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Effect of oral hygiene training to Anganwadi workers on improving oral hygiene of preschool children attending Anganwadi centers in Gandhinagar district of Gujarat

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Abstract: Early childhood caries (ECC) is characterized as a public health problem globally which can lead to pain and infection necessitating hospitalized for the extraction of teeth and untreated ECC have an impact on general health and quality of life of infant or toddlers.

Aims: To assess the prevalence of early childhood caries among children of 3 to 6 years attending Anganwadi Centres and the effect of oral hygiene training to Anganwadi workers on improving oral hygiene of preschool children in Gandhinagar district of Gujarat.

Methodology: 226 children from 15 Anganwadis from Gandhinagar dist of Gujarat were randomly selected for the study. Pre post study was done to assess the effect of training. Training regarding oral hygiene was given to Anganwadi workers and data was collected before and after completion of the training. Data were extracted and analyzed by using SPSS version 20.

Results: 41.9% of the significant decrease in poor oral hygiene index was observed after training and a significant association was observed between gender and the presence of ECC (p- .000, 95% CI), frequency of brushing and presence of ECC (p- .000, 95% CI), gender and pre-training debris index (p-.000, 95% CI) and frequency of brushing and pre-training debris index (P-.000, 95% CI).

Conclusions: Anganwadi centers (AWC) should include oral health issues and the risk factors for ECC, and

its consequences should be addressed.

Key-words: Early childhood caries, Debris index, Oral hygiene index

Key Messages: Training regarding oral hygiene should be provided to Anganwadi workers to improve oral hygiene standerds.

Introduction:

Early childhood caries (ECC) is characterized as a public health problem globally. ECC in young children frequently lead to pain and infection necessitating hospitalized for the extraction of teeth and untreated ECC have an impact on general health and quality of life of infant or toddlers. ECC has demonstrated the prevalence of caries in preschool children of both developed and developing countries and has more severe ECC in low socioeconomic countries [1]. Early childhood caries is defined as the presence of one or more decayed (nonactivated or cavitated), missing (due to caries), or filled tooth surfaces in any primary tooth in a child up to 71 months of age or younger. Caries is a biofilm (plaque)-induced acid demineralization of enamel or dentin, mediated by saliva in children younger than three years of age; any sign of smooth-surface caries indicates severe early childhood caries (S-ECC). From ages 3 through 5, 1 or more cavitated, missing (due to caries), filled smooth surfaces in primary maxillary anterior teeth, or decayed, missing teeth [2].

India is the largest democracy and second largest population country, has the majority of its population is residing in villages. In India, there is a vast difference in Oral health status between urban and rural areas. The reason behind it is that there is very little access to quality dental care in rural areas, and the second very high cost involves dental treatment [3]. In Indian society, people have less awareness and attitude toward the importance of dental health than general health. Across various countries, it has been observed that primary health care workers and parents have limited knowledge about the causes and prevention of the most

common oral disease [4].

Awareness can be generated through training community health workers like Anganwadi workers in Oral Health and providing essential oral health care awareness to preschool children and their mothers. Anganwadi workers (AWWs) are Integrated Child Development Services (ICDS) employees, a government program in India. They provide food, preschool education, primary health care, immunization, health check-up, and referral services to children under six and their mothers. In India, there is 1 Anganwadi canter (AWC) for 1000 population, and most centers AWW posts are filled [5].

The present study was conducted to assess the prevalence of early childhood caries among children attending Anganwadi Centers in Gandhinagar district of Gujarat and the effect of oral hygiene training to Anganwadi workers on improving oral hygiene of preschool children.

Methodology:

Study type:

A pre-post intervention study was conducted among selected AWCs of Gandhinagar district of Gujarat.

Study population:

226 children between 3-6-year of age attending the selected AWCs of Gandhinagar district were enrolled for the study.

Study area:

15 Anganwadi centres across Gandhinagar district of Gujarat state were randomly selected for the study.

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Study duration:

The study was conducted between March 2016 to May 2016.

Sample size calculation:

Purposive sampling was done to enroll the study participants. A total of 15 AWCS were randomly selected for the study. Children between 3-6 years and who were present at the Anganwadi Centers at the time of assessment were randomly selected AWCs were enrolled for this study. A total of 226 children were present at the time of assessment, so 226 were enrolled for the study after obtaining consent from guardians or parents and Anganwadi Workers.

Inclusion criteria:

Children between 3 to 6 years of age as per the Anganwadi register.

Those children whos parents give written and oral consent to participate in the study.

Children having no serious physical or mental illness such as Down syndrome, epilepsy or physically challenged.

Exclusion criteria:

Children less than 3 or more than 6 years of age as per the Anganwadi register.

Those children whose parents don't give written and oral consent to participate in the study.

Children having any serious physical or mental illness such as Down syndrome, epilepsy or physically challenged.

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Data collection:

A structured questionnaire was developed for quantitative data collection. Information regarding Socio-demographic factors and oral hygiene practices of the child was obtained by a structured interview with mothers/ Anganwadi Workers (AWWs) of the child at AWCs using a questionnaire. To collect information about oral hygiene practices of children, information on the following variables were collected: frequency of meals, frequency of snacks, frequency of sweets & chocolate, frequency of brushing, method of brushing, and using any other oral hygiene aid questions related to data was collected. Intra oral examination was carried out for evaluation of ECC and Oral Hygiene Index - Simplified (OHIS).

Intervention (Oral Hygiene Training)-

Intervention was started from day of baseline data collection to end line data collection. Duration of intervention was 20 days.

Two interventions were done-

1) Oral Hygiene Training to AWWs

2) Tooth brush & paste distribution to Anganwadi children

The Oral Hygiene Training (OHT) was provided focusing on oral health care and hygiene practices, functions of teeth; dentitions and their significance, dietary habits and their effects on oral hygiene, etiology, and prevention of dental caries, the importance of twice-daily brushing, tongue cleaning mouth rinsing, proper toothbrushing technique and importance of a regular dental visit. In addition, they were provided an on-the-spot practical demonstration of tooth brushing and flossing methods by using tyfodent models. The OHT was given to the AWWs at the time of baseline data collection.

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Toothbrush and paste were distributed to each child attending selected AWCs. AWWs did daily demonstrate the tooth brushing method and involved children to practice proper tooth brushing methods. AWWs were providing tooth brushing demonstrations to children till the last date of intervention.

The duration of the intervention was 21 days. Data from every child was collected before intervention and after intervention for evaluation of OHIs of children.

Data Analysis-

OHIS was used to evaluate oral hygiene of children. For the age of 3 to 6 years; was selected labial surface of the 54, 61, 82 and lingual surface of 75 [6]. Only debris index was used to evaluate oral hygiene of children. Calculus was excluded. Data was extracted and analysis by using Microsoft excel.

Table-1:Criteria for classifying Debris Index

Scores	Criteria
Excellent	No debris or stain present
Good	Soft debris covering not more than one third of the tooth surface, or presence of extrinsic stains without other debris regardless of surface area covered
Fair	Soft debris covering more than one third, but not more than two thirds, of the exposed tooth surface.
Poor	Soft debris covering more than two thirds of the exposed tooth surface.

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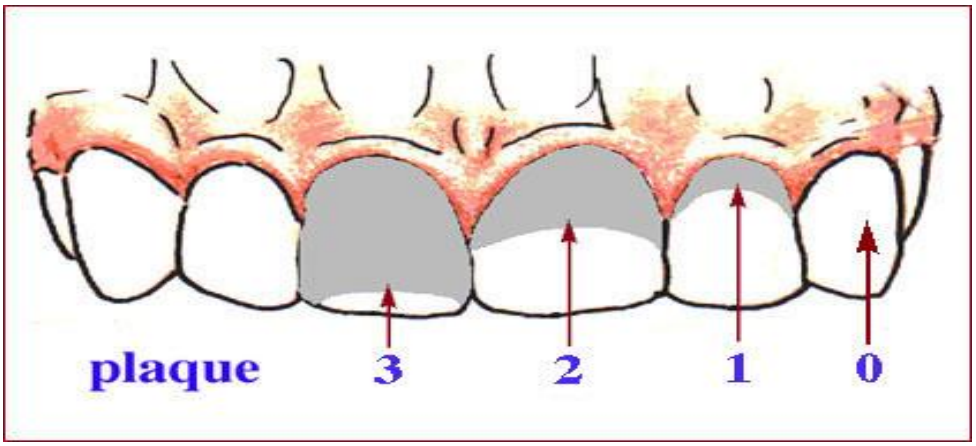

Intraoral examinations were carried out by using mouth mirror and No. 23 explorer for assessing decade missing filled teeth (dmft) index (for ECC), No five explorer for assessing OHI-S Index (debris index). Intraoral examination was done in natural daylight and artificial light using a flashlight where needed. 0.2% (w/v) chlorhexidine gluconate&cetrimide antiseptic solution was used as an antiseptic in between patients.

Predictor variables-

Age, gender, income of the family, motherss education level, mothers's occupation, frequency of intermediate snacks, frequency of meal/day, frequency of sweets & chocolate, frequency of brushings/day, methods of brushing.

Key variable observed-

Prevalence of ECC, association of OHI-S with oral hygiene practices.

Development of tool:

Interview guide was developed based on the literature available and was pre tested before commencement of study. Each questionnaire was translated in Gujarati as well. After subsequent pretesting, a few more questions and themes were added. The instrument also provided scope for allowing and probing of unusual

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or unexpected comments and understandings.

Consent:

Oral and written consent was taken from guardians/parents of each study participants before commencement of the interview. Consent form was translated into local language for better understanding.

Results:

A total of 226 children were enrolled for the study; out of that, 114(50.4%) were male, followed by 112(49.6%) were females. The majority of the children were four years old (99, 43.8%), followed by 77(34.1%) children who were 3 yrs. old and 49(21.7%) children of 5 yrs. of age. Only 1(0.4%) child was 6 yrs. of age.

The literacy level among the mothers was very low. The majority of the mother of study participants were illiterate (90, 39.8%). Only 4.7% of mothers had studied up to graduation or above that.

Mothers were asked about their annual family income. It was observed that 177(78.3%) families had yearly family income less than 1 lakh per year, and only 3.1% of families had income more than 2 lakh per year.

Out of the total mothers interviewed, 204(90.3%) mothers were housewives, followed by 20(8.8%) doing any labor work and 2(0.9%) doing other work such as tailoring or teaching.

Mothers were asked about the frequency of intermediate snacks. 195(86.3%) children had intermediate snacks between 1-5 times, and 4(1.8%) had it more than five times.

Table-2 shows that the majority of the children, 131(57.9%) were eating 1-5 sweets or chocolates per day, and only 56(24.8%) were not eating any sweets or chocolate in a day. There were 34(15%) children

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consuming ten or more than ten chocolates per day.

The frequency of brushing among the study participants was also asked, and it was observed that 55.8% of children were not brushing their teeth for a single time in a day, and 43.3% were brushing their teeth once a day. Only 0.9% were brushing their teeth twice a day.

Out of these 100 children who were brushing their teeth once or twice a day, 98% were doing horizontal brushing, and only 2% were doing it vertically.

Children were assessed for the presence of ECC, and it was observed that ECC was present among 96(42.5%) children and was not observed among 130(57.5%) children.

Assessment of study participants for debris index was done before and after training. During the training, 35 participants left the study in between, so pre and post-training debris index analysis was done of the remaining 191 participants. Effectiveness of training was clearly observed in the post-training result as before training; no participant had good oral hygiene index, but after training, 21(11%) participants had good oral hygiene index. Similarly, there was a significant change in poor verbal hygiene index score after training. Before training, 104(54.5%) participants had a poor score, but only 12.6% of participants had a poor oral hygiene index after training. So there was a 41.9% decrease in the poor oral hygiene index, which has significant public health importance. Before training, 87(45.5%) participants had a fair index, but 146(76.4%) participants had a fair oral hygiene index after training. So there was a 30.9% increase in participants with a fair oral hygiene index, which is very significant.

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Table-2: Socio-demographic details

Variable	Type	n=226	%
Gender	Male	114	50.4
	Female	112	49.6
Age (in completed yrs.)	3	77	34.1
	4	99	43.8
	5	49	21.7
	6	1	0.4
Mother's education	Illiterate	90	39.8
	Primary	74	32.7
	Secondary	44	19.7
	Higher secondary	7	3.1
	Graduate and above	11	4.7
Annual Family income	Don't know	9	4
	>50000	89	39.4
	50000-1 lakh	88	38.9
	1-2 lakh	33	14.6
	More than 2 lakh	7	3.1
Mother's occupation	Housewife	204	90.3
	Labour work	20	8.8
	Other	2	0.9
Frequency of intermediate snack	0	27	11.9
	1-5	195	86.3
	More than 5 times	4	1.8
Frequency of meal per day	0	18	8
	1	26	11.5
	2	63	27.9
	3	104	45
	4	13	5.8
	5	2	0.9
Frequency of sweets & chocolates	0	56	24.8
	1-5 per day	131	57.9
	More than 5 per day	39	17.3
Frequency of	Not brushing	126	55.8

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brushing	Once	98	43.3
	Twice	2	0.9
Methods of brushing (n=100)	Horizontal	98	98
	Vertical	2	2
ECC present	Yes	96	42.5
	No	130	57.5
Pre training debris index (n=191)	Fair	87	45.5
	Poor	104	54.5
Post training debris index (n=191)	Fair	146	76.4
	Good	21	11
	Poor	24	12.6

Association between ECC and other factors:

Table-3 shows the association between the presence of ECC and other factors. The Chi-square test was applied to explore the significant between the described variables. A significant association was observed between gender and the presence of ECC (p-.000, 95% CI). Out of 226 participants, 96(42.5%) had ECC, out of which 52.1% were male, and 47.9% were female. Similarly, the significant association between frequency of brushing and presence of ECC was also observed (p-.000, 95% CI). Out of the total of 226 participants, ECC was present among 96 (42.5%) participants. Out of which, 57.3% were not brushing their teeth daily.

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Table-3: Association between ECC and other factors

Variable	Type	ECC present (N=226)		p value
		Yes N (%)	No N (%)	
Age	3	27(28.1)	50(38.5)	.428
	4	42(43.8)	57(43.8)	
	5	27(28.1)	22(16.9)	
	6	0	1(0.8)	
Gender	Male	50(52.1)	64(49.2)	.000*
	Female	46(47.9)	66(50.8)	
Frequency of sweets and chocolates (No of sweets or chocolates)	0	23(24)	33(25.4)	.687
	1-5	56(58.3)	75(57.7)	
	More than 5	17(17.7)	22(16.9)	
Frequency of brushing	Not brushing	55(57.3)	71(54.6)	.000*
	Once	40(41.7)	58(44.6)	
	Twice	1(1)	1(0.8)	

Association between pre-training debris and other factors:

Table-4 shows the association between the pre-training debris index and other factors. The Chi-square test was applied to find an association between the dependent and independent variables. A significant association was observed between the frequency of brushing and the pre-training debris index (p-.000, 95% CI). Out of a total of 226 participants, 126 (55.6%) had poor oral hygiene index, out of which 61.9% were not brushing their teeth regularly, and 37.3% were brushing once a day. Another significant association was observed between gender and pre-training debris index (p-.000, 95% CI). Of 126 participants who had poor oral hygiene index, 52.4% were male, and 47.6% were female. Table-4: Association between pre training

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debris and other factors

Variable	Type	Pre training debris Index (N=226)		p value
		Fair (n,%)	Poor (n,%)	
Frequency of brushing	Not brushing	48(48)	78(61.9)	.000*
	Once	51(51)	47(37.3)	
	Twice	1(1)	1(0.8)	
Frequency of sweets and chocolates (No of sweets or chocolates)	0	32(32)	24(19)	.134
	1-5	56(56)	75(59.5)	
	More than 5	12(12)	27(21.4)	
Age (In completed yrs.)	3	35(35)	42(33.3)	.807
	4	46(46)	53(42.1)	
	5	19(19)	28(22.2)	
	6	0	1(0.8)	
Gender	Male	48(48)	66(52.4)	.000*
	Female	52(52)	60(47.6)	

Discussion-

Early childhood caries is one of the most common dental diseases in pre-school children [7]. As per our study result, AWW is one of the key stakeholders in improving pre-school children's oral hygiene status. Compared with the previous study in India, the prevalence of ECC among the children in Anganwadis of Gandhinagar district in the 3- 6 years age group is more than Gaidhane et al. study in Wardha district in 2-5 year age group, 2013. The prevalence of ECC in the Wardha district was 31.81. As in this study, the prevalence of ECC was found to be 42.63%. The difference might be due to the selection of different socio-demographic areas, cultures, and feeding habits. A similar kind of study was done by Bhagia et al. at

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Ghaziabad on the effect of oral hygiene training amongst Anganwadi workers to improve oral hygiene status in pre-school children [8].

In this study, there was a marked change in the poor oral hygiene index of children. Before training, it was 62.2%, which went down to 37.6% after training. Similarly, the fair and good oral hygiene index was 24% and 13.3%, respectively, which went down to 40.2% and 21.7% after training. Similar findings were observed in our study, where poor oral hygiene index was 54.5% before training which went down to 12.5% after training. Similarly, fair and good indexes were 45% and 0%, respectively, which went down to 76.4% and 10.9%, respectively. So compared to their study, reduction in poor oral hygiene index was around 42%, and in their study, it was 24.6%.

Similarly, in fair and good oral hygiene index, 30% and 10.9% improvement was observed respectively, compared to 15.7% and 8.4% improvement in fair and good oral hygiene index in their study. Our study has public health significance as it helps AWWs improve their knowledge, practice, and attitude towards basic oral hygiene care. Most of the AWWs were excited about this short-term oral hygiene program. Many AWWs had continued this even after the end of the program. There are many myths in the community like no need to brush small children because the new teeth will erupt, children will be swallow toothpaste, other reasons like water scarcity, no time, a child crying, etc. Parents or AWWs were not aware of using other oral hygiene aids like dental floss or mouth wash. But after this intervention, parents, children, and AWWs were aware of teeth, their function, brushing method, other oral hygiene aids. We observed during our intervention AWWs and mothers of children were so happy to make basic oral health care and tooth brushing practice on the daily life of their children.

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Conclusion-

Future health promotion and education programs in Anganwadis should include oral health issues and the risk factors for ECC, and its consequences should be addressed. Public-funded oral health programs should be started and should be targeted at children from lower socioeconomic status. Effective strategies should be developed to promote the use of brush and paste for cleaning teeth. Along with different services of AWC, they can even provide training on Oral Hygiene like it is done for Handwashing. Once a year, this type of OHT program should be conducted.

References:

1. World Health Organization. WHO Expert Consultation on Public Health Intervention against Early Childhood Caries REPORT OF A MEETING. Bangkok; 2016.
2. Dentistry american A of P. Defination of Early Childhood Caries [Internet]. 2008 [cited 2020 Sep 22]. Available from: https://www.aapd.org/assets/1/7/D_ECC.pdf
3. Gambhir RS, Gupta T. Need for Oral Health Policy in India. Ann Med Health Sci Res. 2016 Jan-Feb;6(1):50-5. doi: 10.4103/2141-9248.180274. PMID: 27144077; PMCID: PMC4849117.
4. Singh P, Bey A, Gupta ND. Dental health attitude in Indian society. J Int Soc Prev Community Dent. 2013 Jul;3(2):81-4. doi: 10.4103/2231-0762.122444. PMID: 24778985; PMCID: PMC4000917.
5. Home | Ministry of Women & Child Development | GoI [Internet]. [cited 2020 Sep 22]. Available from: https://wcd.nic.in/
6. GREENE JC, VERMILLION JR. THE SIMPLIFIED ORAL HYGIENE INDEX. J Am Dent Assoc. 1964 Jan;68:7-13. doi: 10.14219/jada.archive.1964.0034. PMID: 14076341.
7. Khatib N, Zodpey S, Zahiruddin Q, Gaidhane A, Patil M. Prevalence and determinant of early childhood caries among the children attending the Anganwadis of Wardha district, India. Indian J Dent Res [Internet]. 2013 Mar [cited 2020 Sep 22];24(2):199. Available from: http://www.ijdr.in/text.asp?2013/24/2/199/116677
8. Bhagia P, Menon I, Singh RP, Sharma A, Goyal J, Tomar D. Effect of educational status on oral health education program amongst Anganwadi workers in improving oral health of preschool children of Muradnagar block, Ghaziabad-A cross-sectional study. J Dent Specialities 2018;6(1):136-139. Dentistry american A of P. Defination of Early Childhood Caries [Internet]. 2008 [cited 2020 Sep 22]. Available from: https://www.aapd.org/assets/1/7/D_ECC.pdf