

ORIGINAL ARTICLE**Need For Unique Assessment Parameters And Interventional Modalities In Community Dentistry For School Going Children.**

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Abstract:

The present study was conducted in rural areas of Konkan region in which a total of 5256 school children from age group of 6 to 15 years were screened and 4750 children (90.37%) who were found to have dental caries were referred to the BKL Walawalkar hospital for dental treatment. A total of 3582 school children received treatment in the hospital. New parameters like caries teeth percentage and functional capacity percentage were assessed both at the time of screening and 1st follow-up. The prevalence of caries was found to be 90.37%, at the time of screening, the caries teeth percentage was 23.91% in group I (6years to 10years) and the caries teeth percentage was 13.33% in group II(11years to 15years). Caries teeth percentage is the number of caries teeth present in the mouth in relation to the total teeth. Functional capacity percentage was 38.24% in group I (6years to 10years) and in group II (11years to 15years) it was 58.93% at the time of screening. After treatment at the hospital by interventions like Glass ionomer cement (GIC), Permanent filling (P.F), extraction and X ray, the caries teeth percentage was brought down by 6.75% in group I (6years to 10years) and 3.13% in group II (11years to 15years) and functional capacity improved by 77.34% in group I (6years to 10years) and was improved by 82.18% in group II (11years to 15years). The data analysis was done

using S.P.S.S software and appropriate statistical tests were applied for proving the statistical significance of results. Thus the study proposes that the above unique assessment tools/indicators and interventions should be used apart from the usually used prevalence of caries and DMFT indices.

Key Words:

Prevalence of caries, Caries teeth percentage, functional posterior teeth percentage, functional capacity percentage, interventions.

Introduction:

School going children constitute an important fraction of the total population. School children are also having tremendous latent potential as future human resource of any country. The health issues associated with school children are unique and need special interventions. Oral hygiene is often poor which leads to dental caries and a host of other oral and dental problems. Nutritional status in school children also needs attention and many of them require nutritional supplementation. Keeping in mind the above challenges B.K.L Walawalkar Hospital started its School Dental Health Project with special emphasis on oral

and dental hygiene. This project was implemented in Zilla Parishad school children so that adequate follow-up and monitoring could be maintained.^{1,2}

Objectives:

- To screen school children for dental problems, to assess the prevalence of dental caries.
- Modifying the WHO dental assessment format and including new indicators like caries teeth percentage, functional posterior teeth percentage and functional capacity percentage.
- Providing curative interventions like Glass ionomer cement (GIC), Temporary filling (Z.O.E), Permanent filling (AgF), extraction and X ray at hospital level.
- Sequential follow-up of children for keeping a track of their dental status by maintaining data of each tooth of each child in appropriate database.

Materials and Methods:

The study was conducted in Ratnagiri district of Konkan region which lies in Western Maharashtra and which consists of 9 Talukas (Administrative Blocks). The main reason for choosing this geographic area was the high prevalence of untreated carious lesions and malnutrition. Dental caries were hypothesized as both a cause and effect of malnutrition. Poor oral and dental hygiene when superadded with tobacco chewing increased the chances of oral malignancies many folds.³ The prevalence

of oral malignancies in Ratnagiri district is very high i.e. in male 9.5/ 100000 population and 4.7/100000 population.⁴ This prompted us to consider an oral health project targeting the school children which would improve the oral health status and spread awareness regarding ill effects of tobacco chewing. Amongst 9 Talukas (Administrative Blocks) of Ratnagiri district, 1 taluka i.e. Chiplun Taluka was randomly selected. Chiplun taluka has an area of 130. 31 sq kms with a total population of 2,22,735 people. It has a total of 168 villages which have a total of 35 Kendra School's (Each Kendra School consists of about 8 to 12 schools under it). Out of the 35 Kendra Schools, 11 were selected randomly. All the schools under these 11 Kendra's i.e. a total of 118 schools were selected for the project. All the children from 1st Standard to 7th Standard (i.e. 6 years to 15 years) who were present during the screening were included for the purpose of the project. A total of 5256 children were screened for carious teeth, 4750 were referred and 3582 were treated by various interventions at the hospital.

The organizational and administrative workout like approval from authorities like chief executive officer, district education officer, micro-planning for selecting the schools, operational and logistic planning, human resource allocation, monitoring and evaluation mechanism, referral services were carried out in a systematic manner.

A pilot screening of the project was conducted before the start of the study with an aim to screen and assess prevalence of caries, caries teeth percentage, loss of functional capacity

and treatment needs. Modifications were made in the WHO dental assessment proforma for clarity and easy accessibility. The norms for analysis of the data were set and only then the research project was initiated.

Proper informed consent was obtained from parents of all school children and school teachers before starting with the treatment procedure. The screening of school children was carried out by a dental team which visited each school according to schedule. Oral examination of each child was conducted by seating the child on a chair in day light using required instruments. The required data for conducting research was collected and recorded using a printed form. A structured questionnaire proforma was used which included questions regarding personal data, anthropometry, etc. A modified WHO format for recording the dentition status and treatment form was used to generate comprehensive record of "Each tooth of each student". A session on importance of oral health was undertaken along with an interactive demonstration on thorough brushing and mouth rinsing techniques. Distribution of free toothbrush and toothpaste was done to each school child in order to promote good oral cleaning habits.

The essential instruments used for screening were mouth mirror, straight probe, explorer and pair of tweezers. Sufficient numbers of instruments were made available to have an uninterrupted examination. At field level the used instruments were disinfected using korsole.

Those children who required treatment were referred to B.K.L Walawalkar hospital, here they were treated for carious teeth and procedures were carried out to increase their functional capacity. Scaling i.e. Oral prophylaxis was performed to restore the normal health of gums. Extraction was done in case of over-retained deciduous teeth to avoid malocclusion. The essential instruments used for referrals were, airtar handpiece for cavity preparation, filling instruments like round condenser, cement carrier, pedo extraction forceps, ultrasonic scalers, to name a few. In the hospital all instruments were sterilized by autoclaving. Sequential follow-up of all school children were done at 6 months and 1 year to know the impact that the project is having on the parameters developed.

Unique assessment parameters used for the purpose of the study:

i. Prevalence of Caries: Number of children having caries teeth x 100/ Total number of children screened

ii. Caries Teeth Percentage (C.T %): Number of carious teeth (C.T) x 100/Total number of teeth (T.T)

iii. Total Functional Pair = Functional pair (R) + Functional pair (L)

iv. Functional posterior teeth percentage (F.P.T %) =

Functional posterior teeth (FPT) x 100/ Total posterior teeth (P.T)

v. Functional capacity percentage (FC %) = Total Functional pair (TFP) x 100/ Total pair (TP)

Results

Despite credible scientific advances and the fact that caries is preventable, the disease continues to be a major public health problem.⁵The research study was carried out in zilla parishad schools of chiplun taluka. In school going children belonging to 6yrs to 15yrs of age group. A total of 118 schools out of 363 schools were randomly selected. Among this 3582 school children in the age group of 6 to 15 years were treated for dental caries out of which 1725 (48%) were males and 1863(51.9%) were females.

Table No. 1 (Sex):

	Sex	Frequency	%	Valid Percent
Valid	Male	1725	48.1	48.1
	Female	1863	51.9	51.9
	Missing	2	0.1	0.1
	Total	3590	100	100

For further studies like prevalence of dental caries and functional capacity, the school children were divided in two groups. Group I included 6years to 10years school children, that was a total of 2464 children (68.8%) and Group II included 11years to 15years school children, which was a total of 1118 children (31.2%).

Table No 2 (Age):

		Frequeny	Percent	Valid Percent
Valid	6 to 10 years	2464	68.6	68.8
	11 to 15 years	1118	31.1	31.2
	Total	3582	99.8	100
Missing	System	8	0.2	
Total		3590	100	

As the study was carried out in two parts of which the first part was screening .The school children from both the groups were examined for dental caries and the percentage of caries teeth was recorded i.e. (CT%).In group I the percentage of caries found was 23.91%.

Table No 3:

CARIES TEETH% (6 to 10 years age group)

N	Valid	2462
	Missing	2
Mean		23.91
Minimum		0
Maximum		88

The percentage of caries teeth (CT %) in group II school children was found to be 13.33%.

Table No 4: CARIES TEETH%
(11 to 15 years age group)

N	Valid	1118
	Missing	0
Mean		13.33
Minimum		0
Maximum		75

Hence this indicates that the percentage of carious teeth (CT%) is decreased as the age is increased or it can be said that prevalence of dental caries is more in primary dentition as compared to mixed or permanent dentition.

During mastication, tooth contact exists. These occur most often during sliding movements in which the direction and the origin are variable. This justifies the concept of an occlusion field of mastication. Centric occlusion is the occlusion most often used during mastication. It is also the occlusion for which the masticatory forces are greatest.⁶ This occlusion determines the functional capacity(FC%), which can be calculated by pairing posterior teeth as upper right side with lower right side and upper left side with lower left side. In this way we can calculate the functional pair for each dentition. In case of primary dentition i.e. when only deciduous teeth are present there are only four functional pairs. During mixed dentition when both deciduous and permanent teeth are present there are six functional pairs. For permanent dentition there are eight functional pairs. By using these procedures we calculate the functional pairs and also the percentage functional capacity for each school children. The percentage of functional capacity (FC %) was done for both groups.

In group I – 6years to 10years the percentage functional capacity (FC %) at the time of screening was 38.24%

Table No 5: FUNCTIONAL CAPACITY %
(FC%) 6 years to 10 years at screening

N	Valid	2462
	Missing	2
Mean		38.24
Minimum		0
Maximum		133

The percentage of functional capacity in group II i.e. 11years to 15years at the time of screening was found to be 58.93%.

Table No 6: FUNCTIONAL CAPACITY %
(FC %) 11 years to 15 years AT SCREENING

N	Valid	1117
	Missing	1
Mean		58.93
Minimum		0
Maximum		700

This indicates that the functional capacity is less in group I that is in 6years to 10years school children. The studies also indicates that in primary dentition the functional capacity is less and which can be due to various factors like wrong feeding habits introduced by mothers , improper brushing teeth , snacking and many more.

The second part of the study consists of referral. In this phase the school children were treated for dental caries and also other respectful treatment like scaling and extraction

was performed, for which the school children were brought to B.K.L.Walawalkar Hospital Dental Department.

The treatment procedure were also followed in similar pattern in two groups that is group I 6years to 10years and group II 11years to 15years.

After treating the group I school children for dental caries the percentage of caries teeth (CT%) was reduced by 6.75%.

Table No 7 : CARIES TEETH % after treatment in 6 to 10 years age group

N	Valid	2462
	Missing	2
Mean		6.75
Minimum		0
Maximum		88

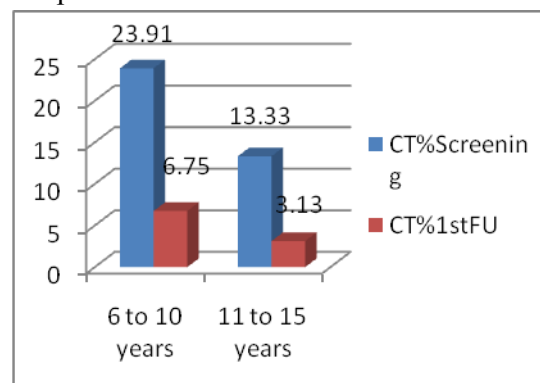
After treating school children in group II also showed decrease in percentage of caries teeth(CT%) by 3.13%.

Table No 8: CARIES TEETH % after treatment in 11 to 15 years age group

N	Valid	1118
	Missing	0
Mean		3.13
Minimum		0
Maximum		62

The study of prevalence of dental caries in school children from 6years to15years can be better explained by drawing a comparison in before and after conditions that is at the time of screening and after getting treated. This was again done separately for both groups.

Graph No 1



Statistically Significant (P value < 0.01 using Standard Error of Difference between two means)

The bar graph No 1 above shows the figures, that shows the difference for percentage of caries teeth (CT%) at screening and after treatment. Similar assessment was also done for percentage of functional capacity (FC%) in both groups i.e. group I and group II. It showed increase in functional capacity in both groups. The difference was found to be statistically significant at 99% confidence limit using standard error of difference between two means tests.

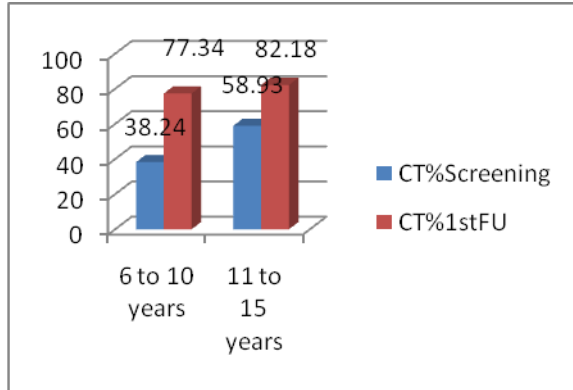
In group I the functional capacity (FC%) was increased by 77.34%.

In group II the functional capacity (FC%) was increased by 82.18%

The increase in functional capacity in group I and Group II was found to be statistically significant (p value < 0.01) using standard error of difference between two means statistical test.

PRE AND POST INTERVENTION EFFECT ON FUNCTIONAL CAPACITY %

(Graph No 2)

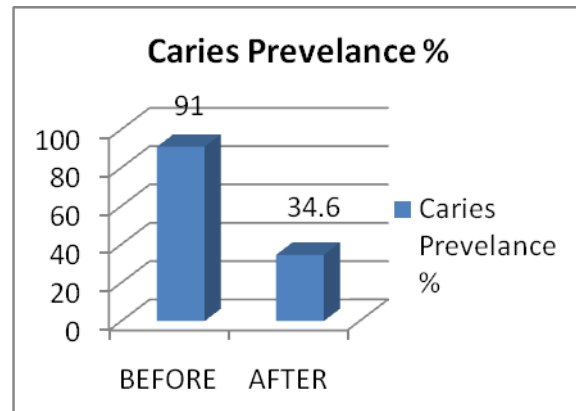


Statistically Significant (P value < 0.01 using Standard Error of Difference between two means)

The above bar graph No 2 shows the before and after results of increased in functional capacity(FC%).

To summaries the whole, study of prevalence of dental caries in school children from 6years to 15years group with before and after conditions, that is at the time of screening and after getting treated for dental caries teeth. The percentage for caries prevalence was drawn which showed that about 90% of the school children had decayed teeth at the time of screening and after getting treated for this decayed teeth the percentage was reduced to 34.6%.

The bar graph No 3 shows the percentage of caries prevalence before the treatment and after getting treated for dental caries.



Statistically Significant (P value < 0.01 using Standard Error of Difference between two means)

Hence we can conclude that the percentage of prevalence of dental caries is decreased as the functional capacity is increased. By increasing the functional capacity we can also improve the centric occlusion which is most often used for mastication. By treating at the right time with right modalities of treatment we also prevent malocclusion and also restore the healthy gums.

Discussion:

Dental caries is a highly prevalent dental disease amongst school children, which is frequently neglected by the children and parents until it reaches terminal stages with painful consequences. Multiple untreated carious lesions are frequently observed among rural children because of low priority to dental caries, lack of awareness, unavailability of dental man power and fear towards dental treatment. Caries is the most prevalent dental disease in both primary and permanent dentition. [7] By assessing the needs for dental

disease among the school children ,the greatest need was for one surface restoration, followed by two surface restoration , pulp restoration, extraction and other care.[7]. In this study of prevalence of dental caries the school children belonging from 6years to 15years were selected. For better study they were divided in two groups. The group I included children from 6years to 10years and group II included from 11years to 15years. The study showed that the percentage of prevalence of dental caries was high in first group that is 6years to10years⁸⁻¹³. During the study it was found that the percentage of the prevalence of dental caries was decreased in group II 11years to 15years.^{12,14-17}This showed that as age advances the prevalence of dental caries decrease or it can be said that the prevalence of dental caries is more in deciduous dentition as compared to mixed and permanent dentition.^{7,9,10,18}

On assessment of treatment required, among two groups it was found that group I that was 6years to 10years required more treatment.^{8,19,21,22}

Untreated oral diseases in children frequently lead to serious general health, significant pain, interference with eating and lost school time. A world health organization [WHO] estimation of global DMFT for 12years old children reported in 188 countries included in their data base that on global basis 200, 335, 280 teeth were decayed, filled, or missing among just that age of group.[21]. World health organization[WHO] continues to advocate that efforts to improve the overall

situation are still highly indicated.^{20,21}

A study on oral health assessment and dental health education of children at an early age helps in improving preventive dental behavior and attitude which would be beneficial for life time. It would also help reducing amount of malocclusion and at same time awareness for oral hygiene to reduce the risk of oral cancer cases.

The result of this study is a pointer to the fact that there still exist a large segment of the population who continues to remain ignorant about the detriment effect of poor oral health and multiple benefits enjoyed from good oral health. One of the oral health advocated by WHO for 2000 AD(22) was that 50%for 5years to 6years olds should be free from dental caries.²⁰ It also points to the fact that new indicators like caries teeth percentage, functional posterior teeth percentage and functional capacity percentage need to be developed and used in community dentistry for school children.

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