8	16%
	One times	33	66%
	Not even one	0	0%
Duration of brushing	0-1 minute	9	18%
	1-2 minutes	23	46%
	3-5 minutes	19	28%
	5-6 minutes	4	8%
Source of information	Parent	9	18%
	Teachers	24	48%
	Friends	0	0%
	Mass Media	17	34%
Any dental problems in previous	Yes	26	52%
	No	24	48%

Data presented in the table 1 shows the distribution of the primary school children are shown as:
 The majority of the primary school children 31(90%) were between the age group of 11-12 years, followed by 19(38%) were between the age group of 9-10 years and 00(0%) were in the age group of 13-14 years.
 The majority of the primary school children 27(54%) were male and 23(46%) were female.
 The majority of the primary school children 20(40%) were Hindus, followed by 16(32%) were Christians, 13(26%) were Muslim, and only 01 (2%) were from other religions.
 The majority of the primary school children 50(100%) were 6thstandard and none of them were from 3rd, 4thand 5thstandard.
 The majority of them 32(64%) were nuclear family, 18(36%) were joint family.
 The majority of them 29(58%) were residing in urban area and remaining 21(42%) were residing in rural area.
 The distribution of the primary school children according to their number of times of brushing in a day. It shows that 33(66%) were one time, three times were 9(18%), and followed by two times were 8(16%) and none of them were not even once.
 The distribution of the primary school children according to

their duration of brushing in a day. It shows that 23(46%) were 1-2 minutes, 14(28%) were 3-5 minutes, 9(18%) were 0-1 minutes and 4(8%) were 5-6 minutes.
 The distribution of the primary school children according to their sources of information. It shows that 24(48%) were from teachers, 17(34%) were from mass media, 9 (18%) were from parents and 0(0%) knowledge from the friends.
 The distribution of the primary school children according to their dental problem. It shows that 26(52%) were having dental problem and 24(48%) does not have any dental problem.

Section II: Analysis of pre-test and post-test knowledge on Dental Hygiene among Primary School Children.

Table 2: Overall knowledge score on Dental hygiene among Primary school children: Pre-test, n=50

Questions	Mean	SD	Mean%
Overall pre-test Knowledge	11.32	2.48	37.73%

The above table 2 shows that the overall mean knowledge scores of primary school children are found to be 11.32 with standard deviation of 2.48.

Table 3: Overall knowledge score on dental hygiene among Primary school children, Post-test n=50

Questions	Mean	SD	Mean percentage (%)
Overall post-test knowledge	22.50	2.159	75%

The above table 3 shows that the overall mean knowledge

scores of primary school children are found to be 22.50 with standard deviation of 2.159.

Section III: Effectiveness of video assisted teaching on Dental Hygiene

Table 4: Comparison of pre-test and post-test knowledge score of Primary school children regarding dental hygiene

Area of Knowledge	Pre-test		Post-test		Pairedt-test
	Mean	SD	Mean	SD	
Definition of teeth	1.08	0.724	1.76	0.517	5.870
Describe about the composition of teeth	0.50	0.505	0.86	0.351	5.25
Explain about the structure of teeth	1.30	0.735	2.14	0.857	5.168
Explain the types of teeth and its functions	1.66	0.626	2.90	0.953	8.941
Definition of dental hygiene	0.38	0.490	0.76	0.431	3.857
List down the importance of dental hygiene	0.48	.505	0.86	0.351	4.229
List down and explain about the common dental problems	1.66	0.772	3.50	0.707	13.048
Perform the basic steps of dental hygiene	0.38	0.490	0.82	0.388	5.088
Mention Do's and Don'ts of dental hygiene	1.30	0.789	2.98	0.915	8.921
Explain about the signs of good dental hygiene	0.34	0.479	0.76	0.431	4.228
Mention some of the beneficial foods for healthy teeth	0.30	0.463	0.80	0.404	5.754
Mention some of the harmful foods for teeth	0.34	0.479	0.76	0.431	4.628
Mention the preventive measures of dental problems	1.22	0.887	2.96	1.029	9.776
Enlist the complications of dental problems	0.36	0.485	0.62	0.490	2.543

To find the significance difference between pre-test and post-test knowledge of primary school children, the following research hypothesis was stated.

H₁: There will be a significant difference between pre-test

and post-test knowledge score regarding oral hygiene among primary school children. This hypothesis was tested using paired 't'-test.

Table 5: Determination of overall mean knowledge score on pre-test and post-test knowledge score, n=50

Knowledge	Pre-test	Post-test	Mean of difference	Paired t-test
Overall mean knowledge score	11.32	22.50	11.18	33.1076

*Significant at 0.05 level of significance, df = 49

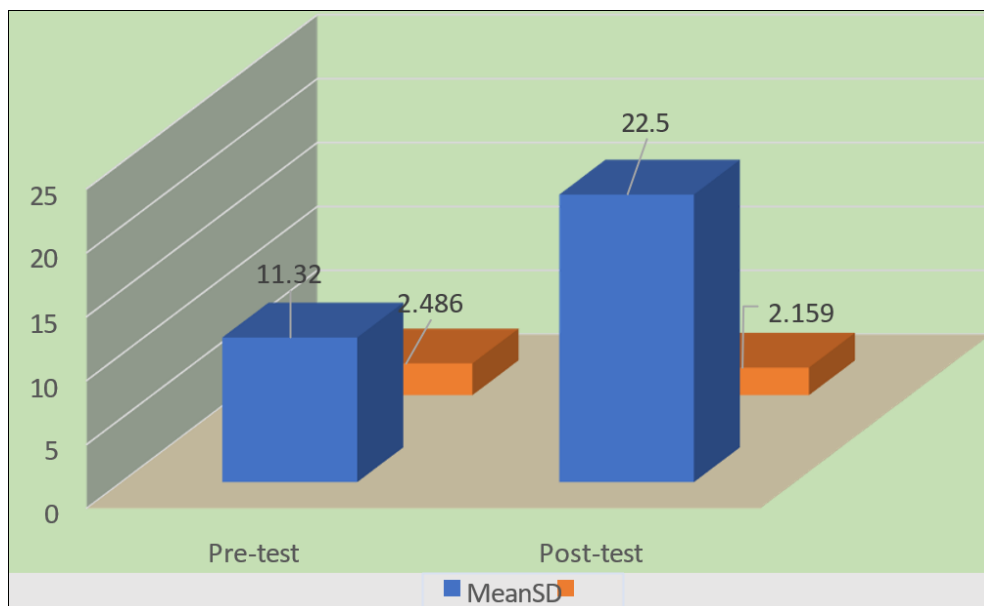


Fig 1: Overall knowledge of Pre & Post-test, Mean Score and SD

From the above Figure1 and table 5 the overall mean knowledge score of pre-test was 11.32 and post-test was 22.50 and mean difference was 11.18. The obtained 't' value 33.1076 is greater than the table value at 0.05 level of significance. Therefore, 't'-value is found to be significant. It shows that there will be significant difference between pre-

test and the post-test knowledge score of primary school children regarding dental hygiene. Therefore the research hypothesis is accepted.

Section IV: Association between the pre-test level of knowledge with selected socio- demographic variables.

To test the association between the pre-test level of knowledge with selected socio-demographic variables, the following hypothesis was formulated.

H₂: There will be significant association between the pre-test level of knowledge with selected socio-demographic variables.

Table 6: Association between pre-test level of knowledge with selected socio- demographic variables

Variables		No. of primary school children	Level of knowledge		P value	Df	Chi-square test (χ^2)
			Moderately adequate	Inadequate			
Age	9-10years	19	3	16	0.416	2	1.754
	11-12years	30	4	26			
	13-14years	1	0	1			
Gender	Male	26	4	22	0.769	1	0.086
	Female	24	3	21			
Religion	Hinduism	22	11	11	0.980	3	0.187
	Islam	14	8	6			
	Christianity	13	3	10			
	Others	1	0	1			
Educational Qualification	3 rd standard	0	0	0	----	3	-----
	4 th standard	0	0	0			
	5 th standard	0	0	0			
	6 th standard	50	7	43			
Type of family	Joint	17	3	14	0.594	1	0.285
	Nuclear	33	4	29			
Place of residence	Urban	36	4	32	0.345	1	0.891
	Rural	14	3	11			
How many times do you brush your teeth in a day	3 times	9	1	8	0.945	3	0.114
	2 times	8	1	7			
	1 time	33	5	28			
	Not even one	0	0	0			
How many minutes do you brush your teeth	0-1 minute	10	1	9	0.979	3	0.190
	1-2 minutes	21	3	18			
	3-5 minutes	13	2	11			
	5-6 minutes	6	1	15			
Sources of information	Parent	11	1	10	0.379	3	1.943
	Teachers	22	2	20			
	Friends	0	0	0			
	Mass media	17	4	13			
Any Dental problem history in previous	Yes	18	4	14	0.209	1	1.579
	No	32	3	29			

The above table shows that the significant association between the pre-test level of knowledge with selected socio-demographic variables like age ($\chi^2=1.754$), gender ($\chi^2=0.086$), religion ($\chi^2=0.187$), educational qualification (constant), type of family ($\chi^2=0.285$), place of residence ($\chi^2=0.891$), number of brushing in a day ($\chi^2=0.114$), duration of brushing ($\chi^2=0.190$), source of information ($\chi^2=1.943$), any dental caries ($\chi^2=1.579$) were not significant at 0.05 level. Thus it can be interpreted that there is no significant association between the pre-test level of knowledge with the selected socio- demographic variables. Thus, the research hypothesis is rejected. The findings of this study support the need for conducting an awareness on dental hygiene among primary school children. The study proved that majority of the students had imparted adequate knowledge on dental hygiene.

Discussion and Conclusion

Majority of the primary school children 31(62%) were in the age 11-12 years. Majority of the primary school children were 27(54%) male and 23(46%) were female. Majority of the primary school children 20(40%) were Hindu, 13(26%) were Islam, 16(32%) were christian and 1(2%) were from other religion. Majority of the primary school children

32(64%) were from nuclear family, 18(36%) were from joint family. Majority of the primary school children 29(58%) were from urban area and remaining 21(42%) were residing from rural area. Majority of the primary school children 50(100%) were studying in 6th standard. Majority of the primary school children 33(66%) were do one time brushing per day and 9(18%) were do three times brushing per day and 8 (16%) were do two times brushing per day. Majority of the primary school children were 24(48%) having source of information from teachers, 17(34%) from mass media, 9(18%) from parents. Majority of the primary school children about duration of brushing were 23(46%) 1-2 mins, 14(28%) 3-5 mins, 9(18%) 0-1 mins and 4 (8%) 5-6 mins. Majority of the primary school children 26(52%) were having dental problems and 24 (48%) were not having any dental problems.

In pre-test, the mean knowledge score was maximum 1.66 in the area of explain the types of teeth and its functions with standard deviation of 0.626, list down and explain about the common dental problems with standard deviation. 0.772, list down and explain about the common dental problems with standard deviation 0.772 minimum 0.30 in the area mention some of the beneficial foods for healthy

teeth with standard deviation 0.463. In the post-test the mean score was maximum 3.50 in the area list down and explain about the common dental problems with standard deviation.707 and minimum mean knowledge score was 0.62 in the area enlist the complications of dental problems with standard deviation 0.490.

The overall mean knowledge score of pre-test was 11.32 and post-test was 22.50. The obtained “t” value 33.1076 is greater than the table value at 0.05 level of significance. Therefore “t” value is found to be significant. It shows that there will be significant difference between the pre-test and post-test knowledge score of primary school children regarding dental hygiene. Therefore research hypothesis is accepted.

Association between the pre-test level of knowledge of primary school children regarding dental hygiene with selected socio-demographic variables like age ($\chi^2=1.754$), gender ($\chi^2=.086$), religion ($\chi^2=4.39$), educational qualification ($\chi^2=\text{constant}$), place of residence ($\chi^2=0.891$), type of family ($\chi^2=0.542$), no. of brushing in a day ($\chi^2=0.114$), source of information ($\chi^2=1.943$), any dental carries ($\chi^2=1.579$) and duration of brushing ($\chi^2=.190$) were significant at 0.05 level. Thus it can be interpreted that there is no any significance association between the pre-test level of knowledge with selected socio-demographic variables. Therefore the research hypothesis is rejected.

Implications of the study

Nursing administration: Nursing is a major component of the health care delivery system, and nurses make up the longest employment group within the system. Nursing services are necessary for virtually every client seeking care of any type, including health promotion, diagnosis and treatment rehabilitation. Nurse as an administrator play an important role in educating the professionals and policy making such as mass health education measures in the community. The special implication of nursing administration in community is that they should pay attention to all the school children’s and to see whether they are provided with enough education about dental hygiene. Being a nurse administrator, one can arrange in-service education and special training programmes regarding dental hygiene.

Nursing Education

The nurse educators have responsibility to update the knowledge of the nursing personnel regarding dental hygiene through the media. The present study emphasizes on enhancement of knowledge regarding dental hygiene. In order to achieve those nurses should equip themselves by reading more books, recent advance and current issues. Clearly, it is imperative to include in the nursing curriculum the correct material about dental hygiene in health textbooks.

Nursing practice

The nurse plays an important role in the health care delivery system. The nurses can visit to hospital and community to recognize any problems of the children and people. Health education is important function of health personnel. Nurse’s as resource persons working in community setting should impart education to the primary school children regarding

dental hygiene. It helps in improving their knowledge regarding dental hygiene.

Nursing research

The findings emphasis an extensive need to assess the effectiveness of video assisted teaching regarding dental hygiene. The essence of research is to build a body of knowledge in nursing. Nursing research is mean by which nursing profession is growing. The generalization of the study results can made by replication of the study. The nurse researcher can include evidenced based practice by a strong based research.

Recommendations

Based on the findings of the study, the following recommendations have been made for the study:

- A similar study can be done to assess the knowledge, attitude and practice of primary school children regarding dental hygiene.
- The study can be replicated on larger samples for better generalization.
- Structure teaching programme can be conducted among primary school teachers on dental hygiene of children
- Video assisted teaching can be conducted among the other groups regarding dental hygiene.

Conflict of interest

I Waikhom Ranjana Devi, corresponding author, on behalf of all authors confirm that this manuscript is original and has not been published elsewhere and is not under consideration by any other journals. We agree with submission to International Journal of Advance Research in Nursing. We have no conflict of interest to declare.

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Ethical clearance: Informed consent was obtained from the Administrators/ Principals and Participants of the respected primary school before conducting the data collection and maintained the confidentiality and anonymity of the subjects and information gathered.

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