

## Research Article,

**Prevalence, Severity and Risk Factors of Dental Caries among 1 – 6 year Old Children Attending Pediatric Hospital****Dr. Karthik Shunmugavelu<sup>1\*</sup>, Dr. Arthi Balasubramaniam<sup>2</sup>, Dr. V Vijayakumar<sup>3</sup>**

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**Abstract:**

**Objectives:** To determine the prevalence and severity of dental caries in 1-6 year old children in a pediatric hospital in Chennai and to assess the risk factors associated with dental caries among them. **Materials and methods:** A cross-sectional survey was conducted among 70 children in the age group of 1 to 6 years from a pediatric hospital in Chennai, India. A pre-tested questionnaire which contained parents' educational level, socio-economic status and various risk factors of dental caries was administered to the parents' of the study participants to collect relevant data. Decayed, missing, filled teeth (dmft) index and decayed, missing, filled surface (dmfs) index were used to collect the caries status of the study population **Results:** The mean age of the study participants was 4.01 years ( $\pm 1.40$ ). The study population constituted 58.6% of the male and 41.4% of the female. There was statistical significant difference among the children in the number of sweets consumed with a p value of 0.05. There found to be a statistical significant difference in the mean dmft and mean dmfs value based on the number of sweets consumed by the children ( $p=0.05$  &  $0.01$ ). There was statistical difference in the mean dmfs values among the study population based on gender with a p value of 0.02. The mean dmft value was found to be high among the female ( $9.97 \pm 5.5.6$ ) compared to that of male ( $7.02 \pm 4.65$ ) with a significant p value of 0.01 **Conclusion:** This study indicates the need for cumulative preventive programs with a focus to bring behavioral changes in the frequency and number of consumption of sweets among the pediatric population. Parents have to be motivated to alter the diet pattern and positively modify the oral hygiene practices of the young children.

**Key words:** Risk factors, dental caries, children, pediatric hospital**Introduction:**

Dental caries is the most prevalent chronic childhood oral disease<sup>1</sup>. There is an importance to assess the caries risk among children which has to be monitored at regular intervals to make necessary modifications<sup>2</sup>. Deleterious oral habits, the caries patterns and the risk factors are most commonly observed in preschool period, a perfect scenario of establishing a dental health lifestyle with a lifelong influence<sup>3</sup>. Children are vulnerable to adopt deleterious oral habits which predispose them to the chronic disease dental caries. It is the ideal time to intervene and establish a healthy trend which can have a lifelong influence<sup>4</sup>. Detection of early dental caries (incipient lesion) will be accurate in prediction of risk for the future decay. Thus, the necessity of information on the pattern, nature, severity and associated risk factor of dental caries are required for better understanding of the current situation and for planning community caries prevention programs among children. However the present study aimed to determine prevalence and severity of dental caries and its associated risk factors in pediatric population of 1-6 year old children in a pediatric multispecialty hospital in Chennai.

## Materials and methods:

A cross-sectional study was done to measure the prevalence and the severity of dental caries in 1- 6 year old children and to study the association of dental caries with the various factors such as gender, BMI, frequency of toothbrushing, mode of oral hygiene, number of sweets per day, socioeconomic status, and parent education. In this study, 70 children were enrolled who visited the Department of Pediatric Dentistry, Kanchi Kamakoti Child Trust Hospital, Chennai, India. A pre-tested questionnaire which contained parents' educational level, socio-economic status, frequency of toothbrushing, materials used for brushing, number of sweets consumed per day was administered to the parents to collect the information. Calibrated examiner recorded the dmft and dmfs scores using Decayed, Missing, Filled index (Klein, Palmer and Knutson, 1938). Prior approval was obtained from the hospital authorities after explaining the necessity of the study. Collected data were entered into the Microsoft excel sheet and statistical analysis were performed using Statistical Package for the Social Sciences (SPSS) version 20. Chi-square test was done for the comparison of the categorical variables and the 't'-test was done for the comparison of the continuous variables.

## Results:

**Table 1: Mean age of study population**

Variable	N	Minimum	Maximum	Mean	Std. Deviation
Age	70	1	6	4.01	1.409

**Table 2: Frequency distribution of variables among study participants**

Variables		Frequency	%
<b>Gender</b>	Male	41	58.6
	Female	29	41.4
<b>BMI</b>	<5 <sup>th</sup> Percentile	4	5.7
	5 <sup>th</sup> – 85 <sup>th</sup> Percentile	64	91.4
	>85 <sup>th</sup> percentile	2	2.9
<b>Socio-economic status</b>	Middle class	28	40
	Upper class	42	60
<b>Parent education</b>	Graduate	56	80.0
	High School	13	18.6
	Middle School	1	1.4
<b>Material for brushing</b>	Tooth brushing	70	100
<b>Frequency of Brushing/day</b>	Once	69	98.6
	Twice	1	1.4
<b>Number of sweets consumed/day</b>	Nil or once	22	31.4
	More than once	48	68.6

**Table 3: Mean distribution of caries status among study participants based on number of sweets consumed**

Factors	Total	dmft		dmfs	
		Mean	S.D	Mean	SD
No. of Sweets consumed					
Nil or Once	22	6.50	5.43	27.05	18.63
More than Once	48	9.04	4.97	41.81	22.82

Pearson's $\chi^2=0.05$	t= 1.92 p= 0.05 CI = 1.01-5.17	t= 2.65 p= 0.01 CI= 3.66 – 25.8
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**Table 4: Mean distribution of caries status among study participants based on Gender**

Factors	Total	dmft		dmfs	
		Mean	S.D	Mean	SD
Gender					
Male	41	7.02	4.65	32.15	21.04
Female	29	9.97	5.56	44.28	23.03
Pearson's $\chi^2=0.02$		t= -2.40 p= 0.01 CI = -5.38 to -0.49		t= -2.28 p= 0.02 CI=-22.7 to - 1.53	

The range and mean age of the study population was 1 to 6 years, 4.01 years ( $\pm 1.40$ ). The study population constituted 58.6% of the male and 41.4% of the female. About 91.4% of the study population had healthy weight with their BMI in the 5th and 85th percentile. Most of the parents of the study population were found to be in the upper class socio-economic status constituting 60%. Most of the study population parents were graduated (80%). About 98.6% of the children brushed their teeth once daily. Most of the children in the study consumed sweet in any form more than once daily (68.6%). Table 3 shows the caries status of the children based on the number of sweets consumed per day. There was statistical significant difference among the children in the number of sweets consumed with a p value of 0.05. There found to be a statistical significant difference in the mean dmft value based on the number of sweets consumed by the children ( $p=0.05$ ). The mean dmft in the children who consumed sweets any form more than once was found to be high ( $9.04 \pm 4.97$ ) compared to that of children in who consumed no sweet or less than once daily ( $6.50 \pm 5.43$ ). Similarly, the mean dmfs was found to be high among the children who consumed sweets in any form more than once daily ( $41.81 \pm 22.82$ ) compared to that of children who consumed no sweet or less than once daily ( $27.05 \pm 18.63$ ). Table 4 shows that there was statistical difference in the gender distribution among the study population with a p value of 0.02. The mean dmft value was found to be high among the female ( $9.97 \pm 5.56$ ) compared to that of male ( $7.02 \pm 4.65$ ) with a significant p value of 0.01. Similarly the mean dmfs value was found to be high among female ( $44.28 \pm 23.03$ ) compared to the mean dmfs of male

( $32.15 \pm 21.04$ ) with a statistical significant p value of 0.02. There found to be no statistical difference in the mean dmft and dmfs value among the children based on the socioeconomic status, education of parents. Also, there was no statistical difference in the caries status among the children based on the frequency of tooth brushing.

## Discussion:

The present study mainly focused on the dental caries status of the children in the age group 1-6 years which highlighted the risk factors of dental caries. The results of this study were in consistent with the previous work of several authors. The main objective of this study was to find the prevalence, severity and risk factors associated with dental caries. The prevalence of dental caries among the study subjects was found to be 82.4%. This showed a high prevalence of dental caries in 1 -6 year old children which may be attributed to various risk factors. In agreement with previous study the prevalence and severity of dental caries was found to be high among females compared to males<sup>5</sup>. This increasing trend may be partly due to the increased consumption of sweets, changes in the dietary habits and improper oral hygiene measures. The frequency of tooth brushing, that is once or twice daily, revealed no significant association with the prevalence of dental caries in this study. This may be attributed to the fact that lack of motivation and poor manual dexterity is common in the children of age group 1 -6 years. A suggestion, that there is need for continuous participation and supervision of the parents in tooth cleaning among preschool child's dental hygiene and that the quality of cleaning, rather than a mere cleaning twice daily, must be stressed<sup>6</sup>. The prevalence of dental caries was found to be high among those participants who consumed sweets more than once daily. This was found to be in consistent with the results of the study conducted by Sarumathi et al, Lehl G, Utreja D et al and Amit Arora et al<sup>1,7,8,9</sup>. The present study showed no statistical significant difference in the caries prevalence based on socio-economic status of the parents. This contradicted with

previous study by Gaur Set al<sup>10</sup> which showed that socio-economic status of the parents influence the caries status of the children.

There found that there was no significant difference in the mean decayed, missing, filled teeth scores among parents educational level. The parents with a better attitude and more knowledge in diet pattern and oral hygiene measures will probably build up better oral health habits in their children.

### **Conclusion:**

It was inferred from this study, that the prevalence of dental caries increased in females than males and that it was highly associated with the oral hygiene practices, the eating habits. Thus, the results of this study indicate that the cumulative preventive efforts should be focused on young children. Nonprofessionals such as primary health care workers and education professionals may be employed, to provide information on the oral health knowledge and also to create awareness and motivation among parents.

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