

# EARLY CHILDHOOD CARIES AND ITS RELATIONSHIP WITH DIFFERENT RISK FACTORS IN PRESCHOOL CHILDREN

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## ABSTRACT

**Objective:** To find the frequency/pattern of Early Childhood caries (ECC) and to find out the relationship of different risk factors with ECC.

**Methodology:** A cross sectional survey was conducted in both pediatric departments present in the dental hospitals of Peshawar, Pakistan from August 2013 to January 2014. All children with age range of 3- 6 years that visited pediatric department were selected. The diagnosis of ECC was solely based on clinical assessment. A parent or a caregiver was asked to complete a questionnaire regarding information about the child, their oral hygiene, demographics and feeding practices. The data was arranged categorically and analyzed using Statistical Package of Social Sciences (SPSS 16). Chi Square test was used to calculate statistical significance set at <0.05

**Results:** A total number of 320 children were selected. The Mean age of our sample was  $4.2 \pm 1.14$  years Majority of children were males (n=184, 57.5%) while females were (n=136, 42.5%) The frequency of Early Childhood Caries was 85 %(272). Anterior teeth had more caries (n=139, 43.4%) than posterior and upper jaw teeth had more caries (n=171, 53.4%) than lower jaw. Feeding habits, Age, mother's age, adult supervision, and knowledge of parent were found to be significantly related with Early Childhood Caries ( $p < .005$ ), while the gender and who applies the tooth paste were found not significant

**Conclusion:** There is a high occurrence of early child hood caries among children visiting dental hospitals in Peshawar. Anterior upper teeth are more prone to caries.

**Key Words:** Early Childhood Caries, Occurrence, Pattern, Risk Factors

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## INTRODUCTION

The Incidence of Early Childhood Caries (ECC) varies in different countries, this is dependent on the diagnostic criteria, while on the other hand in more developed or advanced countries which have more advanced oral health programs and protection techniques, the Incidence of early childhood caries is around 5%<sup>1-5</sup>. While in southern Europe the commonness of this disease is higher around 20% in (Bosnia) apart from that in (Macedonia) it is 14%<sup>6,7</sup>. The higher prevalence of this disease is in places,<sup>5</sup> Alaska (66.8%) and Iran (59%)<sup>8</sup>. In the United States of America the occurrence of this disease in Indian children is 41.8%<sup>8</sup>.

Likewise in North American population, the commonness of this disease ranges from 11-72% in children<sup>9</sup>. In America, its occurrence is more than asthma and seven times more than allergic rhinitis<sup>10</sup>. In India the dental car-

ies is reported to be 51-54.1% in different researches.

In a study from Karachi, Pakistan, a research conducted reported it to be 29.1%<sup>11</sup>. According to another study conducted in Fatima Jinnah dental college and hospital Karachi the experience of early childhood caries was 50.1%<sup>12</sup>. Caries prevalence was 51% in another study conducted in Saddar Karachi<sup>13</sup>; while a research by Sufia et al, calculated the dental carries prevalence about 40.1% among the children of 3-5 years age<sup>14</sup>.

This study is therefore planned to collect the relevant data related to early childhood caries and raise awareness in parents about it. This will provide an idea to a dentist about the link of ECC with different variables. It is important to treat early child hood caries because they affect permanent dentition. The study may also serve as a base for other researches in the same field in the future.

## METHODOLOGY

This cross sectional study was conducted in pediatric Department of Khyber College of Dentistry and Sardar Begum Dental College and Hospital, Peshawar. The time required to complete the study was 6 months August 2013-January 2014 after the approval by the "Institutional Review Board of Khyber medical university". Ethical permission was taken from the principals of both the hospitals. Children having missing teeth due to caries and healthy children with no systematic diseases were included in our study while children with missing and decayed tooth due to trauma or some other reasons and not due to caries, congenitally missing and supernumerary teeth, un-erupted teeth were excluded

The sample size for this particular study with 95% interval, expected prevalence of ECC as 29% and 5% absolute precision was 320 which was calculated using sample size formula by WHO.<sup>42</sup>

$$n = z^2 \cdot 1 - \alpha \cdot p \cdot (1 - p) / d^2$$

Convenient Sampling technique was selected for the collection of the relevant data required for the analysis of the study on a semi structured proforma. After obtaining consent from the patient, the children were examined in Pediatric Departments of two hospitals Khyber College of Dentistry (KCD) and Sardar Begum And Dental College (SBDC) using decayed, missing, filled teeth (dmft) indices.

Frequency and pattern were analyzed using SPSS version 16 in the form of frequencies (%). Chi Square test was applied to determine the association between Early Childhood Caries and other variables like feeding habits, child's age, child's gender, mother's age, adult supervision while tooth brushing, who helps in applying toothpaste, parent's knowledge that sweet cause caries. Pattern was defined as something that happens in a regular and repeated way<sup>31</sup>

## RESULTS

The Mean age of our sample was  $4.2 \pm 1.14$  years. Majority of children were males (n=184, 57.5%) while females were (n=136, 42.5%). The frequency of ECC was 85%. Number of children who were breast fed < 12 months was (n=176, 55%) and those who were on bottle fed > 18 months (n=115, 35.8) {Table 1}.

Caries were found more in anterior teeth (n=139, 43.4%) and in upper jaw (n=171, 53.4%) as shown in Table 2.

The comparative analysis showed that feeding, child's age, mother's age, general beliefs, parents knowledge that sweet cause caries, using tooth brush under adult supervision showed significance with early childhood caries while the variables gender and who applies tooth paste does not shows any significance with early childhood caries.

**Table 1: Feeding habits**

Feeding habits		Frequency (n=320)	Percentage
Breast feeding	Not at all	89	27.9%
	For < 12 months	176	55%
	For >12 months	55	17.1%
Bottle feeding	Not at all	127	39.6%
	For <18 months	78	24.6%
	For >18 months	115	35.8%

**Table 2: Pattern of early childhood caries**

	Caries pattern	Frequency (n=320)	Percentage
Teeth	Anterior	139	43.4%
	Posterior	133	41.6%
Jaw	Upper	171	53.4%
	Lower	101	31.6%

## DISCUSSION

Our study stated that occurrence of ECC was 85% compared to the studies conducted at Karachi, which showed occurrence of 29% and 50% respectively.<sup>11,12</sup>

In our study it was found that majority of the caries were in anterior teeth and upper jaw as compared to posterior and lower jaw. According to the studies by Berkowitz et al and VanHoute J et al that upper anterior are more prone to caries as compare to lower jaw teeth<sup>8,15</sup>. This may be due to the fact that nipple block entry of saliva to the upper anteriors and hence make them more prone to develop caries<sup>15</sup>.

There was a significant relationship of feeding and ECC as shown in other studies<sup>8,12,15,16</sup>. It is worth mentioning that study conducted in United States showed that children who were not breastfed had twice the risk of ECC if compared to their siblings who were breastfed<sup>17</sup>. According to WHO breast feeding should be encouraged but special instructions should be kept in mind for oral hygiene,<sup>8,15,16</sup>. Only three factors are linked to breastfeeding i.e. duration, frequency and breastfeeding at night and three to breastfeeding and/or bottle-feeding i.e. when used to feed or to stop the infant from crying at night, to put him/her to sleep and duration of breastfeeding longer than 18 months.<sup>17</sup>

In our study there was a significant association between age of children and ECC which was against the results obtained by a study conducted in Karachi where there was no significant association.<sup>11</sup> however the studies conducted in Fatima Jinnah hospital Karachi, Kosovo and Brazil showed that age has the significant association with ECC<sup>12,16,17</sup>.

At the same time our study showed no significant relationship among ECC and gender of children, which supports the analysis of the researches conducted in Karachi<sup>11,12</sup>.

The result of our study showed that there was a significant association with mother's age and the occurrence of ECC. It was observed that younger the mother have less chances of occurrence of ECC this is supported by another research which was conducted in Australia. The reason might be that mothers >25 years has less immunity and their oral hygiene is compromised as compared to young mothers and the other reason is that younger are more energetic than older mothers so they can supervise their children more efficiently<sup>18</sup>.

A study conducted in Karachi showed that there was a significant relationship between caries and adult supervision and who applies the tooth paste whether parent or child<sup>12</sup>. Our study showed that adult supervision was significant but it was not significant whether who applies the tooth paste on brush

Our study revealed the fact that parent's know that sweet cause caries is significant tom ECC almost similar to the research conducted in Australia and Ireland<sup>18,19</sup>.

## CONCLUSION

Recommended increasing parent's information of proper feeding habits and oral health practices Dental caries can be prevented by knowing the factors that cause the disease and then educating the people about the activities to be planned to restrict the prevalence of this disease.. To know the estimated occurrence of dental caries among the young children in Pakistan will help to employ control over it and also possible preventives measures to be taken at the early age of child.

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## REFERENCES

1. Drury TF, Horowitz AM, Ismail AI, Maertens MP, Rozier RG, Selwitz RH. Diagnosing and reporting early childhood caries for research purposes. A report of a workshop sponsored by the National Institute of Dental and Craniofacial Research, the Health Resources and Services Administration, and the Health Care Financing Administration. *J Public Health Dent* 1999;59:192-7.
2. Schroth RJ, Brothwell DJ, Moffatt ME. Care-giver knowledge and attitudes of preschool oral health and Early Childhood Caries (ECC). *Int J Circumpolar Health* 2007;66:153-67
3. American Academy of Pediatric Dentistry. Guideline on infant oral health care. *Pediatr Dent* 2012;34:148-52.
4. Ayhan H, Suskan E, YildirimS. The effect of nursing or rampant caries on height, body weight and head circumference. *J Clin Pediatr Dent* 1996;20:209-12.
5. Thomas C, Primosch R. Changes in incremental weight and well-being of children with rampant caries following complete dental rehabilitation. *Pediatr Dent* 2002;24:109-13.
6. Seow WK. Biological mechanisms of early childhood caries. *Community Dent Oral Epidemiol* 1998;26:8-27.
7. Veerkamp JS, Weerheim KL. Nursing caries bottle: the importance of a developmental perspective. *ASDC J Dent Child* 1995;22:381-6.
8. Berkowitz RJ. Causes, treatment and prevention of early

- childhood caries: a microbiologic perspective. *J Can Dent Assoc* 2003;69:304-7.
9. Low W, Tan S, Schwartz S. The effect of severe caries on the quality of life in young children. *Pediatr Dent* 1999;21:325-6.
  10. Dilley GJ, Dilley DH, Machen JB. Prolonged nursing habit: a profile of patients and their families. *ASDC J Dent Child* 1980;47:102-8.
  11. Charani A, Mohsin S, Sufia S, Khan AA. Prevalence of early childhood caries among 3-5 years old children of Clifton Karachi. *J Pak Dent Assoc* 2011;20:89-92.
  12. Inayat N, Mujeeb F, Shad MA, Rashid S, Hosein T. Experience of early childhood caries in children at Fatima Jinnah dental college and hospital, Karachi and its relationship with feeding practices. *J Pak Dent Assoc* 2010;19:35-40.
  13. Dawani N, Nisar N, Khan N, Syed S, Tanweer N. Prevalence and factors related to dental caries among pre-school children of Saddar town, Karachi, Pakistan: a cross-sectional study. *BMC Oral Health* 2012;12:59.
  14. Sufia S, Chaudhry S, Izhar F, Syed A, Mirza BA, Khan AA. Dental caries experience in preschool children: is it related to a child's place of residence and family income? *Oral Health Prev Dent* 2011;9:375-9.
  15. Van Houte J, Gibbs G, Butera C. Oral flora of children with "nursing bottle caries". *J Dent Res* 1982;61:382-5.
  16. Begzati A, Berisha M, Meqa K. Early childhood caries in preschool children of Kosovo - a serious public health problem. *BMC Public Health* 2010;10:88:788.
  17. Rosenblatt A, Zarzar P. Breast-feeding and early childhood caries: an assessment among Brazilian infants. *Int J Paediatr Dent* 2004;14:439-45.
  18. Hallett KB, O'Rourke PK. Pattern and severity of early childhood caries. *Community Dent Oral Epidemiol* 2006;34:25-35
  19. Harris R, Nicoll AD, Adair PM, Pine CM. Risk factors for dental caries in young children: a systematic review of the literature. *Community Dent Health* 2004;21:71-85.

### CONTRIBUTORS

US participated in planning of study, data analysis and manuscript writing. SB helped in data management. BJ supervised the study and helped in manuscript writing. All authors contributed significantly to the final manuscript.