

## *Original Article*

### **Promoting Oral Health Awareness among 116 School Children in Eastern Bihar**

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#### **ABSTRACT:**

**Background:** The limited availability of oral health care services and the lack of knowledge on oral health in the population have been documented as contributing factors for poor oral health among preschool children. **Aims and Objectives:** This study was designed to evaluate the effect of an oral health education intervention, in Eastern Bihar school children. The objective was to improve the oral health status. **Materials and Methods:** 116 children were recruited using a convenience sampling technique. WHO criteria for detecting dental caries and treatment need were used. Loe's plaque index was used to determine the oral hygiene status of children. Mothers were educated on common oral health problems and causes among children. Preventive strategies and available oral health care services were introduced. Their knowledge of healthy food habits, of oral hygiene practices and of opportunities for self-referrals to oral health care facilities was enhanced during the intervention. Pre- and Post-Intervention clinical assessments were performed on children. **Results:** The prevalence of caries was reduced from a mean DMFT of 3.60 to 3.00 ( $P<0.005$ ). The major change was a reduction in the number of non-cavitated lesions, where the mean was lowered to 1.83 from 2.11 ( $P=0.04$ ). Children not in need of treatment for dental caries increased to more than half (69%) of the sample after 6 months, compared to 54% initially ( $p=0.564$ ). The need for preventive care decreased from 41% to 19% ( $p<0.005$ ). The same observation was made for treatment need, where the reduction was from 14.6% to 5.9% ( $p=0.003$ ). Prevalence of plaque was reduced from 86% to 81% post intervention. **Conclusion:** In conclusion, utilizing non-dental personnel to deliver appropriate education messages can improve the oral health of preschool children.

**Key words:** Preschool children, Preschool Teachers, hygiene, Oral health.

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#### **INTRODUCTION**

Primary prevention of oral diseases should be as early as possible. There is substantial evidence that the earlier the intervention, the more effective are the prevention efforts<sup>1,2</sup>. Mothers play a key role in the development of the oral hygiene habits of their children so it is essential that parents must be having dental awareness.<sup>3</sup> Thus teaching pregnant or lactating mothers on the importance of oral hygiene for both herself and her baby during the antenatal period, through auxiliaries or oral health care personnel, can establish sound oral hygiene practices later in childhood and adolescence<sup>4</sup>. The risk factors for the poor oral health of a child include mother's or the family's misconceptions, the level of knowledge and attitudes towards oral health<sup>3</sup>. Oral health promotion programs provided in the form of guidance and information can significantly reduce the incidence of Early Childhood Caries<sup>4</sup>. The oral health status of children, especially dental caries, is correlated with their parents dental and

oral health-related behaviors.<sup>5</sup> According to National Oral Health Survey (NOHS) results in 2002/2003<sup>6</sup> the prevalence of dental caries in deciduous teeth of 6-year-old children was 65.3% and the prevalence of active caries 63.5%. Only 1.8% of the 5-year-old children had been treated for caries teeth. Parents' perceptions about maintaining good oral health of children and the importance they place on the deciduous dentition largely determine the oral health status of children. In the urban setting the oral health knowledge of mothers is sound as their level of literacy is better and the availability and accessibility of oral health care services are substantial<sup>10</sup>. However, this cannot be said about the rural community<sup>8</sup>. Therefore this could be a contributing factor for the lower level of dental caries in the urban areas as compared to rural areas<sup>9</sup>. The aim of the present study was to test if we could improve the oral health of children by educating mothers.

**METHODS**

It was decided for the purpose of this study to use only the treatment need criteria for dental caries, as this is the most common oral health problem among preschool children. The study recruited 116 participants.

**Study Design:** Hospital based cross sectional study.

**Study Subjects:** Among total of 116 children enrolled in my study 55 were males and 61 was females.

**Inclusion Criteria:** Children with complete primary teeth eruption in age group 3-7 years.

**Exclusion Criteria:** Children above 8 years of age

**Data Collection Tool:** Started from July 2014 to July September 2014.

**Statistical Analysis:** The following formula was used to calculate the sample size, where  $\alpha$  is the level of significance used for detecting a difference of the type I error- (0.05) and  $\beta$  is type II error 0.1 when power is set at 0.9.

$$n = P1 (100-P1) + P2 (100-P2) \times f (\alpha \beta) (P2-P1)^2$$

**Methodology:** Each child’s oral health was measured using dental caries and oral hygiene as indices. Dental caries was measured with the WHO standard criteria for detecting dental caries along with modifications suggested by the National Institute for Dental Research for detecting non-cavitated lesions<sup>9</sup>.

The most commonly used indices to measure oral hygiene status of children are either the Visible Plaque index (VPI) or the gingival bleeding index<sup>12, 14</sup> and Partial mouth recording is considered to be adequate for surveys in which a degree of underestimation is an acceptable trade-off for lower costs<sup>15</sup>. To arrive at a VPI, the mean scores for the index teeth were calculated for each individual. Use of a mean value is debatable, as the different index classes are not equidistant. Training of mothers involved hands-on practical sessions with the PI and a dental public health specialist. Their knowledge and skills were developed using day to day case scenarios and role plays. They were taught how to examine the oral cavity under normal daylight conditions to detect dental caries and visible plaque.

**RESULTS**

Only 5% of mothers among the study group had university or other higher education qualifications.

Estimated Sample Size	Number participated	
	N	%
Males	61	53.4
Females	55	46.6

**Table 1 : Distribution of preschool children in the study**

Prevalence	Pre Intervention	Post Intervention	Significance
Decayed tooth without cavitation	41.01%(45)	19.18%(21)	0.0001
Decayed tooth with cavitation	27.40%(30)	26.48%(29)	0.0001
Caries prevalence	68.49%(75)	45.66%(50)	0.008
Prevalence of Dental Plaque	86.30%(94)	80.82%(83)	0.0105

**Table 2 Comparison of Dental Caries experience before and after intervention**

VPI	Pre Intervention		Post Intervention		Significance
	N	%	N	%	
0	16	13.7	23	19.2	0.0001
0.1-0.9	25	19.2%	50	44.3	0.0001
1.00-2.00	55	47.9%	39	34.2	0.0001
>2.00	19	17.8%	4	2.3	0.0001

**Table 3 Comparison of visible plaque score before and after intervention**

Taken together these explain 0.67/1.53, ie 44% of the observed reduction in active carious lesions. The remaining over 50% of the reduction in cavitated carious lesions, and the reduction from 2.1 to 1.83 in mean scores for non-cavitated lesions, may be attributed to better oral health care within families, and this to our health promotion intervention.

## DISCUSSION

Our results show after six months from the intervention, the prevalence of caries diminished from 68% to 46%. The main contributor to this reduction was a decline in decayed teeth without cavitation which was reduced substantially from 41% to 19% as indicated in Table 2. According to Haynes (2013), education on practical oral hygiene measures does have the potential to stop the disease process and actively promote re-mineralization of tooth structure<sup>17</sup>. The possible reasons for the drop in caries prevalence include i) The serious emphasis given to preventive measures for dental caries; regular and correct brushing with fluoridated toothpaste; and the information of oral health care services provided during the training after the pre-intervention results had been observed<sup>18</sup>. ii) The intervention being implemented during a school holiday period was likely to have had an impact since the children could more easily be taken to oral health care services.

When post-intervention data were considered for the identified categories of plaque score the number of children with a plaque score of "0" increased. Encouragingly, the number of children who had plaque scores more than 2.1 were very small opposed to that during the pre-intervention stage. This emphasizes that the availability of oral health services combined with the commitment provided by relevant oral health care personnel, coupled with the motivation of mothers, could create an environment that promotes the oral health of children. In summary, there was an obvious improvement in the oral health status and treatment need of children. The improvements were statistically significant and are attributed to the effects of the intervention targeting mothers of children. It highlights the potential that the above target groups have in promoting the oral health of children, with low-cost preventive strategies.

## CONCLUSION

Oral health promotion is a new concept. Even with the unavoidable limitations, this study demonstrates a feasible and cost-effective strategy has been used to promote the oral health of children. Further, available oral health care facilities need to be consistent with the planned intervention otherwise disappointments experienced by the clients will negatively impact on. Incorporating such methods into the existing oral health care system will further enhance future interventions of this nature.

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