## Original Research Article

# Effectiveness of a planned teaching program regarding modified bass brushing technique on knowledge among school children at selected school of rural area of Lucknow district

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### ABSTRACT

**Background:** Pre-schooler are very much prone to infectious diseases due to low immunity among those diseases the commonest is dental carries which occurs due to improper brushing technique. The study was conducted with the objective to assess knowledge and effectiveness of planned teaching program regarding modified bass brushing technique among school children at selected rural area.
**Methods:** Research design and setting experimental pre-test-post-test control group design used and setting was selected rural area, Sarojini Nagar, Lucknow, Uttar Pradesh. Sample and sampling technique total 66 sample and villages for experimental and control group were selected through simple random technique. Tools were used as self-structured knowledge questionnaire and checklist.
**Results:** Revealed that in experimental group post-test mean and SD score (7.55±1.09) was significantly higher than pre-test score (5.06±1.03) and in checklist the post-test mean and SD score (7.64±1.32) was significantly higher than the mean and SD pre-test score was 5.27±0.45. The researcher compared the calculated t-value (11.04) with the tabulated value (1.986) for the questionnaire and the checklist t-value 3.14. In control group the knowledge questionnaire post-test mean and SD score was (5.27±0.45) and pre-test mean and SD score was (4.24±1.03) with the t-value of 0.04. Whereas checklist post-test mean and SD score (5.21±0.48) and pre-test mean and SD score (5.27±0.05) with the t- value 0.32.
**Conclusions:** Thus the planned teaching programme on knowledge regarding modified bass brushing technique was effective.

**Keywords:** Effectiveness, Knowledge, Modified bass brushing technique, Planned teaching programme

## INTRODUCTION

Healthy children will become healthy citizen constituting a healthy nation. Healthy children are successful learners.[1] Teeth are important not only for mastication of food but also for good appearance and clear speech. All over the world reported prevalence of dental caries varies from 30% to 80%. In many developing countries like India, dental caries is at the increase. India faces many short comings challenges in providing oral health needs. The Indian children cannot utilize oral facilities due to inaccessibility, monetary constraints and stagnation of public dental health care services. This provides the health professional to adopt a more practical approach to achieve primary prevention of oral disease.[2]

Thus oral hygiene education should be taught to child according to development of child's cognitive skills.

Instructions should be given according to child's readiness for tooth brushing and must also include proper training and regular reinforcement.[3]

Children can be provided with knowledge that helps them in making better choices, adopting healthier lifestyle and to deal with conflicting ideas. Students are the ideal target group for an early intervention because healthy behaviours and lifestyles developed at younger ages are more sustainable.[4,5] Tooth brushing is very efficient measure to maintain good oral hygiene and to prevent dental caries as well as periodontal problem.[6] Maintaining good oral health should include the guidance regarding maintenance of oral hygiene as it prevents the accumulation of microbial plaque and normal tooth brushing is sufficient in preventing the adherence of dental plaque.[7]

School health is a significant branch of community health. The school years is a time of increasing risk for negative health related outcomes. These groups develop cognitive, affective and behavioural changes which in turn can promote children health and prevent health problems. Hence the school remains a natural pathway through which the health of the community can be improved with the children as the natural agent to change.[8]

Today, toothbrushes are commonly used for cleaning the oral cavity and preventing dental diseases. Learning tooth brushing is necessary because oral health is one of the most important factors for not only prevention of oral cavity and periodontal diseases but also general health. In case of children majority show noncompliance towards brushing and they try to hide themselves from daily brushing task because they considered as tedious procedure and dislike the brushing. It is important to gain child's interest in brushing by introducing some device that child can enjoy the brushing.[9]

Hygienic oral health practices are necessary from a young age to ensure positive long term dental health and hygiene. The Global Burden of Disease Study in 2016 assessed that oral diseases affected at least 3.58 billion people worldwide, with caries of the permanent teeth being the most prevalent of all conditions assessed. Globally, it is estimated that 2.4 billion. The children need to be educate regarding oral hygiene and they should practice from early stage as it is one of the determinants of the health status later in one's life. Considering the fact that there is the rise in the number of dental problems in school going children. Hence, the researcher felt the need to find out the effectiveness of brushing technique among school going children.[10]

## METHODS

An experimental pre-test-post-test control group design used and setting was selected rural area, Sarojini Nagar, Lucknow, Uttar Pradesh.

The total sample size was 66 including both the groups (33 in each group). School children aged between 8-11 years studying in selected rural school from 3rd to 6th standard of Sarojini nagar, Lucknow.

Simple random sampling technique (lottery method) was used to select the villages. Sample was selected by random table method under Sarojini nagar PHC Lucknow.

### Data collection tool

*Part A:* Socio-demographic variables included- age of school children, gender, religion, type of family, education of father, education of mother, occupation of father, occupation of mother.

*Part B:* Self-structured knowledge questionnaire on modified BASS brushing technique.

### Table 1: Knowledge questionnaire scoring criteria.

| Score | Score (%) | Level of knowledge |
|-------|-----------|--------------------|
| 1-5 | 7-28 | Poor knowledge |
| 6-10 | 35-64 | Average knowledge |
| 11-16 | 71-100 | Good knowledge |

Description of planned teaching program cover various headings like introduction to modified bass brushing technique, meaning of modified bass brushing technique, general points for modified bass brushing technique, steps for modified bass brushing technique.

*Part C:* Observational checklist for steps (15) followed in modified bass technique.

### Table 2: Checklist scoring criteria.

| Score | Score (%) | Level of Knowledge |
|-------|-----------|--------------------|
| 1-5 | 7.14 - 35.71 | Poor performance |
| 6-10 | 42.85- 71.42 | Average performance |
| 11-15 | 78.57- 100 | Good performance |

### Inclusion criteria

School children including boys and girls between the age group of 8-11years studying in 3rd to 5th standard, school children whose parents allowed to participate in the study were included in the study.

### Exclusion criteria

School children with intake of medications affecting oral health, school children undergoing orthodontic treatment were excluded from the study.

### Statistical analysis

Data entered in Microsoft excel and analysis was done. The association between pre-test knowledge score of

school children and their selected demographic variables was done by chi square test, effectiveness of planned teaching program was done by paired t- test and the level of significance was set at p-value<0.05.

### Ethical clearance and informed consent

The study was carried after obtaining approval from the institutional ethical committee of King George's Medical University Lucknow. And also permission was taken from chief medical officer of Lucknow.

The participants were briefed about the purpose of the study and informed consent was obtained from the parents/ guardians of the school children prior to the data collection.

## RESULTS

### Level of knowledge regarding modified bass brushing technique

In experimental group the majority of the school children had poor knowledge in pre-test 75.75%, 24.24% had average knowledge and none of them had good knowledge where as in post-test subjects had average level of knowledge 96.6%, 3.03% had good knowledge and none of them had poor knowledge.

**Table 3: Level of knowledge regarding modified bass brushing technique.**

| Level of knowledge | Experimental group | | | | Control group | | | |
|---|---|---|---|---|---|---|---|---|
| | Pre-Test | | Post-Test | | Pre-Test | | Post-Test | |
| | F | % | F | % | F | % | F | % |
| Poor (1-5) | 25 | 75.75 | 0 | 0 | 19 | 57.57 | 9 | 27.27 |
| Average (6-10) | 8 | 24.24 | 32 | 96.96 | 14 | 42.42 | 24 | 72.72 |
| Good (11-16) | 0 | 0 | 1 | 3.03 | 0 | 0 | 0 | 0 |

**Table 4: Checklist score regarding modified bass brushing technique.**

| Level of performance | Experimental group | | | | Control group | | | |
|---|---|---|---|---|---|---|---|---|
| | Pre-Test | | Post-Test | | Pre-Test | | Post-Test | |
| | F | % | F | % | F | % | F | % |
| Poor (1-5) | 19 | 57.57 | 5 | 15.15 | 19 | 57.57 | 18 | 54.54 |
| Average (6-10) | 14 | 42.42 | 28 | 84.84 | 14 | 42.42 | 15 | 45.45 |
| Good (11-15) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

**Table 5: Effectiveness of planned teaching program on knowledge regarding modified bass brushing technique.**

| Group knowledge score | Experimental group | | Control group | |
|---|---|---|---|---|
| | Pre-test | Post-test | Pre-test | Post-test |
| Mean | 5.06 | 7.55 | 4.24 | 5.27 |
| SD | 1.03 | 1.09 | 1.03 | 0.45 |
| df 30 | 2.04 | | 2.04 | |
| t-value | 5.07 | | 0.04 | |

In control group 57.57% school children had poor knowledge in the pre-test, 42.42% had average knowledge and none of them had good knowledge where as in post-test majority of subjects had average level of knowledge 72.72%, 27.27% had poor knowledge Table 3.

### Checklist score regarding modified bass brushing technique

In experimental group of school children had poor knowledge in the pre-test i.e. 57.57%, 42.42% had average knowledge and none of them had good knowledge where as in post-test majority of subjects had average level of knowledge 84.84%, 15.15% had good knowledge. In control group majority of school children had poor knowledge in the pre-test 57.57%, 42.42% had average knowledge and none of them had good knowledge where as in post-test majority of subjects had average knowledge 54.54%, 45.45% had poor knowledge Table 4.

### Effectiveness of planned teaching program on knowledge regarding modified bass brushing technique

In experimental group the pre-test and post test score was compared to assess the effectiveness paired t-test was applied.

**Table 6: Effectiveness of planned teaching program on modified bass brushing technique checklist.**

| Group checklist score | Experimental group | | Control group | |
|---|---|---|---|---|
| | Pre-test | Post-test | Pre-test | Post-test |
| Mean | 5.27 | 7.64 | 5.27 | 5.21 |
| SD | 0.45 | 1.32 | 0.45 | 0.48 |
| df 30 | 2.04 | | 2.04 | |
| t-value | 3.14 | | 0.32 | |

**Table 7: Association between the pre-test knowledge score of school children in experimental group and their selected demographic variables.**

| Variables | Category | Sample | Respondents knowledge | | | P value | χ2 |
|---|---|---|---|---|---|---|---|
| | | | Good | Average | Poor | | |
| Age in years | 8 | 12 | 0 | 9 | 3 | 7.81 df=3 | 1.82 NS |
| | 9 | 8 | 0 | 5 | 3 | | |
| | 10 | 10 | 0 | 8 | 2 | | |
| | 11 | 3 | 0 | 3 | 0 | | |
| Gender | Male | 14 | 0 | 11 | 3 | 3.84 Df=1 | 0.104 NS |
| | Female | 19 | 0 | 14 | 5 | | |
| Religion | Hindu | 27 | 0 | 19 | 8 | 3.84 Df=1 | 2.34 NS |
| | Muslim | 6 | 0 | 6 | 0 | | |
| | Christian | 0 | 0 | 0 | 0 | | |
| | Others | 0 | 0 | 0 | 0 | | |
| Type of family | Nuclear | 11 | 0 | 5 | 6 | 3.84 Df=1 | 8.25 S |
| | Extended | 22 | 0 | 20 | 2 | | |
| Education of father | Primary | 20 | 0 | 14 | 6 | 7.81 Df =3 | 1.107 NS |
| | Secondary | 7 | 0 | 6 | 1 | | |
| | Graduate | 1 | 0 | 1 | 0 | | |
| | Above | 0 | 0 | 0 | 0 | | |
| | Illiterate | 5 | 0 | 4 | 1 | | |
| Education of mother | Primary | 20 | 0 | 15 | 5 | 7.81 Df =3 | 0.783 NS |
| | Secondary | 6 | 0 | 5 | 1 | | |
| | Graduate | 1 | 0 | 1 | 0 | | |
| | Above | 0 | 0 | 0 | 0 | | |
| | Illiterate | 6 | 0 | 4 | 2 | | |
| Occupation of father | Professional | 8 | 0 | 7 | 1 | 5.99 Df =2 | 1.365 NS |
| | Skilled | 2 | 0 | 1 | 1 | | |
| | Semi- Skilled | 23 | 0 | 17 | 6 | | |
| | Unemployed | 0 | 0 | 0 | 0 | | |
| Occupation of mother | Housewife | 29 | 0 | 0 | 0 | 5.99 Df =2 | 3.459 NS |
| | Skilled | 3 | 0 | 23 | 6 | | |
| | Semi- Skilled | 1 | 0 | 2 | 1 | | |
| | Unemployed | 0 | 0 | 0 | 0 | | |

The calculated t-value (5.07) at the level of significance (<0.05) and the tabulated was (2.04). Hence, there was a significant change in the knowledge score of post-test value of school children. Whereas in control group calculated t value was (0.04) and the tabulated value was (2.04) with 30 df at the level (<0.05) which depicts no significant change Table 5.

***Effectiveness of planned teaching program on modified bass brushing technique checklist***

In experimental group the pre-test and post test score calculated where t-value was (3.14) at the level (<0.05) and the tabulated was (2.04). Hence there was a significant change in the knowledge score of post-test value of school children. In control group the calculated t value was (0.32) and the tabulated value was (2.04) with

30 degrees of freedom at the level (<0.05). Hence the calculated value is lower than the tabulated value which depicts there is no significant change Table 6.

***Association between the pre-test knowledge score of school children in experimental group and their selected demographic variables***

The computed chi square value for each variable with the appropriate degree of freedom i.e., age, gender, religion, type of family, education of father, education of mother, occupation of father, occupation of mother. There was no significant association between the demographic variable, for all the variables except the type of family, and their knowledge level in experimental group. That means there was a relationship between the knowledge level of school children and their type of family Table 7.

**Table 8: Association between the pre-test knowledge score of school children in control group and their selected demographic variables.**

| Variables | Category | Sample | Respondents knowledge | | | P value | χ2 |
|---|---|---|---|---|---|---|---|
| | | | Good | Average | Poor | | |
| **Age in Years** | 8 | 7 | 0 | 3 | 4 | 7.81 | 0.508 |
| | 9 | 8 | 0 | 4 | 4 | df=3 | NS |
| | 10 | 9 | 0 | 3 | 6 | | |
| | 11 | 9 | 0 | 4 | 5 | | |
| **Gender** | Male | 14 | 0 | 8 | 6 | 3.84 | 2.15 |
| | Female | 19 | 0 | 6 | 13 | Df=1 | NS |
| **Religion** | Hindu | 21 | 0 | 5 | 16 | 3.84 | 8.192 |
| | Muslim | 12 | 0 | 9 | 3 | Df=1 | S |
| | Christian | 0 | 0 | 0 | 0 | | |
| | Others | 0 | 0 | 0 | 0 | | |
| **Type of family** | Nuclear | 16 | 0 | 7 | 9 | 3.84 | 0.022 |
| | Extended | 17 | 0 | 7 | 10 | Df=1 | NS |
| **Education of father** | Primary | 21 | 0 | 10 | 11 | 7.81 | 2.821 |
| | Secondary | 6 | 0 | 2 | 4 | Df =3 | NS |
| | Graduate | 1 | 0 | 1 | 0 | | |
| | Above | 0 | 0 | 0 | 0 | | |
| | Illiterate | 5 | 0 | 1 | 4 | | |
| **Education of mother** | Primary | 14 | 0 | 8 | 6 | 7.81 | 2.167 |
| | Secondary | 6 | 0 | 2 | 4 | Df 3 | NS |
| | Graduate | 0 | 0 | 0 | 0 | | |
| | Above | 0 | 0 | 0 | 0 | | |
| | Illiterate | 13 | 0 | 4 | 9 | | |
| **Occupation of father** | Professional | 9 | 0 | 5 | 4 | 7.81 | 6.226 |
| | Skilled | 14 | 0 | 8 | 6 | Df =3 | NS |
| | Semi- Skilled | 9 | 0 | 1 | 8 | | |
| | Unemployed | 1 | 0 | 0 | 1 | | |
| **Occupation of mother** | Housewife | 31 | 0 | 12 | 19 | 5.99 | 2.889 |
| | Skilled | 2 | 0 | 2 | 0 | Df =2 | NS |
| | Semi- Skilled | 0 | 0 | 0 | 0 | | |
| | Unemployed | 0 | 0 | 0 | 0 | | |

***Association between the pre-test knowledge score of school children in control group and their selected demographic variables***

The computed the chi square for each variable with appropriate degree of freedom i.e., age in years, gender, religion, type of family, education of father, education of mother, occupation of father, occupation of mother. There was no significant association between the demographic variable and their knowledge level for all the variables except religion. That means there was a significant relationship between the knowledge level of school children and religion in control group Table 8.

**DISCUSSION**

The present study was conducted among school children of rural area of Lucknow district. A total of 66 school children including for both experimental and control group were selected after fulfilling the inclusion criteria.

In experimental group the mean score and standard deviation of pre-test was (5.06±1.03) and in post-test it was (7.55±1.09) where as in control group i.e. (4.24±31.03) in pre-test and in post-test i.e. (5.27±0.45). Mean difference of score of pre-test in experimental group were significantly higher in comparison to mean difference in post-test. A similar cross study was conducted to evaluate the dental health condition in primary school going children (Class iii to class v) age group in 8 to 12 years, in the school named Mughda high school in Dhaka City. Out of 183 students 42 students were in age group 8, 38 were in age group 9, 32 were in age group 10, 35 were in age group 11, 36 were in age group 12. Among them 92 were male students and 91 were female. Out of 183 students 78 students gingival status is abnormal which indicates 42.62% cases gingival condition is poor that means gingivitis or periodontitis is present. Thus the result revealed that preventive measure should be taken to maintaining good dental health by maintenance of proper brushing techniques.[11] The association of pre-test knowledge score with their

selected demographic variables by using Chi square, the result revealed that in experimental group there was no significant association between, pre-test knowledge score and selected socio- demographic variables and in control group school children had significant association it means having positive relationship between the knowledge. Others demographic variables in control group had no significant association with pre-test knowledge score. A similar study was conducted among dental Orthodontics and Pediatric Dentistry (OPD) visitors of DIKIOHS in Karachi, 2015. Socio-demographic and behavioural factors related to tooth brush changing were identified. Majority of participants (65%) were changing tooth brush at every 3 months. The other factors that showed significant association in multivariate analysis with the monthly income >50,000, users of other mouth cleaning aids and people using tooth brush with soft bristles. Study concluded that majority of the participants were changing their tooth brush at recommended intervals and different variables (demographic, socioeconomic and dental) are associated with the frequency of tooth brush changing.[12]

## CONCLUSION

The present study assessed the knowledge among school children regarding modified bass brushing technique and found that the children had poor knowledge related to modified bass brushing technique. After the planned teaching program on modified bass brushing technique there was significant improvement on knowledge of the school children regarding modified bass brushing technique. The study concluded that the planned teaching program was effective in improving knowledge of school children regarding modified bass brushing technique.

## ACKNOWLEDGEMENTS

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