
Effectiveness of Demonstration Method on Knowledge Regarding Brushing Techniques

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ABSTRACT

Background: Dental Health is neglected among children leading to many dental problems like periodontal diseases, gingivitis, tooth decay etc. that can be prevented by imparting skills of brushing techniques.

Objective: To assess the effectiveness of demonstration method on knowledge of brushing techniques.

Method: The participants (30) were selected using convenient sampling technique. One group pretest and posttest data on knowledge of brushing techniques was collected using self-reported structured questionnaire. Demonstrations on brushing techniques were given and post test data was collected on knowledge.

Results: The demonstration method on knowledge of brushing techniques was effective as it is statistically significant ($p < 0.0001$) at 0.05 significant level. There is significant association between Oral Hygiene Index- Simplified (OHI-S) and post-test knowledge ($p < 0.0001$) at 0.05 significant level. There is significant association between pre-test knowledge and religion of the participants ($p < 0.001$) at 0.05 significant level.

Conclusion: Mere knowledge on oral hygiene does not improve oral hygiene which requires demonstration on practical aspects of brushing techniques enabling participants to have better skills on brushing techniques that help them to improve their oral health and thereby preventing oral illness.

Key words: Dental hygiene, prevention, demonstration, demonstration techniques.

INTRODUCTION

Oral Health is neglected among young people. Poor oral health leads to many diseases like periodontal diseases, gingivitis, tooth decay, dental caries, and tooth loss. Neglected oral health leads to oral pain affecting activities of daily living in children like sleeping, playing, going to school etc [1]. The incidence of dental caries in 2016 was higher among Indians when compared to South Asians. There is a need for realignment of primary focus on preventing the dental disease from aesthetic and cosmetic concerns [2].

Dental caries is a common chronic disease among children and adults that can be prevented with oral health education [3]. For the overall health and wellbeing of young children, good oral health is essential [4]. Poor oral hygiene has a negative impact on quality of life, and WHO recommended an educational program to improve oral health [5]. If patients are properly educated, they can understand the importance of maintaining oral hygiene, and demonstration of proper brushing techniques should be included in national preventive programs [6].

Batra M et al., in their systematic analysis, reported that South Asian Migrants had inadequate oral health knowledge, attitudes, and practices that are outdated and are

influenced by culture, religion, and social norms that have limited preventive oral hygiene practices. Though tooth brushing is common practice, flossing is not done. Among Bangladesh women, traditional practices like cleaning with fingers, chew sticks, soot, and tobacco powder are prevailing. Poor oral health leads to long-term pain and suffering and affects activities of daily living [7]. In a study among migrant farm workers, oral health is neglected, and also they lack basic oral health knowledge [8].

A Study [9] stated that trained dentists mainly focus on curative aspects only. There is a lack of preventive dental services necessitating health promotive programs to improve oral health conditions. There is also a lack of basic dental care aids like toothpaste. The study also reported that there was limited oral health literacy among Asian migrants.

Nursing care mainly focuses on the referrals of oral diseases to dentists, and the least preference was given for oral health even in the nursing curricula. The nursing students are in direct contact with people in the community. They can provide Health education and demonstrate oral brushing techniques that can impact oral health practices, which aid in promoting oral health [5].

The vital step for the prevention of plaque-associated diseases like periodontal diseases is proper brushing techniques. Instilling oral health knowledge and practices is required for initiating self-practice that led to early interventions and successful management of periodontal disease [10]. A residential area is a place for living, playing, and learning that is the most cost-effective to impart knowledge through demonstration method that helps to promote oral health [11].

The present study aims to assess the effectiveness of demonstration on knowledge of brushing techniques among residents that forms a base to initiate good oral habits that help prevent dental diseases and promote oral health.

MATERIALS AND METHODS

Study Design: A quasi-experimental one-group pre and post-test design was used.

OBJECTIVES

- 1) To assess the effectiveness of the demonstration method on knowledge of brushing techniques.
- 2) To find the association between Simplified Oral Hygiene Index (OHI-S) and post-test knowledge.
- 3) To find the association between selected demographic variables and pre-test knowledge on brushing techniques.

INCLUSION CRITERIA

- 1) Residents in the age group of 8-20 yrs.
- 2) Residents who can speak and read both English and Telugu.
- 3) Residents with an Oral Hygiene Index of above 1.2

EXCLUSION CRITERIA

- 1) Any systemic conditions or on any treatment.
- 2) History of smoking, chewing tobacco.

Sample: A convenient sampling method was used. A sample of 30 was selected in the age group of 8 to 20 years in a selected rural village in Andhra Pradesh.

Simplified Oral Hygiene Index: WHO simplified Oral Hygiene Index was used to assess oral hygiene. It consists of calculating the Plaque index and Calculus index separately. Plaque index and Calculus index are together summed and divided by 6 gives a score of Oral Hygiene. This is calculated for everyone separately. The Simplified Oral Hygiene Index interpretation for 0-1.2 score is good, 1.3 to 3 is fair, and above 3 as poor.

Questionnaire: A self-reported structured questionnaire was prepared by the researcher in consultation with dentists, nursing faculty, and literature review. The questionnaire consists of three sections. Section-I included demographic details like age, class, father and mother occupation, and educational status. The study participants have to fill in their demographic information. Section-II included observation and recording of the Simplified Oral Hygiene Index by the researcher. Section-III included 10 structured questions related to knowledge on brushing techniques like methods of brushing teeth, frequency of brushing, materials used for brushing, frequency of change of brush required, flossing, effects of poor brushing techniques, need for a dental check-up, etc. The study participants have to complete the structured questionnaire according to the instructions provided.

The questions were structured into a multiple-choice format. Each question consists of one correct answer and three distractors. Each correct answer was scored as '1,' and the wrong answer was scored as '0'. All the answers were totaled for total knowledge score value. It is interpreted as follows:

Score	Interpretation
0-3	Below average
4-6	Average
7-10	Above average

The internal validity of the tool was checked by using Cronbach's alpha, and it was 0.76. This questionnaire was used to collect both pre and post-test knowledge on brushing techniques.

Before pre-test, the researcher performed the simplified oral hygiene index and recorded the findings. After pre-test data collection, the participants were given a demonstration on brushing techniques using teaching aids like flashcards, teaching tools like tooth diorama, and toothbrush individually for each participant. After one week of demonstration method, Post-test data was collected on knowledge about brushing techniques.

A pilot study was conducted on 10 participants from another village and assessed for the study's feasibility. Minor modifications of questions were done in the tool for practicality.

Ethical Approval: The study was approved by Institutional Review Board. The written consent was obtained from parents and participants together. The study's purpose was explained and was also assured for withdrawing anytime from the study if required.

Data Analysis: A T-test for two dependent means was done to find out the effectiveness of the demonstration method on knowledge of brushing techniques during pre and post-test. T-test for two dependent means was done to find the association between Oral Hygiene Index

and post-test knowledge. Chi-square was done to find the association between pre-test knowledge and selected demographic variables.

DISCUSSION

The majority of the participants, 66.66% (20), were in the age group of 16-20 Years, followed by 16.67% (5) each in the 8-10 Years and 11-15 Years age group. The majority of the participants, 56.67% (17), were Males, and the remaining 43.33% (13) were females (Fig-1). These findings are similar to study [1] in that the majority of participants, 54.5%, were males, and 45.5% were females.

The majority of the participants, 53.34% (16), were studying 6-10th standard, followed by 33.33% (10) studying Intermediate and 13.33% (4) studying 5th standard. Of the majority of the participants, 93.33% (28) were Hindus, and 6.67% (2) were Christians (Fig-1).

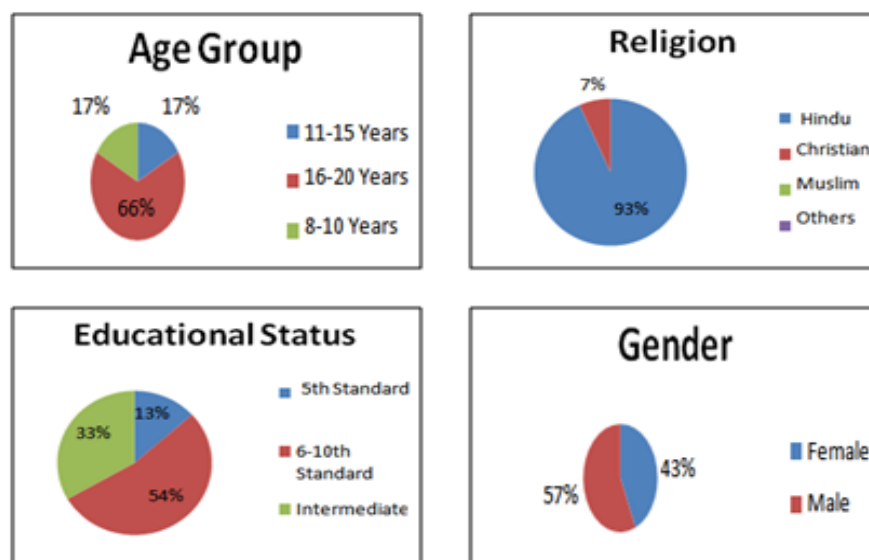


Fig-1: Frequency and Percentage distribution of Participants according to Demographic variables (n=30)

Table-1: Effectiveness of Demonstration Method on Knowledge During Pre and post-Test (n=30)

Knowledge	Pre-test		Post-test		t-value	p-value
	Number	%	Number	%		
Above average	19	63.3	30	100.0	6.93	<0.0001*
Average	10	33.3	0	0.0		
Below Average	1	3.3	0	0.0		
Total	30	100.0	30	100.0		

During the pre-test, it is found that the majority of participants, 63.3% (19), had above-average knowledge during the pre-test, followed by 33.3% (10) participants with average knowledge (Tab-1). The participants have adequate knowledge during pre-test level might be

attributable to the school curriculum, which includes oral hygiene information. The majority of the participants are doing high school and intermediate education, and only a few participants are studying 5th standard. These findings are consistent with the study done by Cruz et al. [12] that Asian Indian immigrants in the USA scored high oral health knowledge. But the present study findings are contradictory to the research conducted by Adeniyi et al. [13], that >50% of respondents in their study had gaps in knowledge during the pre-intervention phase, which may be attributed to the setting of the research in Nigeria, where this study was conducted among mothers with less than nine years of education level. Similarly, the present study contradicts research conducted by Batra et al. [7] that the oral health knowledge is low in their study, which can be because the study was done among South Asian migrants in the USA. The present study is conducted among residents of rural Andhra Pradesh, India. The demonstration method on knowledge of brushing techniques was effective on analysis during pre and post-test. During post-test, the knowledge increased to 100% (30). The demonstration method was effective as it is statistically significant ($p < 0.0001$) at 0.05 significant level (Tab-1). These findings are similar to the study Adeniyi [13] as improvement in knowledge among mothers during a post-test intervention. The present study identified that though most participants, 63.3% (19), had good pre-test knowledge of brushing techniques, their Oral Hygiene Index-Simplified was poor. The OHI-S with above 1.2 (fair and poor) was included in the study to ensure that poor oral hygiene participants are included. This means that mere knowledge of brushing techniques does not assure good oral hygiene. These findings are supported by the study conducted in Delhi, that the mothers had adequate knowledge on oral hygiene, but there was a high prevalence of Dental caries, indicating that behavior change is required [14].

Tab-2: Association between Oral Hygiene Index-Simplified (OHI-S) and Post-test Knowledge (n=30).

Variables	Mean	t-value	p-value	Interpretation
Oral Hygiene Index- Simplified	5.54	34.27	<.00001*	Significant
Post-test Knowledge				

Tab-3: Association between pre-test knowledge and selected demographic variables (n=30).

Demographic Variables	Above Average		Average		Below Average		P-value
	n	%	N	%	n	%	
Age							0.17
8-10 Years	2	6.60	3	10	0	0	
11-15 Years	4	13.30	1	3.30	1	3.30	
16-20 Years	14	46.60	6	20	0	0	
Gender							0.40
Male	12	40	5	16.60	0	0	
Female	7	23.30	5	16.60	1	3.30	
Educational status							0.18
5th standard	2	6.60	2	6.60	0	0	
6th to 10th standard	12	40	3	10	1	3.30	
Intermediate	4	13.30	7	23.30	0	0	
Religion							0.001*
Hindu	18	60	10	33.30	0	0	
Christian	1	3.30	0	0	1	3.30	

There is an association between Oral Hygiene Index (OHI) and post-test knowledge ($p < .00001$) at 0.05 significant level (Tab-2). This might be attributable to the Demonstration method on brushing techniques which helped them practically understand the techniques like holding the brush at 45 degrees angle to the gum line, rotation of brush on all surfaces of teeth, flossing techniques, brushing thrice daily, etc. This is supported by study [1] that though the African children are using toothpaste and toothbrush, their oral hygiene was poor, indicating that they might be having inadequate knowledge on proper usage of brushing aids. There are no significant association between pre-test knowledge and selected demographic variables like age, gender and educational status of the participants, but there is a significant association between pre-test knowledge and religion of the participants ($p < 0.001$) at 0.05 significant level (Tab-3). This could be because people's culture plays an essential role in providing knowledge on oral hygiene like brushing teeth daily, rinsing the mouth after food, etc. The study conducted by Cruz [12] also supported that cultural factors influence oral health by bringing particular attitudes, practices, behavior, and oral habits.

LIMITATIONS OF THE STUDY

- 1) The study is limited to only one village.
- 2) The sample size is very small.

Implications for Nursing

Since nurses are primary health care providers, oral health promotion and prevention of dental diseases must be given more preference as educating the public continuously help in improving the oral health knowledge, thereby helping them to understand the relationship between oral hygiene and dental disease, allow them to inculcate healthy oral brushing habits which play a significant role in the prevention of oral disease.

Implications for Nursing Education

The community health nurses can provide health education to residents. As less preference is given to oral health in nursing curricula, oral health should be inculcated into their curricula. This helps nurses to transfer the knowledge to people in the community.

Nursing Research

The nursing profession should identify different ways of imparting knowledge to people who help transfer their knowledge to practice healthy oral hygiene habits. Since mere imparting knowledge will not improve oral hygiene, research on brushing techniques with regular reinforcement is required.

CONCLUSION

The present study identified that the demonstration method on brushing techniques improved knowledge. Mere knowledge on oral hygiene does not improve oral hygiene, which requires demonstration on practical aspects of brushing techniques. This enables participants to have better skills in brushing techniques to improve their oral health and thereby prevent oral illness.

CONFLICT OF INTEREST: None were declared.

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