

# Effectiveness of Learning Package on Knowledge Related To Oral Hygiene Practices among School-Age Children

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## ABSTRACT

**Introduction:** Gingivitis, halitosis and cavities are common dental problems, which are often unnoticed until they start giving worrisome trouble. Oral hygiene involves keeping the teeth and oral cavity clean and free from odour. School children frequently prefer to use raw sugars, candies etc throughout the day making it important to educate the school age children regarding oral hygiene practices. The aim of the study is to assess the effectiveness of learning package on knowledge of the school-age children regarding oral hygiene practices.

**Methods:** An experimental study with pre test post test control group design was used to assess the effectiveness of learning package on knowledge of the 6-12 aged school-age children regarding oral hygiene practices. Simple random sampling technique (lottery method) was utilized to select 60 school-age children (allotted 30 in each group by odd-even method). Socio demographic profile and knowledge questionnaire related to dental practices were used to collect data. Data were analyzed using appropriate descriptive and inferential statistics.

**Results:** The results of this study shows that pre-test knowledge score of the school-age children in the both experimental and control group had no significant difference. Post-test knowledge score was significantly different in the experimental group (n=24, 80%) as compared to control group (n=10, 33%). The significant difference in the experimental group between pre-test and post-test score was 50%, due to the learning package.

**Conclusion:** The findings of the present study suggested that learning package was very effective in improving knowledge of the school-age children regarding oral hygiene practices. Study recommended that all health authorities and school administrators should strengthen their work for raising awareness and translation of sound knowledge about risk factors of poor oral health on children to the parents, school teachers, and children themselves.

**Key Words:** Learning package, Oral hygiene practices, knowledge, School-age children.

## INTRODUCTION

Prevention is better than cure” This is true in case of dental problems. Dental caries, halitosis, (bad breath) gingivitis are common problems, which are often unnoticed until they start giving worrisome trouble. Good oral health is important for our well-being. Daily preventive care includes proper brushing and flossing which

will help to stop problems before they develop as painful and expensive”. [1]

After we eat, a thin sticky film (plaque) of material forms around the teeth, if this is not removed by brushing and flossing regularly, it absorbs calcium from the surrounding saliva and hardens to form tartar, which harbors harmful bacteria and leads to irritation, inflammation and

bleeding of the gums (gingivitis). If cleaning, is not done at this stage, the tartar forms below the gums, leading to loss of surrounding bone (periodontitis), if periodontitis is not treated, it leads to loosened teeth and their eventual loss. [2]

Plaque, which is a soft, sticky colourless film of bacteria that constantly forms on the teeth, combines with sugars present in food particles stuck between the teeth and turns them into acid which attacks the tooth enamel. If cleaning is not done, with repeated acid attacks, the enamel wears away and a cavity is formed then it spreads to the next layer-the dentine. If the cavity is not treated at the dentine stage, the cavity spreads deeper into the pulp and this can be very painful. [3]

Oral hygiene involves keeping the teeth and oral cavity clean and free from odour. Oral hygiene can be performed using a toothbrush and toothpaste, dental floss and mouthwash. [4]

Oral hygiene measures should be implemented to remove plaque, soft bacterial deposits that adhere to the teeth and cause dental caries (decay or cavities) and periodontal (gums) diseases. Poor dietary habits are associated with development of caries in children. The most effective methods of removing plaque removal are brushing and flossing. [5]

The school age children form a very high proportion of India's population, both in rural and in urban areas. The number of school children between 5 to 14 years age group constitutes about 15% of the total population. Healthy habits regarding personal hygiene, clean surroundings, nutritious diet, exercise, rest and recreation if formed at an early stage will remain with the person throughout life and will help to develop healthy citizen in the full and positive sense of the term. So the school is the best place for giving health education. [6]

Permanent teeth erupt during the school age years, good dental hygiene and regular attention to dental caries are vital parts of health supervision during this period, children of this age tends to become

lax about oral hygiene unless they are carefully supervised. [7]

The rate of tooth decay and dental ailments is very high among new generation as compared to older generation. Some children in the western countries have to go for dentures around the age of 18 years. Even in India the scenario is fast changing, as the Indian try to imitate and follow the western countries. Chocolates, sweets, ice creams, pastries, fast food and other host of junk are flooding our, markets. [8-9]

It is pertinent to give health education on oral hygiene practices to prevent oral health problems among school age children. Investigator's own experience with neighbors and relatives had shown that many children are suffering from dental caries and more so, they are school going children. By seeing this problem in children, investigators decided to provide a learning package on oral hygiene practices among school age children which may bring forth changes in practice and create awareness on oral hygiene among school- age children. Study aimed to assess the effectiveness of learning package on knowledge related to oral hygiene practices among school-age children aged between 6-12 years studying at Selected Schools of north India.

## MATERIALS AND METHODS

Quantitative, experimental, two group, pre-test post-test control group design was used to assess effectiveness of learning package on knowledge related to oral hygiene practices among 60 school-age children aged between 6-12 years studying at Selected Schools. Simple random sampling technique (lottery method) was utilized to select 60 school-age children (allotted 30 in each group by odd-even method).

Following research tools were used in the study:

### Tool 1: Socio- demographic profile sheet

It is used to measure socio-demographic details of the college student. It has 11 items structured questionnaire which were age, gender, religion, background, family type,

marital status, family income, pocket money, programme, class and years of formal education

### Tool 2: Knowledge questionnaire related to oral hygiene

Knowledge questionnaire related to oral hygiene was used to measure the knowledge of school-age children aged between 6-12 years related to oral hygiene practices. It consisted of 30 objective type of multiple choice questions. All questions had only one correct response. Each correct response was awarded 1 mark according to the key and zero mark was awarded for the wrong response. The possible maximum score for all the questions was 30.

Content validity of the Socio-demographic profile sheet and Knowledge questionnaire related to oral hygiene was established by experts from child health Nursing, pediatrician and dental sciences and school teachers. The reliability of the Socio-demographic profile sheet and Knowledge questionnaire related to oral hygiene was established through test retest method ( $r = 1$ ) and split half tech, respectively ( $r = 0.83$ ). English version of the tools was translated to Hindi and back translation was done to ensure the meaning of original tools.

The administrative approval was taken from the concerned school authorities after explaining in detail the need for the

study along with its objectives. A written informed consent was obtained. The entire questionnaires were administered in an individual or group setting in one session itself. The researcher was present during the session and any queries while answering the questions were attended. The study protocol was approved by ethical committee of the university. Data were collected in Hindi Language based on the participant's preference. The estimated time for the completion of the questionnaires was about 10-15 minutes. Response rate was very high.

Appropriate descriptive and inferential statistics was used to analyze data through SPSS (21) software.  $p$  value  $< 0.05$  was considered as level of significance.

## RESULTS

### Socio demographic profile of students:

As shown in table 1, the maximum (55%) subjects were in 11 years age group. More than two third (68%) of the subjects were male, Hindu (81%) and belonged to urban area (62%). Majority of the subjects were living in nuclear family (65%) and were in earning more than Rs. 5000 (61%) per month. More than half of the subjects (52%) had no dental examination in last one year where have half of the subjects (50%) had dental problems in past three years.

**Table-1: Frequency and percentage distribution of students according to their demographic variables (N=60)**

| Demographic Characteristics      |                | Group        |     |            |       |           |       |
|----------------------------------|----------------|--------------|-----|------------|-------|-----------|-------|
|                                  |                | Total (n=60) |     | Exp (n=30) |       | Con(n=30) |       |
|                                  |                | n            | %   | n          | %     | n         | %     |
| Age                              | 11 years       | 33           | 55% | 18         | 60.0% | 15        | 50.0% |
|                                  | 12 years       | 27           | 45% | 12         | 40.0% | 15        | 50.0% |
| Gender                           | Male           | 41           | 68% | 23         | 76.7% | 18        | 60.0% |
|                                  | Female         | 19           | 32% | 7          | 23.3% | 12        | 40.0% |
| Religion                         | Hindu          | 49           | 81% | 24         | 80.0% | 25        | 83.3% |
|                                  | Christian      | 3            | 5%  | 2          | 6.7%  | 1         | 3.3%  |
|                                  | Muslim         | 8            | 14% | 4          | 13.3% | 4         | 13.3% |
| Residence                        | Rural          | 23           | 38% | 14         | 46.7% | 9         | 30.0% |
|                                  | Urban          | 37           | 62% | 16         | 53.3% | 21        | 70.0% |
| Family type                      | Joint family   | 21           | 35% | 13         | 43.3% | 8         | 26.7% |
|                                  | Nuclear family | 39           | 65% | 17         | 56.7% | 22        | 73.3% |
| Family income                    | Rs.2000-3000   | 4            | 7%  | 1          | 3.3%  | 3         | 10.0% |
|                                  | Rs.3000-4000   | 4            | 7%  | 3          | 10.0% | 1         | 3.3%  |
|                                  | Rs.4000-5000   | 15           | 25% | 8          | 26.7% | 7         | 23.3% |
|                                  | >Rs. 5000      | 37           | 61% | 18         | 60.0% | 19        | 63.3% |
| Dental examination in a year     | Once           | 26           | 43% | 12         | 40.0% | 14        | 46.7% |
|                                  | Twice          | 3            | 5%  | 1          | 3.3%  | 2         | 6.7%  |
|                                  | Not at all     | 31           | 52% | 17         | 56.7% | 14        | 46.7% |
| Dental problems in past 3 years. | Yes            | 30           | 50% | 12         | 40.0% | 18        | 60.0% |
|                                  | No             | 30           | 50% | 18         | 60.0% | 12        | 40.0% |

**Effectiveness of learning package on knowledge score of students related to oral hygiene**

Table 2 reveals the comparison of pre-test knowledge score of students on different aspects of oral hygiene between experimental & control group and it was found that pre-test knowledge score of oral hygiene practices of the school-age children

was 9 (30%) both in the experimental and control group. As per Z test, there was no significant difference (Z=0.00) between experimental and control group at p level >0.05, hence it can be concluded that experimental and control group were same at base line with regards to knowledge of oral hygiene practices.

**Table 2: Comparison of pre-test knowledge score of students on different aspects of oral hygiene between experimental & control group (N=60)**

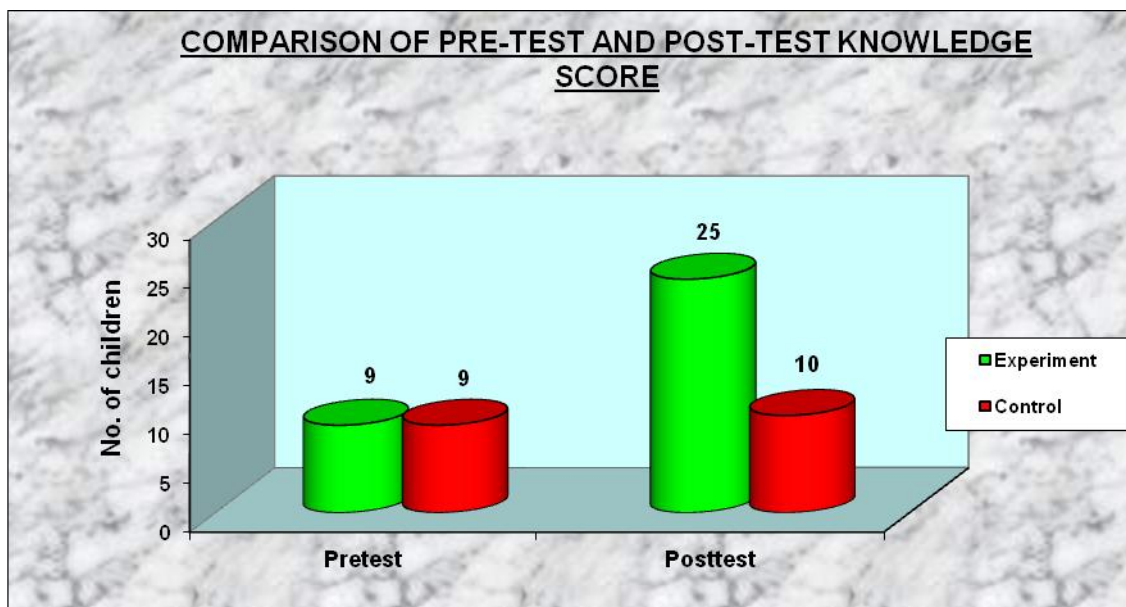
| Oral hygiene           | Experimental (30) |     | Control (30) |     | Two sample binomial proportion test |
|------------------------|-------------------|-----|--------------|-----|-------------------------------------|
|                        | N                 | %   | N            | %   |                                     |
| Oral hygiene practices | 14                | 47% | 12           | 40% | Z=0.29 p=0.78                       |
| Habits on oral hygiene | 6                 | 20% | 7            | 23% | Z=0.00 p=1.00                       |
| Oral health problems   | 6                 | 20% | 8            | 27% | Z=0.33 p=0.74                       |
| Overall                | 9                 | 30% | 9            | 30% | Z=0.00 p=1.00                       |

Table 3 reveals the comparison of post-test knowledge score of students on different aspects of oral hygiene between experimental & control group and it was found that post-test knowledge score of oral hygiene practices of the school-age children was 25 (83%) in the experimental group whereas it was 10 (33%) in the control group on oral hygiene practices. As per Z

test, there was significant difference (Z=3.41) between experimental and control group at p level <0.05, hence it can be concluded that learning package was effective in improving knowledge related to oral hygiene practices among school-age children aged between 6-12 years studying at Selected Schools.

**Table 3: Comparison of post-test knowledge score of students on different aspects of oral hygiene between experimental & control group (N=60)**

| Oral hygiene           | Experimental (30) |     | Control (30) |     | Two sample binomial proportion test |
|------------------------|-------------------|-----|--------------|-----|-------------------------------------|
|                        | N                 | %   | N            | %   |                                     |
| Oral hygiene practices | 26                | 87% | 14           | 47% | Z=0.29 P=0.78                       |
| Habits on oral hygiene | 22                | 73% | 7            | 23% | Z=3.62 P=0.001                      |
| Oral health problems   | 23                | 77% | 8            | 27% | Z=3.62 P=0.001                      |
| Overall                | 25                | 83% | 10           | 33% | Z=3.41 P=0.001                      |



**Figure:- 1 Multiple bar diagram showing comparison of pre-test and post-test knowledge scores**

Figure 1 shows that the difference between pre-test score and post-test score of the school-age children in the experimental group on oral hygiene practices was 15 (50%). Whereas difference in pre-test score and post-test score of the school-age children in the control group on oral hygiene practices was 1 (3%).

A significant association between post-test knowledge score in the experimental group and in the socio-demographic variables like sex, residential area, Number of dental examinations in a year, any dental problems present in the past 3 years in the school-age children.

## DISCUSSION

This study presented a comprehensive overview and information about the level of oral health knowledge among 6-12 years old school children in selected districts of northern state of India. To the best of our knowledge, this study represents the first published study of its kind that explored this issue among school children.

Present study found that learning package related to oral hygiene practices was very effective in improving the knowledge of school students. This finding is in line with previous studies. Mwangosi et al (2002) [10] conducted to assess the effects of that school-based oral health education programme on pupils and reported that proper brushing uses had significantly improved among experimental children and they took longer for tooth brushing. School-based programme had a moderate positive effect on oral health knowledge and on the effectiveness of tooth brushing.

In this study, the oral health knowledge levels were influenced by socio-demographic factors such as gender, residential area, number of dental examinations in a year and any dental problems present in the past 3 years. The results are consistent with previous studies. [11-13]

The majority of the children (48%) visited their dentist only when they had

dental pain or problems. Cheah et al [14] also reported the similar findings. This attitude could be explained in terms of fear due to previous negative dental visit experience or negligence of parents. Another reason could be due to the low awareness of the importance of routine dental visits for dental check-ups.

## CONCLUSION

From the findings of the present study, it may be concluded that knowledge related to oral hygiene practices is below the satisfactory level. Learning package was very effective in improving knowledge of the school-age children regarding oral hygiene practices. Majority of students had lack of awareness regarding oral hygiene practices and regular dental visits. The oral health knowledge levels were influenced by socio-demographic factors, notably gender, residential area, number of dental examinations in a year and any dental problems present in the past 3 years.

Despite the interesting findings, some study limitations need to be mentioned. First, this research is being evaluated on the basis of responses to the questionnaires and self-reported data. Measurement errors due to misinterpretation of questions and memory errors are subject to occur. To beat this difficulty, the questions were worded simply, and a pilot study was performed. Second, cross-sectional data were used in the analysis so, causal relationships cannot be inferred. Thus, a study that employs longitudinal data collection will be required to address this issue in more depth. Further, Data were only collected from a student sample of a single city. This can limit the generalizability of the findings to a larger population.

The findings from this study have given many recommendations. Emphasis should be given on awareness on the importance of oral health need to be enhanced among school children. The optimal way to raise children's oral and general health awareness would be through furnishing parents and school teachers with



accurate information. All parents and school teachers should be invited regularly for presentations on oral and general health. Support should be given to school-based Oral Health Programs by recruiting an oral hygienist or nurse on a full-time basis to visit the schools, screen the children, refer if necessary, and initiate appropriate oral hygiene and dental educational activities. Students need to be taught for development of healthy lifestyles, such as healthy diets low in sugars, effective use of fluoride, and development an oral health system that is oriented toward oral disease prevention and health promotion.

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#### Conflicts of interest

The authors declare that they have no conflict of interests with any organization regarding the materials discussed in this manuscript.

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