

# The Impact of Oral Health Education on Children from the Slums of Thane: A Survey Study

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## ABSTRACT

**Aim:** Oral hygiene often tends to be ignored and not given much importance to as compared to general hygiene in schools and this in turn takes a toll on the oral health status of every growing individual. The aim of this study was to assess the effectiveness of oral health education on children below the poverty belt residing in Thane, Maharashtra, India.

**Materials and methods:** A field trial was carried out at an institute in Thane (India). The students of the school, age between 8-12 years, were asked to fill out a questionnaire about their understanding of oral hygiene following which they received a short lecture and demo on oral hygiene maintenance by the dental professional (licensed dentist). After the demo, the students were asked to fill the same questionnaire to see whether their views towards the routine oral hygiene maintenance had changed positively. The before and after study was conducted on 45 students of the Ngo based school.

**Results:** There was a significant difference in the oral health knowledge of the young individuals with an advancement in knowledge post oral health education ( $p < 0.01$ ). The qualitative results helped judge the impact of education on health care and induce changes in the existing mannerisms of oral hygiene maintenance by bringing about an improvement.

**Conclusion:** The oral health care education was well accepted and retained by the students resulting in a change in their attitudes towards health care. The scores on the questionnaire supported and showed an improvement after the delivery of education.

**Keywords:** oral health, dental, children, survey

## I. INTRODUCTION

It has been previously reported that the habits which you incorporate in your childhood are the ones that are engraved in memory throughout life(1). Oral health concern of an individual is dependent on the attitude of the person. Children of the tender age with their persuadable minds act as the best candidates for instilling correct oral hygiene practices(2). Children are receptive during this period and the earlier the habits are established, the longer lasting is the

impact(2). Schools have been suggested as an important background to carry out such studies as the children are in their most influential stage of life and it provides a good opportunity to reach out to a larger crowd(3, 4). The adult population of the slum area has a poor oral health status as they do not have the funds to afford multiple oral hygiene kits and visit the dentist for regular checkups hence the same oral hygiene status is seen to be reflected in their children. The institute served as a great platform to impart knowledge and strengthen health promotion by

carrying out various educational activities pertaining to oral health maintenance. Teachers were also asked to reinforce the importance of oral health care awareness as they have a good student-teacher bond so the interaction is better. Thus the main aim of the study carried out was to assess the effectiveness of oral health education of children between the ages of 8-12 years in the slums of Thane.

## II. MATERIALS AND METHODS

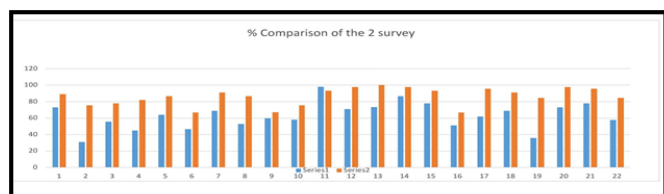
Approval was obtained before carrying out this study by the school principal and permission was granted by the school authorities. Prior to finalizing the questionnaire a pilot test was carried for the same amongst a small sample size of 10 kids, opinions of the superior clinicians were taken to gain feedback on the questionnaire in terms of feasibility, language understanding and length of the form. Based on the feedback necessary changes were made before conducting the main study. The questionnaire included personal information of the students such as name, age, sex and school. 22 multiple choice questions were provided based on oral health care knowledge (11 nos), attitude(3 nos) and practices(8 nos). The sample size of 45 students was selected and the school selected was an Ngo based school named Navjeevan School in Thane which served as an institutional hub for children below the poverty line. The children were requested to first fill a questionnaire, as previously described(5), provided to them in their local language, Marathi alongside which an English version was also made available( see supplemental figure). The first questionnaire was filled without prior knowledge of oral hygiene, after which an informative lecture and demonstration was given on oral hygiene maintenance with detailed explanation on the instruments used to practice good oral hygiene. A short video clip was played for the children demonstrating how to brush using the correct techniques and how floss is to be used.

Communication based behavioral change was used to bring about an improvement in their routine hygiene practices. Tell show do technique was also incorporated while explaining how to use the dental aids. An unbiased educational means was uniformly provided to all the 45 students.

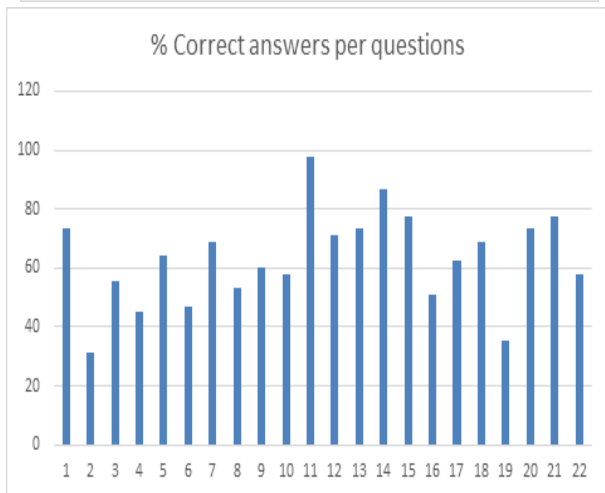
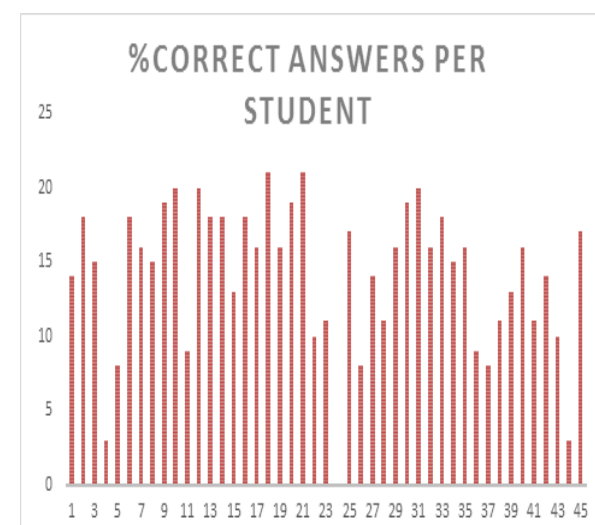
Statistical analysis: The data was coded and entered into Microsoft Excel spreadsheet. Analysis was done using SPSS version 15 (SPSS Inc. Chicago, IL, USA) Windows software program. Descriptive statistics were calculated. Statistical tests applied were Independent t test, paired t test and McNemar test. Level of significance and confidence level were set at 5% and 95%, respectively.

## III. RESULTS

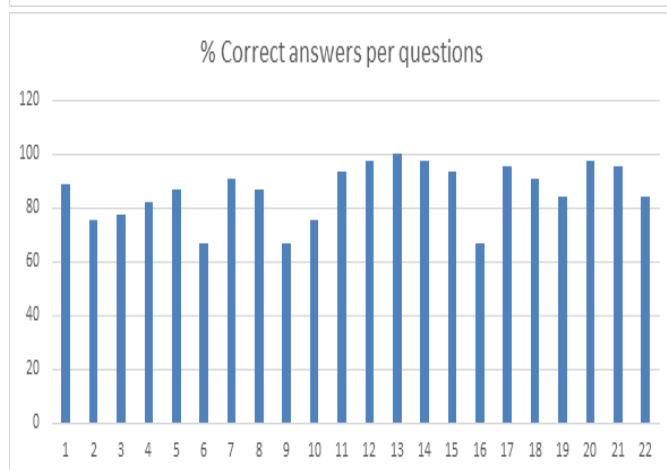
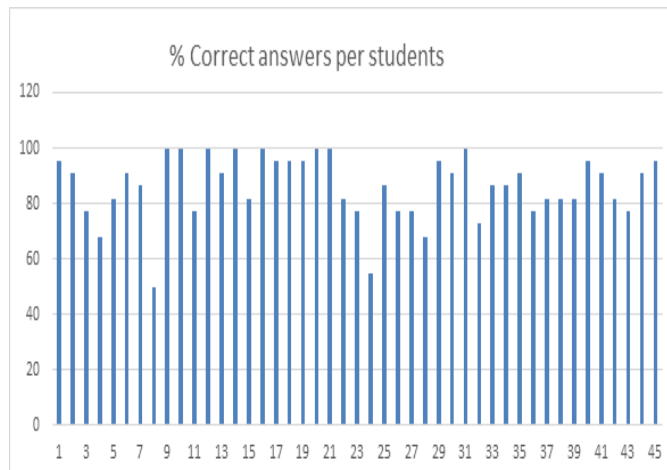
The mean % differences in the answers to the questionnaire are displayed in table 1 and figure 1. Individual correct answers marked by the children pre and post oral education are depicted in figure 2 and 3. On the basis of correct answers obtained, all the questions show statistical improvements except for one question (q11) "can regular cleaning of the mouth prevent dental caries?" which showed no improvement hence displaying that the children didn't understand the cause and prevention of tooth decay. The largest improvement was seen with question 19 "how do you brush your teeth?" demonstrating that the children had clearly understood the method and had a positive reaction towards the practice as a 48% increase in correct response had been seen. A drastic change was also seen in the children's understanding of their dentition; they seemed to be aware of the number of teeth in the primary dentition versus the number of teeth in the permanent dentition post education. When compared according to gender, mean oral health knowledge, attitude and practices of children differed significantly ( $p < 0.01$ ) before and after oral health education program.



**Figure 1.** Assessment of differences in oral health knowledge before and after oral health education program. (Series 1 represents before oral health education and series 2 represents after oral health education).



**Figure 2.** Pre-oral education survey data reporting the number and % of correct answers marked by the students.



**Figure 3.** Post-oral education survey data reporting the number and % of correct answers marked by the students.

**Table 1.** Assessment of differences in oral health knowledge before and after oral health education program. (Survey 1 represents before oral health education and survey 2 represents after oral health education).

Sr No	questions	SURVEY 1(in %)	SURVEY 2 (in %)	DIFFERENCE
1	Is oral health a part of general health?	73	88.89	15.89
2	How many milk teeth do we have ?	31	75.6	44.6
3	How many permanent teeth do we have ?	55.6	77.8	22.2
4	What are the most common diseases affecting oral	45	82	37
5	Why do we get dental problems ?	64	86.7	22.7
6	What is the reason for tooth decay ?	46.7	66.7	20
7	What is the reason for bleeding gums ?	69	91.11	22.11
8	How can we prevent dental problems ?	53	86.7	33.7
9	What is fluoride ?	60	67	7
10	What is dental floss ?	58	75.6	17.6
11	Regular cleaning of mouth can prevent dental caries ?	98	93.3	-4.7
12	Do you think maintaining healthy mouth is individual responsibility	71	97.8	26.8
13	Do you think that improving and maintaining health of the mouth is in your control ?	73.33	100	26.67
14	Do you think it is required to visit a dentist periodically to maintain health of your mouth ?	86.66	97.8	11.14
15	How do you clean your teeth ?	77.8	93.3	15.5
16	How often do you clean your teeth ?	51.1	66.7	15.6
17	What type of toothbrush bristles do you use ?	62	95.6	33.6
18	Do you rinse your mouth after meals ?	69	91.1	22.1
19	How do you brush your teeth ?	36	84.44	48.44
20	How often do you charge your toothbrush	73	97.8	24.8
21	Do you clean your tongue ?	78	95.56	17.56
22	Do you use oral hygiene aids ?	57.8	84.4	26.6

#### IV. DISCUSSION

Living below the poverty line is associated with poor oral hygiene as dentistry is limited to the private sector and the clinics are located mainly in the city area and slum areas are cut out(6-9). Socioeconomic status and the lack of oral health care facilities throughout the country are factors that contribute to poor health of many people as there is lack of awareness and knowledge(10). Epidemiological studies(11) reveal that in general the oral health of these children residing in the slums of Thane is poor, due to which poor oral health can be considered as a public problem because of its high prevalence and significant social impact.

Oral health education is carried out to provide a better understanding of hygiene maintenance and to bring about an improvement in oral health (5, 12, 13). Education was an essential component of this study. In this study focused on the oral health knowledge, attitudes and hygiene practices of the children. The education program was directed at school children to increase their awareness, knowledge and skills in oral health care. It was documented that there was an improvement in the hygiene practices of the students post the informative session. In the study the population was asked to fill the form with 22 questions without prior information about hygiene practices after which an informative lecture was given and the children were asked to fill the same form again in order to compare their responses.

From the set of 22 questions, the major differences were seen in question 2, 4, 8, 17 and 19; whereas there was a negligible difference was seen with question 11. Question 2 was pertaining to the number of teeth in the oral cavity during primary dentition and due to lack of education about the number of teeth in the mouth, most kids were unaware initially but after receiving the lecture the students quickly grasped the information which was seen when they answered the

same question in the second survey. The second time they answered question 2, a marked increase in the correct answer was seen by 44.6%. As for question 4 and 8, an increase in around 33-37% was seen after conduction teaching program. "How do you brush your teeth?" question 19 showed the most improvement in answer as there was an overall 48% increase seen as they children were given a short demonstration of the various brushing techniques best suited for their age group such as charters technique and fones technique.

Although the lecture taken was very informative and was conducted in a simple language the students failed to understand the factors influencing the prevention of dental caries due to which there was a 4.7% fall in the correct answer in relation to question 11. After seeing this negative outcome we decided to conduct another short lecture re-explaining and teaching the kids about the importance of diet and brushing on the prevention of caries, a short animated clip about dental caries was displayed as well.

At baseline, the knowledge of students regarding oral health, importance of hygiene and brushing was poor. Post intervention there was a significant rise in the awareness of the students. These improvements reflected the effectiveness of the oral health education program.

#### V. CONCLUSION

This inexpensive school-based mediation proved to be effective in creating healthier smiles. The results of this study showed that oral health knowledge was poor at baseline; post intervention there was significant improvement in the oral health knowledge and the information given to the students helped provide positive results. Therefore, educating the underprivileged children about oral hygiene maintenance is essential in spreading awareness about oral health.

**FINANCIAL SUPPORT AND SPONSORSHIP:**

NIL

**CONFLICT OF INTEREST:**

There were no conflicts of interest.

<b>APPENDIX</b> <b>Proforma</b>	
Name.....Age .....Sex.....	
Name of School.....	
Tick the right answer. (बरोबर उत्तराला खुण करा)	
<b>Oral Health Knowledge.</b>	
1. Is oral health a part of general health? a. Yes b. No	1. तोंडाचे आरोग्य हे सामान्य आरोग्याचाच भाग असतो का? अ. हो ब. नाही.
2. How many milk teeth do we have ? a. 10 b. 20 c. 28 d. 32	2. आपल्याला कीती दुधाचे दात असतात ? अ. 10. ब. 20. क. 28. ड. 32.
3. How many permanent teeth do we have ? a. 10 b. 20 c. 28 d. 32	3. आपल्याला कायमस्वरूपी दात कीती असतात ? अ. 10. ब. 20. क. 28. ड. 32.
4. What are the most common diseases affecting oral cavity ? a. Dental caries and periodontal diseases b. Asthma and common cold	4. तोंडाचे आतील भाग प्रभावीत करणारे सर्वसामान्य रोग कोणते ? अ. दात किडणे व दातांचे पोषणासंबंधी इतर रोग. ब. दमा आणि सर्दी
5. Why do we get dental problems ? a. If we don't clean teeth regularly and eat frequently. b. If we eat healthy diet. c. If we drink lot of water.	5. आपल्याला दातांच्या समस्या का होतात ? अ. दात नियमित न घासण्याने व सारखे खाण्याने . ब. पौष्टीक अन्न खाण्याने. क. खूप पाणी पिल्याने.
6. What is the reason for tooth decay ? a. Caused by bacterial fermentation. b. Caused by viruses c. Caused by fungal infection.	6. दात सडण्याची कारणे कोणती ? अ. जिवाणूंच्या वाढीमुळे ब. विषाणूमुळे क. बुरशीमुळे.
7. What is the reason for bleeding gums ? a. Not cleaning teeth regularly and deposition of debris. b. Eating hard food.	7. हिरड्यांमधून रक्त येण्याची कारणे कोणती ? अ. दात नियमित साफ न करण्याने आणि अन्नाचे कण साठल्याने. ब. कडक अन्न पदार्थ खाल्याने.
8. How can we prevent dental problems ? a. Maintaining oral hygiene and regular dental visit. b. Taking bath regularly.	8. दातांच्या समस्या टाळण्यासाठी कार्य करावे ? अ. तोंडाचे आरोग्य सांभाळावे व नियमित तपासणी करावी. ब. रोज आंघोळ करावी.
9. What is fluoride ? a. A substance that purifies water. b. A substance that improves taste of food c. A chemical substance in water that prevent dental caries.	9. फ्लोराईडस् म्हणजे काय ? अ. पाणी शुध्द करणारा घटक ब. अन्नाची चव सुधारणारा घटक. क. पाण्यात असणारा रासायनिक पदार्थ जो दात किडणे थांबवतो.
10. What is dental floss ? a. Type of a toothbrush. b. An interdental cleaning aid.	10. डेंटल फ्लॉस म्हणजे काय ? अ. दुधब्रश चा प्रकार. ब. दात साफ करण्याची वस्तू
11. Regular cleaning of mouth can prevent dental caries ? a. Yes. b. No.	11. नियमित तोंड साफ करण्याने दात किडण्यापासून वाचता येते का ? अ. हो. ब. नाही.



<b>Oral Health Attitude</b>	
1. Do you think maintaining healthy mouth is individual responsibility ? a. Yes. b. No.	1. स्वच्छ तोंड ठेवणे ही प्रत्याकाची वैयक्तीक जबाबदारी असते का ? अ. हो. ब. नाही.
2. Do you think that improving and maintaining health of the mouth is in your control ? a. Yes. b. No.	2. तोंडाची स्वच्छता करणे आणि ती सांभाळणे तुमच्याचा हातात असते असे तुम्हाला वाटते का ? अ. हो. ब. नाही.
3. Do you think it is required to visit a dentist periodically to maintain health of your mouth ? a. Yes. b. No.	3. दंत वैद्यांना नियमित भेटून तपासणी करणे हे तुमच्या तोंडाच्या स्वच्छतेसाठी गरजेचे आहे असे तुम्हाला वाटते का ? अ. हो. ब. नाही.
<b>Oral Health Practices</b>	
1. How do you clean your teeth ? a. Toothbrush and tooth paste/toothpowder. b. Finger and tooth paste/toothpowder c. Finger only d. Toothbrush only e. Any other	1. तुम्ही तुम्हचे दात कसे स्वच्छ करता ? अ. दुधब्रशने आणि दुधपेस्ट / दुधपावडर. ब. बोटाने आणि दुधपेस्ट / दुधपावडर. क. फक्त बोटाने. ड. फक्त दुधब्रशने इ. इतर
2. How often do you clean your teeth ? a. Occasionally b. Twice or more daily. c. Once daily.	2. तुम्ही किती वेळा तुमचे दात स्वच्छ करता ? अ. क्वचित ब. दिवसातून दोनवेळा किंवा जास्त क. दिवसातून एकदा.
3. What type of toothbrush bristles do you use ? a. Soft. b. Medium. c. Hard.	3. तुम्ही कांणत्या प्रकारच्या दुधब्रशचा वापर करता ? अ. मऊ ब. मध्यम क. कडक
4. Do you rinse your mouth after meals ? a. Yes. b. No.	4. तुम्ही जेवणानंतर चुळ भरता का ? अ. हो. ब. नाही.
5. How do you brush your teeth ? a. Horizontal method b. Vertical method. c. Circular method	5. तुम्ही तुमचे दात कसे घासता ? अ. आडवे ब. उभे क. गोलाकार
6. How often do you change your toothbrush ? a. Every month b. Every 2 months c. Every 6 months d. When bristles flare out.	6. तुम्ही तुमचा दुधब्रश किती दिवसांनी बदलता ? अ. दर महिन्याला ब. दर दोन महिन्यांनी. क. दर सहा महिन्यांनी. ड. जेव्हा ब्रशचे दाते सपाट होतात
7. Do you clean your tongue ? a. Yes. b. No.	7. तुम्ही तुमची जीभ साफ करता का ? अ. हो. ब. नाही.
8. Do you use oral hygiene aids ? a. Yes. b. No.	8. तुम्ही तोंडाच्या आरोग्याची साधने वापरता का ? अ. हो. ब. नाही.

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