

Original Research

Role of Snacking habits and its relationship with ECC in sub – urban population of north India

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ABSTRACT:

Background: Early Childhood Caries (ECC) is a serious socio-behavioural and dental problem that afflicts infants and toddlers; if left untreated can lead to pain, acute infection, nutritional insufficiencies, learning and speech problems. The aim of this study was to identify the role of snacking habits and its relationship with ECC among sub urban population of North India. **Method:** A total of 370 parents of children in the age group of 6-71 months were included in the study. Self designed questionnaire regarding the snacking habits of children was filled and subjected to statistical analysis. **Results:** A statistically significant correlation was found between nocturnal, prolonged breast feeding and deft in children with ECC ($p < 0.001$) in 1-2 years of age. Children consuming carbonated beverages more than 2 times a day showed increased deft ($p < 0.005$). **Conclusion:** Long term and nocturnal breast feeding with age suggestive of high risk of ECC.

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INTRODUCTION

Dental caries also called as “diet-dependent bacterial infectious disease” is the most common oral health problem. It is widely accepted that all food containing fermentable carbohydrates such as free sugars, glucose polymers, fermentable oligosaccharides and highly refined starch have the potential to contribute to caries formation¹

Early childhood caries (ECC) is defined as the presence of 1 or more decayed, missing or filled tooth surfaces in any primary tooth in a child 71 months or younger ECC is the most common chronic disease in young children and may develop as soon as teeth erupt into the oral cavity.²

The consumption of sweets is particularly critical for young children: Nutritional habits which last a lifetime are established at birth and during child’s development as part of a learning and socialization process and are stabilized by regular consumption. Diet plays an important role in the nutritional status and henceforth the development of an individual. When diet and oral health is considered, Moynihan states that, “Good diet is essential for the development and maintenance of healthy teeth, but healthy teeth are important in enabling the

consumption of a varied and healthy diet throughout life cycle,” thus emphasizing the two way relationship between diet and oral health. Children and adolescents form the backbone of future generation and many serious diseases in adulthood have their roots in adolescence, for example, dietary habits. Unhealthy lifestyle factors like skipping meals and food choice leading to a poorer nutrient intake are common among this vulnerable adolescent group. Children and adolescents are giving preferences for sweetened foods, and soft drinks that are rich in carbohydrate and thus are at risk for caries development. Therefore this study was carried out with an aim to evaluate the role of snacking habits and its relationship with Early Childhood Caries among the sub urban population of North India.

SUBJECTS AND METHODS

A total of 370 parents of children aged 6-71 months, visiting the department of Pedodontics and Preventive Dentistry, fulfilling the inclusion criteria were selected (Table 1). The study protocol was approved by the PG board of studies, Pandit B.D Sharma University of Health Sciences, Rohtak vide letter no. SDDHDC/IEC/2019/20, dated 7/11/19.

Questions were explained in parent’s native language and were filled by a single examiner .The questionnaire contained 15 questions which were further divided into two parts. The first part had general demographic details of children and parents. Second part had questions regarding feeding practice and content of sugar, oral hygiene practices and its association with deft. The number of teeth, and their status as sound, precavitated (white spot lesion), cavitated, filled or sealed was recorded by making the child sit on dental chair [Drury et al., 1999], using

good light, a disposable mirror and an explorer. For each child, the total number of decayed (d; non-cavitated and cavitated), filled (f; sealants not included) and extracted (e) primary teeth (t) was calculated. The last part had question regarding the type and frequency of snacks intake by children. The recorded data was tabulated and subjected to statistical analysis using SPSS software and results were drawn. The association between the snacking habits and severity of ECC was recorded.

TABLE: i

INCLUSION CRITERIA	EXCLUSION CRITERIA
1.Children with age 6 months to 5 years 11 months of age 2. Parents or guardian willing to participate in the study.	Children who are below 6 months and more than 5 years 11 months of age 1. Parents or guardian not willing to participate 2. Children with congenital diseases

RESULTS

Table ii: Frequency N(%) distribution of respondents deft score by their age

		deft score			Total
		1	2	3	
Age	6 months -2 years	66	50	8	124
		47.1%	30.3%	12.3%	33.5%
	2 year 1 month - 4 year	49	41	40	130
		35.0%	24.8%	61.5%	35.1%
	4 year 1 month - 5 year 11 months	25	74	17	116
17.9%		44.8%	26.2%	31.4%	
Total		140	165	65	370
		100.0%	100.0%	100.0%	100.0%

Table iii: Frequency N(%) distribution of subjects deft score by their age at upto what age child was breast fed.

		deft score			Total
		1	2	3	
Q.D	0-1 years	82	66	33	181
		58.6%	40.0%	50.8%	48.9%
	1-2 years	41	99	32	172
		29.3%	60.0%	49.2%	46.5%
	2-3 years	17	0	0	17
		12.1%	.0%	.0%	4.6%
Total		140	165	65	370
		100.0%	100.0%	100.0%	100.0%

Table iv: Frequency N(%) distribution of subjects deft score by breast feeding child during sleep

		deft score			Total
		1	2	3	
Q.E	Yes/daily	83	148	65	296
		59.3%	89.7%	100.0%	80.0%
	Never/sparsely	57	17	0	74
		40.7%	10.3%	.0%	20.0%
Total		140	165	65	370
		100.0%	100.0%	100.0%	100.0%

RESULTS

Table i shows the inclusion and exclusion criteria of the participants

Table ii shows frequency N (%) distribution of subject's deft score by age. On applying Pearson Chi – Square test there was significant association between deft score and age of respondents, $p < 0.001$. The deft score 3 was significantly higher in age the group of 2 years 1 month – 4 years (61.5%) than others.

Table iii shows frequency N (%) distribution of subject's deft score by their age at upto what he child was breast –fed. On applying Pearson Chi – Square there was statistically significant association between deft score and age at upto what the child breast – fed ($p < 0.001$).

Table iv shows frequency N (%) distribution of subject's deft score by breast feeding child during sleep. On applying Pearson Chi- Square test there was statistically significantly associated between deft scores and breast feeding child during sleep ($p < 0.001$)

DISCUSSION

Diet plays a pivotal role in the nutritional status which in turn helps in the growth and development of an individual. Dental caries is a multi factorial disease with diet being one of the most important contributing factors. Sweetened food and beverages rich in carbohydrates content are preferred by children and adolescent group which makes them more susceptible for dental caries.⁴

ECC can rapidly destroy the primary dentition of toddlers and small children and if left untreated, can lead to pain, acute infection, nutritional insufficiencies and learning & speech problems. The risk of having ECC is increased by poor pregnancy care, the mother's own poor oral hygiene as well as the child-rearing practices used in the first few years of life.⁵

The oral health care provided by the parents to the children is of crucial importance since it determines not only the current oral health status of the child, but also lays the backbone of attitudes and practices that a child adopts and carries over into his or her adulthood. Therefore, this study was designed with an aim to evaluate the role of snacking habits and its relationship with early childhood caries among the sub urban population of district, Panchkula, Haryana. Children in the age group of 6 months-2 year ($n=124$), deft score was 1.53 ± 0.61 , followed by deft score of 1.93 ± 0.828 in the age group 2 year 1 month – 4 year old children ($n=130$). In the age group of 4 year 1 month -5 year 11 month ($n=116$), the mean deft score was 1.93 ± 0.600 (Table ii). The results showed that mean deft scores increased with age. Upon applying one way Analysis of Variance (ANOVA), the results were highly significant at ($p < 0.001$) for all the 3 age groups. With increasing age, the children tend to change their eating habits which

in turn results in the increased frequency of consumption of refined sugar and carbohydrates which in turn higher probability of decay. The results of this study were in accordance with a study conducted by **Koya.S in 2016**⁶ who also found that mean dmft score was 1.51 ± 2.44 between the ages of 24 and 71 months in the children of West Godavari district, Andhra Pradesh, South India. Caries risk was found to be 5% in 1 year old, and 12% in 3 year old in a study done by **Hultquist AI in 2020**⁷.

Out of a total of 370 respondents surveyed, 48.9% parents ($n=181$) bottle fed their children till 0-1 years of age. 46.5% of parents ($n=172$) breast fed their children till 1- 2 years of age. 4.6% of parents ($n=17$) breast fed their children till 2-3 years of age. No children were breast fed in the age group of 3 – 4 years. The mean deft score of children breast fed at age group of 0-1 year was found to be 1.73 ± 0.752 . Children who were breast fed in the age group 1-2 year had mean deft score of 1.95 ± 0.651 (Table iii). The reason behind this is that the mothers might be of the opinion that mother's milk contains maximum nutrients and so feeding the child with milk at such an age will help the child with their growth and development. Similar results were seen in a study conducted by **Chanpum P in 2020**⁸, where early childhood caries in children who were breastfed was higher (42.5%) and escalated with age. Children who were breast fed in the age group of 2-3 years scored a mean deft of 1.00 ± 0.00 . Decline in deft scores 2 – 3 years of age group can be attributed to the fact that the parents might have started early brushing for this age group. Contrary to the present study **Weerheijm et al in 1998**, **Mohebbi et al and Kramer et**⁹ al observed prolonged breastfeeding does not lead to higher prevalence of dental caries.

The results showed that the mean deft score was 1.94 ± 0.706 in children with breast feeding ($n=296$) during sleep while mean deft score in children who did not breast feed during night ($n=74$) was found to be 1.23 ± 0.424 . Results of our study indicated that higher deft scores pertaining to early childhood caries were found in the children who breast fed their children during sleep time which were statistically significant at ($p < 0.05$) (table iv). The reason for this might be because of the fact that the mothers did not want their children to sleep empty stomach during night time but child, is unable to swallow and the subsequent pooling of milk overnight results in tooth demineralization. The frequent intake of feeding further aggravates this condition. The results of this study were in accordance with a study conducted by **Roberts et al., 1993**¹⁰; **Valaitis et al, 2000** who reported that the children who were breast-fed after having fallen asleep tended to have more caries. The reason for this could be that most of the mothers were concerned that they might disturb the child by getting them up and cleaning the oral cavity. Study conducted by **Thomson et al (1996)** reported that

nocturnal breastfeeding after the age of 12 months may pose a higher risk of ECC. Feldens CA^{et al} in the year 2010 reported an increased adjusted risk of dental caries with increased daily breastfeeding frequency, including nocturnal feeding.

The oral health of children has been deteriorated because of the substitution of nutritious food with non-nutritious food viz. snacks, chips, cold drinks. Hence the parents should be motivated to avoid such substitution and thus dental caries can be kept in a check. Primary prevention must start in prenatal stage. The parents should also be advised /instructed for oral hygiene practices straight from pre dentate phase.

CONCLUSION

According to the present study lack of information about high sugary food and beverages, prolonged breast and bottle feeding during sleep are reasons for ECC. Awareness can be achieved by taking the help of various member from clubs like rotary club, lions club, people from anganwadi, NGO's etc. Also, the knowledge and recommendation should be added to the curriculum of school and colleges and social media can also be very effective tool for this task.

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