

# The Impact of Planned Health Education on Knowledge and Practices of Oral Hygiene among Teachers in Selected Primary Schools of Karad Taluka

Dr. Sunita Tata<sup>1</sup>, Dr. P. M Durgawale<sup>2</sup>, Dr. S. V. Kakade<sup>3</sup>, Simi Elsa Philip<sup>4</sup>

<sup>1</sup>Nursing Director, KH, KIMSDU. Karad, Maharashtra, India

<sup>2</sup>Professor & HOD of Community Health Medicine, KIMSDU, Karad, Maharashtra, India .

<sup>3</sup>Associate Professor , Department of Community Health Medicine , KIMSDU, Karad, Maharashtra , India

<sup>4</sup>Msc Staff Nurse, KH , KIMSDU Karad, Maharashtra, India

**Abstract:** *Introduction:* Dental caries is public health problem in India. It is one of the most prevalent oral health diseases in India. Our society in its attitude toward dental health has been giving it less importance as compared to general health. *Objective:* To assess the existing knowledge and practices and to determine the impact of planned health education on oral hygiene among teachers in selected primary school. *Methodology:* Evaluative approach with quasi experimental one group pre test post test design was used. 14 Zilla Parishad schools in rural area were selected with simple random sampling. *Result:* Overall comparison of pre and post knowledge and practice score revealed significant improvement in post assessment ( $t = 20.540, p < 0.001$  &  $t = 6.510, p < 0.001$ ) and it was observed that there had been significant improvement in the results of oral hygiene assessment factors at post phase of study . *Conclusion:* The present results suggest that, with appropriate training workshops and guidance, from expert to teachers will lead to get aware of knowledge and practices of oral health care and it will be used in imparting it among school children to keep good oral health.

**Keywords:** planned health education, knowledge, practices, oral hygiene, teachers

## 1. Introduction

**“Oral health is a reflection of the physiological, social and psychological factors that are essential to our quality of life**

Dental diseases are a significant public health burden in India as well as across the globe. WHO recognizes the oral health as an integral part of general health. The consequences of widespread poor oral health can be seen on the personal, population, and health systems level, as caries and periodontal disease deteriorates the individual health and wellbeing, decrease economic productivity, and act as significant risk factors for other systemic health ailments. In most of the developing countries including India, there is a limited access to oral health care services, as a result teeth are often left untreated or are extracted because of pain or discomfort .The growing incidence of some chronic diseases like diabetes can further have a negative impact on oral hygiene <sup>(1)</sup>

Our society in its attitude toward dental health has been giving it less importance as compared to general health. There has been a lack of public identification of oral health deterioration and wide acceptance of morbid mouths along with widespread prevalence of oral diseases and lack of reasonable oral health-care services in the past. Dental public health programmers have not been able to achieve the depth and penetration into society required to bring about the change in societal attitude <sup>(2)</sup>

The high prevalence of dental diseases, like dental caries, periodontal disease, various forms of malocclusion, and lack of access to the required services leads to significant absenteeism and economic loss, apart from the ill-effects on the health of the person afflicted. In view of the adverse effects of poor oral health, it is important to take preventive measures and create the required services. For this purpose, and other planning and administrative needs, it is necessary to know the prevalence and distribution of oral health problems and understand the dental health practices that people follow. Such information is basic for formulation of oral health policies and appropriate programmes to improve awareness and knowledge of general public about the preventive and promotive aspects of oral health, to create the required services and to train the necessary dental manpower to meet these needs..<sup>(3)</sup>

Dental caries is public health problem in India. It is one of the most prevalent oral health diseases in India. The prevalence is as high as 60-80% in Indian school children. According to WHO 2003 Database, the mean DMFT Index at 12 years old ranges between 0.5 to 3.94 for Indian school going children. A nationwide survey of oral health conducted in 2004 throughout India, has shown that the prevalence of dental caries is 51.9% among five year old children, 53.8% among 12 year old children and 63.1% in 15 year old school children highlighting that dental caries is a significant oral health disease<sup>(2)</sup>. It is evident that cultural beliefs and social taboos play an important role in the perception of the causes of dental decay and gum diseases. In many countries, the number of children brushing their

teeth is highly unsatisfactory including India. A small proportion of children do not clean their teeth at all. Some may not have access to a toothbrush and many use the traditional cleaning aids like datun, salt and oil, coal ash and locally made powders etc. A considerable population of children in the developing nations is being affected by tooth decay and most of the time; their proper treatment is given the last priority, owing to the limited access to oral health services.<sup>(4)</sup>

The use of teachers in health education, however, carries certain disadvantages, the major one being the teacher may be insufficiently trained to deliver such messages; the lack of training on aspects of oral health has shown to prevent teacher from participating in teaching children effectively.<sup>8</sup> In order to instill a good positive approach to oral habits, the teachers themselves need to have good knowledge, attitudes, and practices toward oral hygiene<sup>(5)</sup>

The school provides an ideal setting for promoting oral health. At the global level, approximately 80% of children attend primary schools and 60% complete at least 4 years of education, with wide variations between countries and gender. In some countries, more than 50% of children aged 7–14 years are out of school and <20% complete the first grade due to the exploitation of child labor. Still, schools remain an efficient and effective way to reach over 1 billion children worldwide and, through them, families and community members.<sup>(6)</sup>

The school based activities, regular oral health programs should be conducted in schools, to reach large number of children. At the school age, children are receptive to guidance and familiar with the learning environment and culture. School teachers can effectively influence students' knowledge, attitude and practices regarding oral health and can bring change in behavior. It has been observed in India, that the schoolteacher's oral health knowledge has also not been satisfactory. It is very important to target oral health education to the children since the lifestyle and hygiene practices once established at an early age can go a long way in spending rest of the life in a healthy way<sup>(7)</sup>. They should be empowered to take control of their own health early in their lives and encouraged to develop positive attitude towards preventive measures

It is understood that a positive attitude toward learning or attaining education will result in better understanding and hence better practice of the knowledge gained. Similarly, if knowledge regarding oral hygiene and practices is given, it will result in the improvement of oral hygiene over time. The process of improving oral health in a population involves components such as -

- 1) Collection of information about oral hygiene status.
- 2) Evaluation of the data helps to understand the need of the community.
- 3) Identification of the oral hygiene problems.
- 4) Plan the education and treatment and preventive strategies for community

Only few studies on oral hygiene in school teachers have been done in Karad Taluka. Karad is situated in the western part of Maharashtra of the Satara district. Therefore the

investigator have been worked in community & rural area had seen that the primary school teachers come in contact with the mother of under five children's, the parents of the children's, the parents of various schools. By educating the primary school teachers it will be possible for them to communicate the message of keeping good oral hygiene.

## 2. Literature Survey

**1.Nishi G , N Vanishree , Ashwini R , V Chaithra , Deepa B et al (2015)** conducted cross-sectional survey was carried out on 241 primary and middle school teachers from 17 selected schools in Mangalore city and was given the questionnaires in English as well as the local language Kannada. There were 18 questions regarding knowledge about dental diseases such as dental caries, periodontal disease, oral hygiene practices, tobacco chewing habits and smoking habits. Results shows that About 241 (100%) had heard about tooth decay and 228 (94.6%) had heard of gum disease. An inverse relationship between the frequency of changing the brush and awareness about dental caries was observed people with a chewing habit and smoking habit had a low level of knowledge and awareness about the dental caries and periodontal disease.<sup>(8)</sup>

**2. Prabhadevi C M , V Satish, Nikhil M, TD Vishwas, MC Dayanand (2017)** : descriptive study was conducted on school teachers (n = 150) of Davangere city were recruited The subjects completed a questionnaire that aimed to evaluate teachers' knowledge, attitudes, and practices on oral health. (The participants' oral hygiene habits were found to be regular. The majority of teachers showed good knowledge on oral health. Most of the teachers in this study recognized the importance of oral health. The majority of teachers did incorporate the importance of oral health in teaching and educating children in the school. But, not all teachers are involved effectively. So, the teachers should be trained comprehensively regarding importance of oral health and creating awareness on oral health promotion for their students in combination with health care personnel.<sup>5)</sup>

## 3. Research Methodology

**Research approach and design:** Evaluative approach with quasi experimental one group pre test post test design was used.

**Study setting;** The study has been conducted in 14 Zilla Parishad primary schools in Karad Taluka within 10km radius from K.I.M.S.D.U.to achieve advantages of geographical proximity & economy in terms of time, easy transport facilities, administrative approval, co-operation.

**Population:** The study subjects comprised of school teachers teaching in 3<sup>rd</sup> to 7<sup>th</sup> standard schools of Karad Taluka included in the study.

**Sample and Sampling Technique:** 14 Zilla Parishad schools in rural area were selected with simple random sampling

### **Inclusion Criteria**

- 1) All available school teachers from 14 Zilla Parishad schools teaching in 3<sup>rd</sup> to 7<sup>th</sup> standard .
- 2) Only those who are willing to participate in the study.

### **Exclusion Criteria**

Teachers who were absent during study in respective schools.

### **Development of the Tool**

A structured questionnaire was prepared for assessing the knowledge and practices of oral hygiene of these school children studying in Zilla Parishad schools. The tool was prepared on the basis of review of relevant literature. Factors taken into consideration while preparing the questionnaire were its simplicity terms, easy to read and understand. It was validated by experts in concern field and the exposure of investigator in the area of research were considered. Its reliability was also tested by investigator before starting of the study.

### **Description of the Tool**

The Structured questionnaire (Appendix -A) consisted of 20 questions two sections:

**Section I-** Deals with the demographic data of the study subjects viz. age, sex.

**Section II A -** Questions on knowledge of oral hygiene (QU.NO 1TO 10)

**Section II B-** Questions on practices of oral hygiene (QU. NO. 11TO 20)

**Section III-** Check list of oral hygiene status

**Section IV-** Health Teaching Plan Guide

### **Scoring plan for knowledge and practices**

One Score was given for each scientifically correct response and zero for wrong in the knowledge and practices based questions of the oral hygiene questionnaire Similarly, in the assessment of the oral hygiene status form, each aspect related to oral hygiene was assessed and 'zero' for normal finding and 'one' for an abnormal finding.

Knowledge as well as practice score was categorized as 'POOR' if the respective score was  $\leq 7$  i.e.' wrong responses and 'GOOD' if respective score was  $< 7$  i.e. 8,9,10 correct responses.

### **Content Validity**

The tool (Questionnaire + Oral Hygiene Assessment form) (Annexure -A) for collecting the data was prepared and the draft of the health education guide was developed. The tool was given to 15 experts in the field of research for their suggestions regarding validity.

The experts included pediatricians, dentists, community medicine, sociologist, and a statistician.

Suggestions for modification & improvement of the 'Questionnaire' and 'health education plan' were considered. The experts suggested modifications in questions related to demographic data and addition of more questions related to dental check up, accordingly, the areas were identified for simplification and the 'questionnaire' and 'health education plan' (Appendix -B) were modified and the final draft was prepared. Both the questionnaire (Appendix -A) and the 'health education plan' were translated into vernacular language Marathi.

The pilot study was done after confirming reliability of the tool by test re test method and the feasibility of the study was established.

### **Procedure for Data Collection**

Formal permission was obtained from the Gut Shikshanadhikari Karad Panchayat Samiti Karad.District Satara and Principals, of all selected Zilla Parishad shalas from Karad Taluka.

The data was collected from June 2009 to March 2010 .

The following protocol was employed. The researcher met with each of the principals individually. The objective of the study, the method by which data would be collected, the time period required and the cooperation from the teachers that was expected was discussed. It was explained that an oral hygiene assessment of the teachers would be done which would then be followed by an assessment of the knowledge base regarding the practices and understanding of oral hygiene.

The oral hygiene assessment was done by the researcher with the help of a dentist by carrying out an inspection of the clinical condition of the oral cavity on the basis of section III check list of oral hygiene status (APPENDIX -A) This form was used to evaluate an individual's level of oral cleanliness, presence of tooth decay, color and condition of the gum and tongue color, coat. Brushing aids used and frequency, dentifrice used for brushing, hot cold tolerance, and visit to dentist. This assessment form was easy to use because the criteria were objective, the examination was performed quickly and a high level of reproducibility was possible. The Oral Hygiene assessment score was recorded for each teacher. The teachers were made comfortable in chairs and were examined. Good illumination was maintained by using natural light whenever possible, and torch light when required.

After assessing the oral hygiene of all teachers in a class, the researcher administered the questionnaire (section I, II Appendix -A) for the pre-test. The duration of data collection for sample was given 30 minutes. Then after collecting the answered pre test questionnaires, from all subjects of respective school health education was given followed by demonstration of teeth brushing, gum massaging, tongue cleaning shown on dental model with the actual tooth brush, finger and tongue cleaner. Poster charts were shown with detail explanations on anatomy of teeth, process of tooth decay, healthy teeth, and appearance of decayed teeth, gum, and healthy diet.

Question and clarifications asked by teacher and Principal were clarified. All teachers were motivated for keeping their oral hygiene healthy, by regular gargling mouth with water after each meal and tooth brushing habits, dental caries free throughout their life. Time taken for post-test after 3 weeks was approximately 30 minutes for answering the same pre test questionnaires. Again post test oral hygiene status of teachers were inspected and noted down the change. After data collection was over, the participants were thanked for their participation in the study. Also it was suggested to principal to send the teachers who require necessary treatment will be provided in the Krishna Institute of Medical Sciences Deemed University's Krishna School of Dental sciences of Karad as per the permission granted by the management of the Institute.

### Statistical Analysis

For the analysis of demographic data, frequencies (number) and percentage were calculated. The summarization of knowledge and practices aspects were done by using mean, standard deviation. Oral hygiene status aspects were summarized into number and percentages. Impacts of intervention was assessed by applying paired 't' test and chi-square test. Post intervention improvement in good oral hygiene was assessed by Kappa statistic. Logistic regression analysis was carried out to detect knowledge aspects supporting clinicians/ dentists diagnosis as poor or good oral hygiene. The finding was said to be significant if p value was less than 0.05

## 4. Results

### Section 1: Socio Demographic Variables of Participants, (N=92)

Sex	No	Age in Yrs.		Mean	SD
		Minimum	Maximum		
Male	39	20	56	39.56	9.861
Female	53	20	57	40.75	9.689

**Table 1: Age and sex wise distribution of school Teachers**

In the study total 92 school teachers were included. Minimum age of these teachers was 20yrs and maximum age of 57yrs. mean age was 40.25yrs. with SD 9.65yrs. Overall there was no significant difference in the mean age of male and female teachers (t =0.583, p =0.562).

### Section II A: Comparison of Pre-Test and Post –Test Intervention Knowledge Score of School Teachers

**Table 2: Pre-test and post –test intervention knowledge score of schoolteachers**

Sex	No	Pre Knowledge Score	Post Knowledge Score
Male		39	39
	Minimum	3.00	7.00
	Maximum	10.00	10.00
	Mean	5.2308	9.2308
	SD	1.42278	.66734
Female		53	53
	Minimum	3.00	7.00
	Maximum	9.00	10.00
	Mean	5.4717	9.1509
	SD	1.36725	.76952

There was no significant difference in pre education knowledge of male and female teachers (t =0.821, p =0.414). Similarly there was no significant difference in post knowledge score of male and female teachers (t =0.520, p =0.605). Overall comparison of pre and post knowledge score revealed significant improvement in post assessment (t =20.540, p <0.001). The mean improvement in knowledge score was 3.8 with SD 1.6

### Section II B: Comparison of Pre-Test and Post –Test Intervention Practices Score of school teachers

**Table 3: Pre and post Intervention practice score of teachers**

Sex	No	Pre Practice Score	Post Practice Score
Male		39	39
	Minimum	3.00	5.00
	Maximum	9.00	10.00
	Mean	6.2564	7.7692
	SD	1.31225	1.32708
Female		53	53
	Minimum	4.00	4.00
	Maximum	9.00	10.00
	Mean	6.1887	7.4151
	SD	1.31641	1.39276

There was no significant difference in pre education practice score of male and female teachers (t =0.244, p =0.808). There was no significance difference in post practice score of male and female teachers (t =1.229, p =0.222). overall comparison of pre and post practice score revealed significant improvement in post assessment (t =6.510, p <0.001). The mean improvement in practice score was 1.35 with SD 1.99.

### Section III: Pre and Post Oral Hygiene Assessment of Teachers

**Table 4: Pre and post Oral hygiene assessment of teachers**

Hygiene		Pre (92)	Post (92)	$\chi^2$ value
Smell	Normal	37 (40.2)	62 (67.4)	$x^2$ (with Yates correction) 106.59, ***p<0.001
	Bad	55 (59.8)	30 (32.6)	
Stain	No	52 (56.5)	79 (85.9)	0.004999,
	Yes	40(43.5)	13(14.1)	***p=0.9436
Caries	No	18(19.6)	18(19.6)	0.001734,
	Yes	74(80.4)	74(80.4)	**p=0.9668
Plaque	No	57(62.0)	33(64.1)	0.9473,
	Yes	35(38.0)	59(35.9)	p=0.3304
Gum	Pink	92(100.0)	92(100.0)	1.000,p=0.3172
<b>Hygiene</b>		<b>Pre (92)</b>	<b>Post (92)</b>	<b><math>\chi^2</math> value</b>
Gum Bleeding	No	92(100.0)	92(100.0)	0.7533,p=0.3854
Receded Gum	No	56(60.9)	46(50.0)	1.335,
	Yes	36(39.1)	46(50.0)	
Tongue	Normal	92(100.0)	92(100.0)	- -
Tongue Coat	No	55(59.8)	87(94.6)	0.000,
	Yes	37(40.2)	5(5.4)	
Tongue Stomatitis	No	92(100.0)	92(100.0)	0.000,
Hot/Cold Tolerance	No	56(60.9)	3(3.3)	67.463,
	Yes	36(39.1)	89(96.7)	
Tooth Ache	No	16(17.4)	17(18.5)	0.001731,
	Yes	76(82.6)	75(81.5)	
Visit To Doct	No	91(98.9)	92(100.0)	-
	Yes	1(1.1)	0(11.7)	

Cleaning Practices	Brush	75(81.5)	87(94.6)	276.25, p>0.001
	Finger	17(17.4)	5(5.4)	
Clean material	Tooth Powder	30(32.6)	11(12.0)	90.472, p<0.001
	Tooth Paste	61(66.3)	81(88.0)	
	Mishri	1 (1.100)	0	
Cleaning freq	Once	92(100.0)	11(12.0)	2200.7, p < 0.001
	Morn & Night	0(0)	81(88.0)	

\*<0.05      \*\*<0.01      \*\*\*<0.001

There was significant improvement in the dental hygiene, in view of smell, stain, plaque, Hot & cold tolerance, cleaning practice, cleaning material and cleaning frequency. In some of the hygiene related aspects –gum, gum bleeding, receded Gum, stomatitis, tongue coat majority of the teachers were already having good hygiene as well as practices still need improvement in oral hygiene. However, there was no reduction in proportion of having caries. In fact this aspects was not modified during the follow-up period of 3 months of the study. They may require more period.

## 5. Discussion

Tooth decay is the single most common chronic childhood disease, occurring five to eight times as frequently as asthma.. The use of teachers in school health education and health promotion holds many advantages including continuity in instructions being given, integration of general and oral health with other activities as well as the overall low costs associated with such programmes . In addition to the direct benefits to students, school health education and health promotion programmes which include health promotion for staff have been shown to have beneficial effects for teachers in terms of reduced teacher absenteeism and improved morale and quality of classroom instructions

In the present study, Overall comparison of pre and post knowledge score revealed significant improvement in post assessment (t =20.540, p <0.001). The mean improvement in knowledge score was 3.8 with SD 1.6. similar findings were also reported by Pranali Sawant (2017) In pretest majority of the participants 48 (80%) had average knowledge and 11 (18.34%) participants had poor knowledge and only 01(1.66%) participant had good knowledge, where as in posttest 46 (76.67%) participants had good knowledge, 14 (23.33%) participants had average knowledge and none of the participant had poor knowledge. The calculated paired ‘t’ value (t cal = 15.66) was greater than tabulated value (t tab= 2.00). This indicated that the gain in knowledge score was statistically significant at p<0.05 level<sup>(10)</sup> A Study conducted by Augustine EI, Afolabi O (2018) in Nigeria found that the majority of the teachers in the eight schools obtained an oral health knowledge score of 58.33%, which was fair. Only 27.5% of teachers in the sampled schools had a positive attitude towards oral health while 72.5% had a negative attitude.<sup>(11)</sup>

Pranali Sawant (2017) found that in pretest, majority of the participants 53 (88.34%) showed fair practice and 07 (11.66%) participants had showed poor practice and none of the participants showed good practice, where as in posttest, 44 (73.34%) participants showed good practice and 16

(26.66%) participants had showed fair practice and none of the participant showed poor practice. The calculated Karl Pearson’s correlation value was (t cal=0.93). This indicated that correlation between knowledge and practice score was statistically significant at p<0.05 level. Another study by Augustine EI, Afolabi O (2018) found that the oral health practices of 26% of the teachers was poor, 63.5% had fair oral health practices while 26.0% of the teachers had good oral health practices. Comparing these findings with present study overall comparison of pre and post practice score revealed significant improvement in post assessment (t =6.510, p <0.001). The mean improvement in practice score was 1.35 with SD 1.99.

In the present study, all the teachers brushed once a day only and after planned health education majority 81 (8%) brushed twice a day and 81(88%) used tooth paste for cleaning. This finding was more appreciable and similar to findings done by Dawani N et al (2015) conducted study in Pakistan reported that Sixty-five percent (62) of teachers brushed twice a day and around 99% (95) used a tooth-brush along with a tooth-paste for cleaning their teeth irrespective of tooth-paste brand<sup>(12)</sup>. A study, done by Ahmad MS in Saudi Arabia only 68% of the subjects were cleaning mouth both morning and evening<sup>(13)</sup>. The prevalence of tooth brushing and using of toothpaste was similar to other studies.

In the current study, majority 91(98.9%) not doing routine dental check up and after planned health education all of them 92 (100%) undergo regular dental check up . as compared to study by Dawani N et al (2015) in Majority 84% (81) do not go for routine dental check-ups and most of them (86%) visit a dentist only when troubled by dental problems. Only 20-30% (24-29) teachers experienced dental treatment procedures such as scaling, extractions, fillings, or root canal by Ehizele A<sup>1</sup> et al (2011)only 42.4% of the respondents have ever been to the dentist for routine dental checkup or treatment.<sup>(14)</sup> Another study by Kompalli P V etal (2013) majority of teachers (69%) have visited the dentist<sup>(15)</sup>

In the present study, when these same factors were assessed at the time of the post education phase of the study it was observed that there had been significant improvement in the results. The number of teachers with halitosis (bad breath) had reduced from 59.8% to 32.6%, with stained teeth had reduced from 43.5% to 14.1%, with dental plaques had reduced from 38% to 35.9%, with coating on the tongue had reduced from 40.2% to 5.4%.As comparing this findings with study done by Shenoy R.P (2010) found that Plaque and Gingival score reductions were highly significant in intervention schools<sup>(16)</sup> Also study done by Ikreet Singh Bal et al (2013) reported Highly significant (P < 0.001) improvements in KAP scores, plaque index scores, s gingival index (cores and caries activity after oral health promotional intervention were reported at 3 weeks and 6 months follow-up examination<sup>(17)</sup> All these studies proves that his small economical school oral health program positively influenced oral health related practices and parameters of oral health such as oral cleanliness, gingival health and caries activity.

## 6. Conclusion

The present results suggest that, with appropriate training workshops and guidance, teachers may gain proficiency in teaching oral health matters, and the gains from school oral health education among the pupils may improve. Teachers should be made compulsory to get the dental check up done every 6 month or at least once in a year to prevent extra burden on health same way teachers will be more attentive about to improve and promoting the oral hygiene of the children

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## Author Profile



**Dr. Sunita. H. Tata** - B.A. (Hon's) R.N.R.M, M.Sc.( Child Health Nursing) PhD. (Community health nursing) Associate Professor & Nursing Director, **Having 29 years of clinical, administrative and teaching experience.** In the Krishna Institute of

Medical Sciences & Krishna Hospital Deemed University Karad, Maharashtra, India

**Dr. P. M. Durgawale**- Professor & HOD of community health Medicine, KIMSDU, Karad, Maharashtra, India

**Dr. S. V. Kakade** -Associate Professor , Department of community health medicine , KIMSDU,Karad ,Maharashtra , India



**Miss.Simi Elsa Philip** has done Msc in child health nursing .She is working as Msc staff Nurse in Krishna Hospital, Karad, Maharashtra, India