

# A Ten Year Retrospective Analysis of Early Childhood Caries among Children Visiting at Institute of Dental Sciences Bareilly

**Sheena Kaur Samagh**

Institute of Dental Sciences, Bareilly, Uttar Pradesh, India

## Abstract

**Aim:** The purpose of this study was to know the prevalence of Early Childhood Caries (ECC) in children reporting to the Department of Pediatric and Preventive Dentistry, Institute of Dental Sciences, Bareilly, Uttar Pradesh, India.

**Methods:** This is a retrospective study of data from the Department of Pediatric and preventive dentistry, Institute of Dental Sciences, Bareilly from May 1, 2011 to May 1, 2021.

**Results:** The prevalence of ECC was 51.7%. The prevalence of ECC increased with the increasing age with the highest prevalence among 5-6 year (69.2%) followed by 57.9%, 48.9%, 46.2%, 32.1% and 0% among 4-5, 3-4, 2-3, 2-1 and less than one year old, respectively.

**Conclusion:** According to the findings of this study, the prevalence of ECC was high among children who visited the Department of Pediatric and Preventive Dentistry, Institute of Dental Sciences, Bareilly. As a result, caries prevention and treatment strategies for this group of youngsters are required.

**Keywords:** Early Childhood Caries (ECC), Dental, Dentistry

## Introduction

Early Childhood Caries (ECC) is a term proposed by the American Academy of Pediatric Dentistry and Centers for Disease Control and Prevention in 1994. ECC is defined as “the presence of one or more decayed (non-cavitated or cavitated lesions), missing (due to caries), or filled tooth surfaces in any primary tooth in a child younger than 6 years of age”. Because of its early onset and high frequency, as well as the increased possibility of not getting treatment, ECC remains a serious public health problem in infants and preschool children, particularly in developing countries like India. There are various risk factors for ECC in young children. One of the reason is their dietary patterns, which has an important part in the occurrence of ECC because teeth becomes prone to caries just after their eruption in the oral cavity<sup>1</sup>.

ECC is a complex disease. A susceptible host, a fermentable carbohydrate diet, dental plaque, a large number of cariogenic bacteria such as *S.mutans* and *Lactobacillus*, and time are all contributing factors<sup>2</sup>. ECC has been linked to demographics, oral hygiene practices, parental attitudes, mother's educational

level, socioeconomic status, child's behaviour, mouth breathing habit, siblings, honey-dipped pacifiers, children with systemic illness or special health care needs, other feeding patterns, mother's health, psychosocial issues and commonly used medication. As a result, understanding the incidence of ECC is critical for creating targeted treatments to prevent its recurrence and minimise the number of children who require emergency care<sup>3</sup>.

So, this study was planned to investigate the prevalence of ECC in children aged 8 months to 6 years who visited the Department of Pediatric and Preventive Dentistry, Institute of Dental Sciences, Bareilly.

**Materials and Methods**

A retrospective assessment was done on the case records of patients treated in the Department of Department of Pediatric and Preventive Dentistry, Institute of Dental Sciences Bareilly from May 1, 2021 to May 1, 2021. Written informed consent was obtained from the guardians of all children included in this study. The aim of this study was to know the prevalence of ECC in children reporting to the Department of Pediatric and Preventive Dentistry, Institute of Dental Sciences, Bareilly. During the study period, 650 pediatric patient records (children aged 8 months to 6 years) were retrospectively evaluated for ECC. The following eligibility criteria were applied for inclusion in this retrospective were healthy children, and children with special needs and children with genetically derived disorders of enamel or dentin — amelogenesis imperfecta, dentinogenesis imperfecta — were excluded from evaluation.

The patients data was collected by trained professionals, and spread on an excel sheet and subjected to statistical analysis and the investigators ensured that the data would be kept private. It was noted if ECC was present or not. The gathered data was laid out on an excel sheet followed by statistical analysis.

**Results**

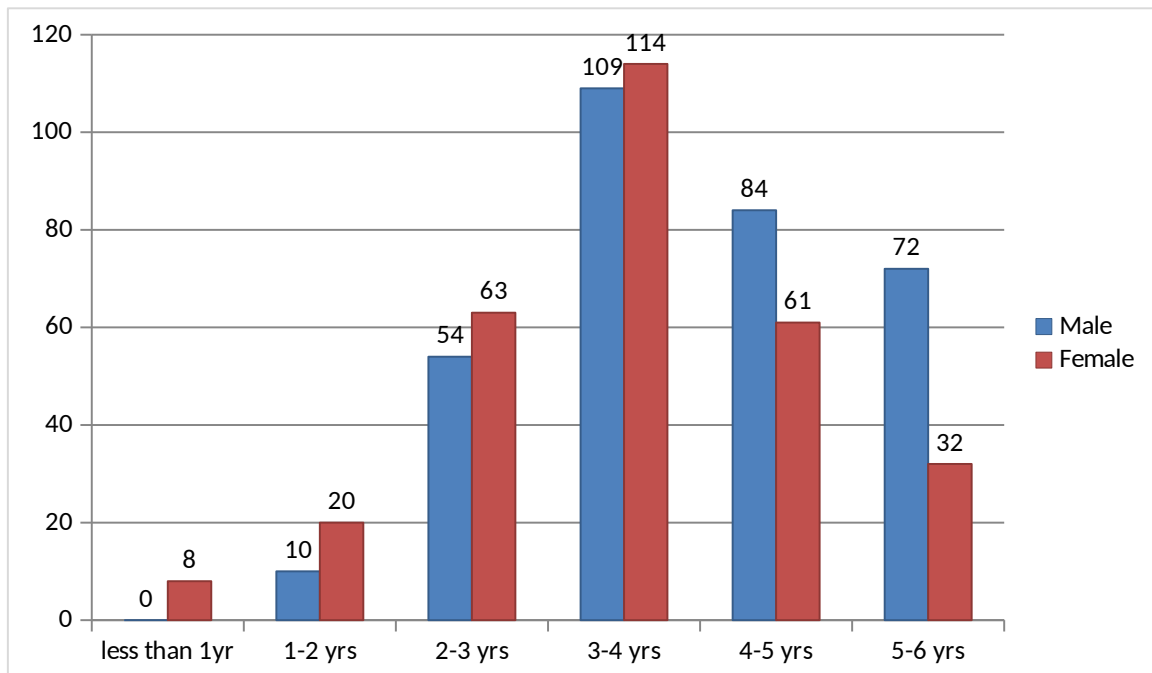
A total of 650 children aged between 8 months and 6 years were analyzed, among them, 47.7% were boys and 52.3% girls. The prevalence of ECC was 51.7% [Table 1]. The prevalence of ECC was high with the increasing age with the highest prevalence among 5-6 years (69.2%), followed by 57.9%, 48.9%, 46.2%, 32.1% and 0% among 4-5, 3-4, 2-3, 2-1 and less than one year old, respectively.

Table 1: Caries Prevalence among Study Population

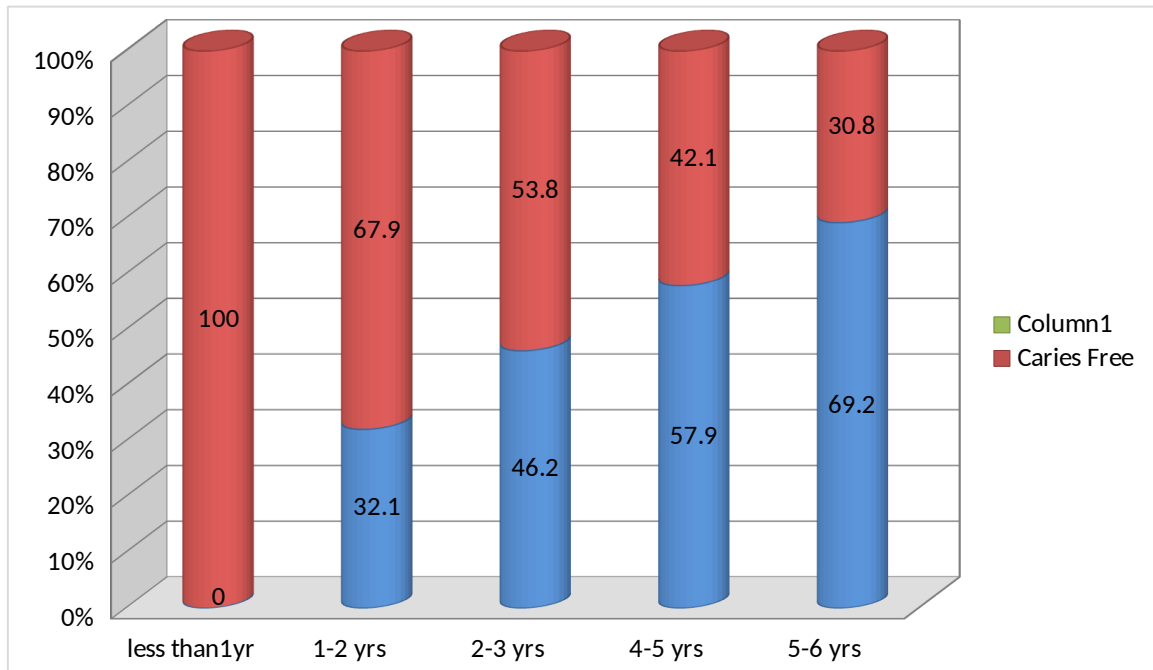
Age Group	Gender	Caries (ECC)	Caries Free
8 Months – 1 Year	Male	0 (0%)	3 (100%)
	Female	0 (0%)	5 (100%)
	<b>Total</b>	0 (0%)	8 (100%)
1 – 2 Years	Male	7 (30.4%)	16 (69.6%)
	Female	10 (33.3%)	20 (66.7%)
	<b>Total</b>	17 (32.1%)	36 (67.9%)
2 – 3 Years	Male	23 (43.4%)	30 (56.6%)
	Female	31 (48.4%)	33 (51.6%)

	<b>Total</b>	54 (46.2%)	63 (53.8%)
3 – 4 Years	Male	47 (46.5%)	54 (53.5%)
	Female	62 (50.8%)	60 (49.2%)
	<b>Total</b>	109 (48.9%)	114 (51.1%)
4 – 5 Years	Male	45 (64.3%)	25 (35.7%)
	Female	39 (52%)	36 (48%)
	<b>Total</b>	84 (57.9%)	61 (42.1%)
5 – 6 years	Male	37 (61.7%)	23 (38.3%)
	Female	35 (79.5%)	9 (20.5%)
	<b>Total</b>	72 (69.2%)	32 (30.8%)
<b>Total</b>	Male	159 (51.3%)	151 (48.7%)
	Female	177 (52.1%)	163 (47.9%)
	<b>Total</b>	336 (51.7%)	314 (48.3%)

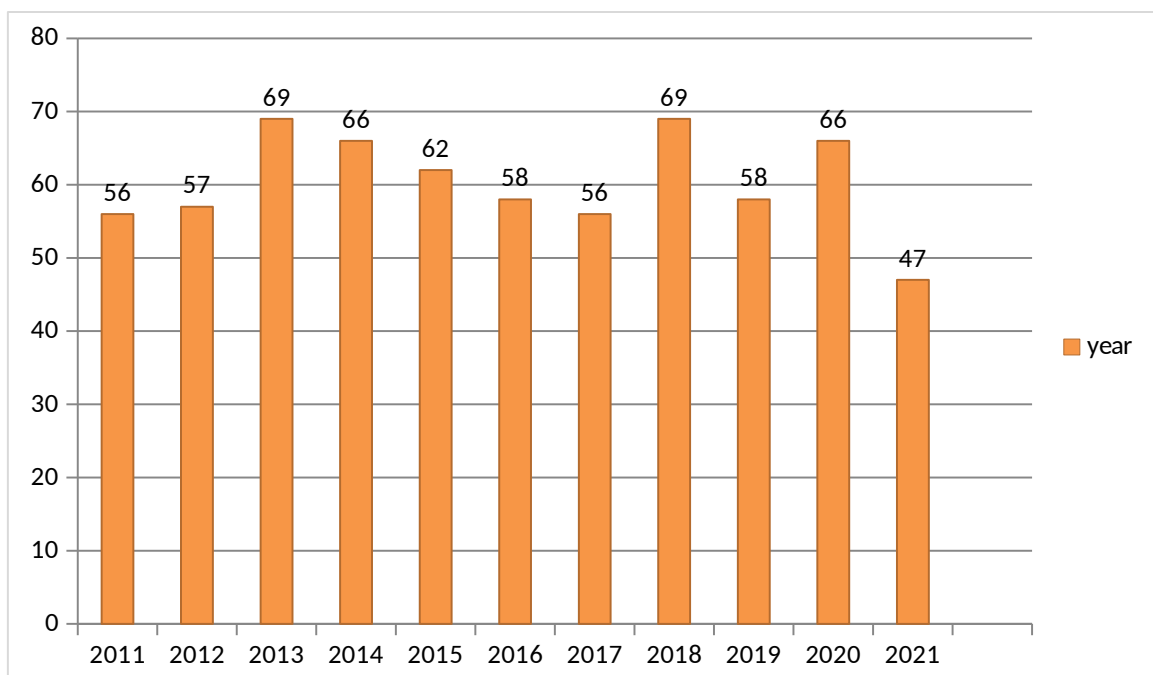
Graph 1: Prevalence of ECC in Relation to Age and Gender



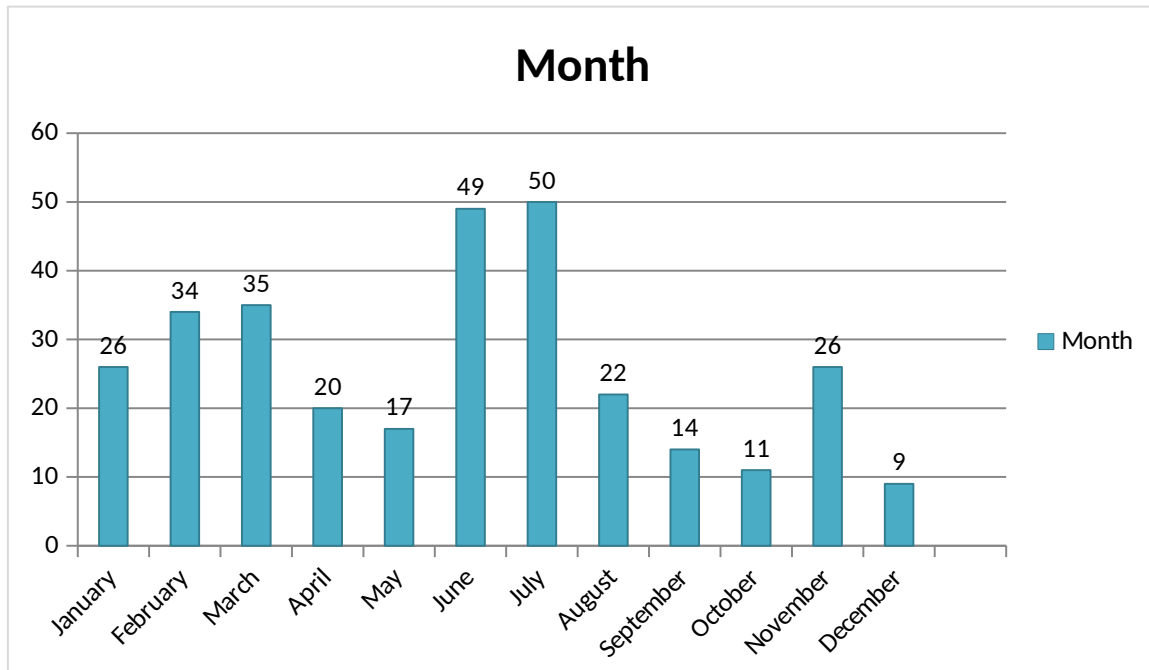
Graph 2: Proportion of Children (in %) With and Without ECC in Relation to Age



Graph 3: Prevalence of ECC in Relation to Year of Visiting



Graph 4: Prevalence of ECC in Relation to Month of Visiting



### Discussion

Children's dental health is sometimes overlooked when it comes to their overall health and well-being, specially in cases of ECC. Children, as young as six, are particularly prone to caries due to their reliance on their parents. Even though ECC is not life-threatening, it can cause pain, bacteremia, hampered chewing due to furcal/periapical infection and toxic overdose of analgesics administered during the early stages, followed by malocclusion in permanent dentition, speaking difficulties, compromised health, and lower self-esteem if it remains untreated.

In this study, ECC was discovered in 51.97% of the individuals in contrast to a research by Dixit et al.<sup>4</sup>, which indicated that 71.1% of people in the Narmada district of Gujarat had ECC, the prevalence was low. 62.14% (Mudhol town, Karnataka)<sup>5</sup>. However, a few research from different Indian groups revealed a lower prevalence: -37.3% (Bengaluru, Karnataka), 21.9% (Srinagar, J & K)<sup>6</sup>, 27.5% (Bengaluru, Karnataka), 32% (Rohtak, Haryana), and 42.03% (Rohtak, Haryana) (Bahadurgarh, Haryana)<sup>7</sup>. Because most studies are performed in and around cities near dental college institutes, the low incidence seen in this study might be attributable to greater usage of fluoride toothpaste in the market, as well as increased oral hygiene awareness as a result of the numerous oral health education programmes offered by well-established dental facilities in the area.

ECC is more common in children aged 8 months to 6 years on different continents and in different countries. A lack of oral hygiene, a lack of understanding of dental hygiene regimens, parental and caregiver negligence and a lack of dexterity in young children under the age of six may all contribute to the increased prevalence of ECC in the preschool age group<sup>8</sup>. Furthermore, the patients who visited the Dental institute, are generally from low socioeconomic backgrounds, were the subjects of this study. This population's parents typically devote the majority of their time and energy to earn a living, making oral hygiene less vital, which could be another cause for the high frequency of ECC in this group<sup>9</sup>. The

prevalence of ECC increases dramatically with age, according to the current study [Graph 2]. Prakash et al.<sup>10</sup> and Stephen et al.<sup>11</sup> found a similar pattern in prior research. This rise in incidence with age is most likely due to changes in food habits and hygiene behaviors, as well as an increase in the cariogenic challenge. A relationship between the ECC and age may also be seen in the growing number of erupted primary teeth that stay visible in the oral cavity for a longer length of time. This retrospective study's findings might be utilised to plan and assess community development and oral health education initiatives. Because children under the age of six are fully dependent on their parents, the ultimate difficulty will be long-term behavioral change among parents. The high prevalence of tooth decay in this population highlights the urgent need for better treatment and prevention.

The dental institute is the one that serves a high number of patients from low socioeconomic backgrounds. To prevent ECC in children, high-risk individuals must be recognized at a young age (ideally during pregnancy) and oral health counseling should be provided. Prenatal counseling should be provided by dentists and other allied health care practitioners in collaboration with gynecologists, pregnancy scanning experts, nurses, Auxiliary Nurse Midwives (ANMs), Accredited Social Health Activists (ASHAs), and other health care professionals. As a result, medical practitioners and others who take care of the pregnant women and children must all be involved in ECC prevention and early detection<sup>12</sup>. Finally, community-based strategies for improving early childhood oral health and avoiding ECC should be researched, as they may be utilized in conjunction with current and future efforts. This study has some limitations, especially because it was conducted retrospectively and did not allow for the evaluation of a cause-and-effect link. Risk variables for ECC such as breast-feeding history, dietary pattern, oral hygiene practices, and social determinants such as family income, number of siblings, parents occupation and other factors that may have influenced ECC were not documented. It is suggested that more research be done that takes all of these aspects into account<sup>13</sup>.

## Conclusion

The findings of this retrospective study will form part of a baseline for the oral health assessment for children below 6 years of age in Department of Pediatric and Preventive Dentistry, Institute of Dental Sciences, Bareilly. From the results of this study, it can be concluded that prevalence of ECC is particularly high among Bareilly's children. Evidence shows that children with this disease are still at a high risk of developing caries in the future. As a result, children in this age group require caries prevention and treatment programmes.

## References

1. Sankar Narayanan R., Kumar P. Prevalence of Early Childhood Caries among children visiting Department of Dental Surgery, Chengalpattu Medical College and Hospital. *European Journal of Molecular & Clinical Medicine*, 2020, 7(2), 6531-6537.
2. Ripa L.W. Nursing caries: A comprehensive review. *Pediatr Dent*, 1988, 10(1), 268-282.
3. Kagihara L.E., Niederhauser V.P., Stark M. Assessment, management and prevention of Early Childhood Caries. *J Am Acad Nurse Pract*, 2009, 21(1), 1-10.
4. Casamassimo P.S., Thikkurissy S., Edelstein B., Maiorini E. Beyond the dmft: The human and Economic cost of Early Childhood Caries. *J Am Dent Assoc*, 2009, 140(1), 650-657.
5. Dixit A., Aruna D.S., Sachdev V., Sharma A. Prevalence of dental caries and treatment needs

- among 3-5 year old preschool children in Narmada, Gujarat. IOSR J Dent Med Sci, 2015, 14(1), 97-101.
6. Kashetty M.V., Patil S., Kumbhar S., Patil P. Prevalence of dental caries among 3-6-year-old Anganwadi children in Mudhol town, Karnataka, India. J Indian Assoc Public Health Dent, 2016, 14(1), 403-448.
  7. Singhal D.K., Acharya S., Thakur A.S. Dental caries experience among school children of Udupi Taluk, Karnataka, India. J Oral Health Community Dent, 2015, 9(1), 5-9.
  8. Singh S., Vijayakumar N., Priyadarshini H.R., Shobha M. Prevalence of early childhood caries among 3-5 year old pre-schoolers in schools of Marathahalli, Bangalore. Dent Res J, 2012, 9(1), 710-714.
  9. Shah A.F., Batra M., Aggarwal V., Dany S.S., Rajput P., Bansal T. Prevalence of early childhood caries among preschool children of low socioeconomic status in district Srinagar, Jammu and Kashmir. IAIM, 2015, 2(1), 8-13.
  10. Prakash P., Subramaniam P., Durgesh B.H., Konde S. Prevalence of early childhood caries and associated risk factors in preschool children of urban Bangalore, India: A cross-sectional study. Eur J Dent, 2012, 6(1), 141-52.
  11. Ghanghas M., Kumar A., Manjunath B.C., Narang R., Shyam R., Piplani A. Dental caries experience among 3-5 years old preschool children in India. Austin J Public Health Epidemio, 2017, 4(1), 1063-1066.
  12. Viridi M., Bajaj N., Kumar A. Prevalence of severe early childhood caries in pre-school children in Bahadurgarh, Haryana, India. Internet J Epidemiol, 2009, 8(1), 1-4.
  13. Stephen A., Krishnan R., Ramesh M., Kumar V.S. Prevalence of early childhood caries and its risk factors in 18-72 month-old children in Salem, Tamil Nadu. J Int Soc Prev Community Dent, 2015, 5(1), 95-102.