

# ASSESSMENT OF EARLY CHILDHOOD CARIES (ECC) AND ITS RELATIONSHIP WITH FEEDING PRACTICES — A STUDY

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## ABSTRACT

*Early childhood caries remains a problem in both developed and developing countries and has been considered to be in an epidemic proportion in developing countries. The aim of this study was to assess the prevalence of Early Childhood Caries and its relationship with feeding practices. It was carried out at Khyber College of Dentistry Hospital. It was spread over a period of three months.*

*This was cross sectional analytical study children of 2-6 years old formed the study group. Sample size was 194 children and sampling technique was convenience purposive. Children were examined on dental unit by the principal author and caries were detected using dft index. A parent or care giver, after taking the informed consent, was asked to complete a self-designed questionnaire regarding information about the child's pattern of feeding, mother education level, socio economics status age of starting brushing, having snack between meals and dft status. The study showed prevalence of ECC was 55.2%. In this study breast, fed children were 84% and bottle-fed were 16%. Percentage of ECC in breast-fed children was 51.6%, which was less than the percentage of ECC in bottle-fed children, which was 72.25%. Those children who took bottle at nighttime had more carries (72.5%) as compared to those who did not (50%). Caries in children was 89% who took milk with sugar at night as compared to those who did not. Incident of carries was more in the children of illiterate mothers (56%) than those of educated mothers (10%).*

*This study documented high prevalence of ECC among 2-6 year olds children. Prevalence of ECC was more in bottle fed children specially in those children who were given milk with sugar in bottle at night. Results reveal an urgent need of increased awareness among the public about ECC and their attitude towards the importance of primary teeth. This is high time to institute preventive strategies to control ECC.*

**Key Words:** *Early childhood caries, Breast and bottle-fed children, and Bottle-fed children.*

## INTRODUCTION

Early Childhood Caries, (ECC) is an aggressive form of dental caries that begins on tooth surfaces, which are usually not affected by dental decay such as labial surfaces of maxillary incisors, thus, there is a strong contemplation that in early childhood caries there may be active risk factors involved, for its progression.<sup>1</sup>

According to American Academy of Pediatric Dentistry, "Early Childhood Caries (ECC) is defined as the presence of one or more primary teeth with caries

cavitated or non-cavitated in a child 6 years of age or younger."<sup>2</sup>

The use of baby bottle, during night decreases salivary flow, thus decreasing salivary buffering capacity which causes food stagnation on teeth and thus are exposed to fermentable carbohydrates for longer time.

The lower incisors being closed to main salivary glands and tongue, are protected from the damage done by bottle in the causation of early childhood caries.<sup>3</sup>

Chronic infection around tooth buds, of developing permanent dentition can cause hypoplasia of developing teeth. Many deciduous teeth are lost due to Early Childhood Caries (ECC) which lead to space lost for successors and ectopic eruption of permanent teeth. Consequently, these children have bad aesthetics, bad speech skills, low self-esteem and poor social interaction.<sup>4</sup>

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Early Childhood Caries (ECC) is a widespread dental condition that is prevalent among children throughout the world. Early childhood caries (ECC) remains a problem, in both developed and developing countries.<sup>5,6,7,8,9</sup> Early childhood Caries (ECC) in Pakistan is 44.4%<sup>10</sup>, and in developing countries, its prevalence is in high proportions.

The various risk factors of Early Childhood Caries (ECC) include feeding practices and snacking habits, oral hygiene, socioeconomic status and mother's education level.<sup>11</sup>

Du and coworkers in their study found that children who were bottle-fed have 5 times greater risk for caries, compared to the children who were breast fed.<sup>12,13</sup>

Bottle feeding, especially when children are allowed to sleep with bottle in their mouth has been considered cariogenic.<sup>14,15,16</sup> Use of bottle with added sugar during infancy was associated with Early Childhood Caries (ECC).<sup>17,18,19</sup>

Lida et al, in their study found no evidence that breast feeding or its duration were associated with an increased risk of caries.<sup>20</sup>

Whilest Oulis et al suggested that breast feeding might play a preventive role in Early Childhood Caries (ECC).<sup>21</sup> Gasparoni et al found, later weaning as the only variable associated with increased Early Childhood Caries (ECC).<sup>22</sup> In contrast, other studies suggested that, children who were breast-fed for longer periods, and especially at night time increases the risk of dental caries.<sup>23,24,25,26,27,28</sup>

Kramer et al found no reduction on caries risk with prolonged and exclusive breast-feeding.<sup>29</sup> So there are conflicting reports regarding ECC and its association with feeding practices in younger children so the present study was under taken, to find the prevalence of Early Childhood Caries (ECC) in Children of 2-6 years old who visited Khyber College of Dentistry Hospital and to determine the relationship of early childhood Caries (ECC), with feeding practices.

## METHODOLOGY

The study was cross sectional analytical study and was carried out at Khyber College of Dentistry Out Patient Department. Data were collected in three months i.e. from December 2012 to February 2013. Sample size was 194 children and sampling technique was convenience purposive.

All the children were examined by the principal author on dental unit. After cleaning teeth with sterile gauze, dental examination was carried out using sterilized mouth mirror and probe. Caries detection was done using dft index. Parents/care givers were asked to give consent to the study and fill out questionnaire which was designed for this study, which consisted of

questions regarding feeding practices, socioeconomic status, mother education tooth brushing, snacks between meals and dft.

Children aged less than 6 years of age and their mothers were included in the study. Children with mixed feeding, handicapped and mentally retarded were excluded.

Data analysis was done using SPSS version 16. Significance level was set at 0.05 confidence level (95%). Analysis included frequencies of responses to questions. Chi-square test for categorical variable was applied for comparison of bottle feeding and breast feeding.

## RESULTS

Among these 194 children 163 (84%) were breast fed and 31 (16%) were bottle fed. Caries was seen in 107 children i.e caries frequency was 55%. Mean dft was  $1.07 \pm 1$  SD. A percentage of ECC was seen more i.e. 74.2% in bottle fed as compared to 51.6% in breast fed. In bottle fed children which were 31 (16%) ECC was seen more 75.5% in children who used to take bottle at night as compared to those who did not (50%).

ECC was seen more in those bottle-fed children who used to take milk with added sugar in bottle. %age of ECC was seen more i.e 89% in those bottle fed children who used to take milk with added sugar in bottle as compared to formula milk which was 80% and plain milk which was 50%.

### Mother's education

ECC was more (59.4%) in the children belonging to middle class families as compared to those belonging to upper class. ECC was less in children who started brushing their teeth earlier as compare to those who didn't started till the age of six year. Further details can be seen in Table 1 and in Figures.

## DISCUSSION

In this study frequency of Early Childhood Caries (ECC) was 55%. These findings are consistent with those of India which was 44%<sup>5</sup>, 49% in Australia<sup>30</sup>, 56.5% in Korea.<sup>19</sup> Prevalence of ECC was seen high i.e. 70% in Turkey.<sup>31</sup> While in contrast prevalence of ECC was controlled i.e, 10.5% in Africa<sup>8</sup>, 26% in Saudi Arabia<sup>9</sup> and, 32% in Japan.<sup>7</sup>

TABLE 1: AGE DISTRIBUTION

S. No.	Age in years	Frequency	%age
1	2	16	8.2
2	3	43	22.2
3	4	67	34.6
4	5	37	19.1
5	6	31	15.9
	Total	194	100



Initial stages of ECC- the lesion can be arrested by the application of fluoride and improved OH habits



Advanced stage of ECC requiring restorative treatment or extraction

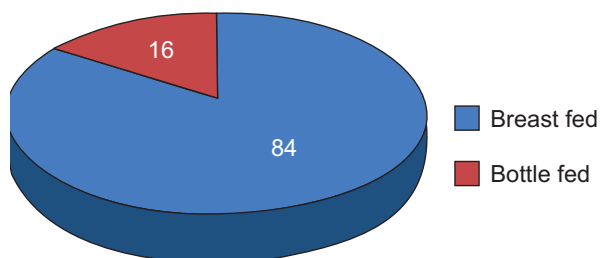


Fig 1: Feeding Habits

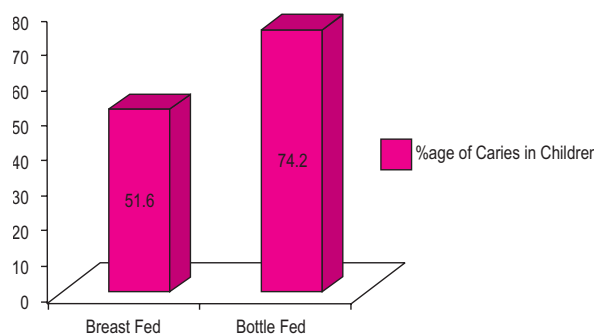


Fig 2: Comparison of ECC bottle-fed vs breast-fed children

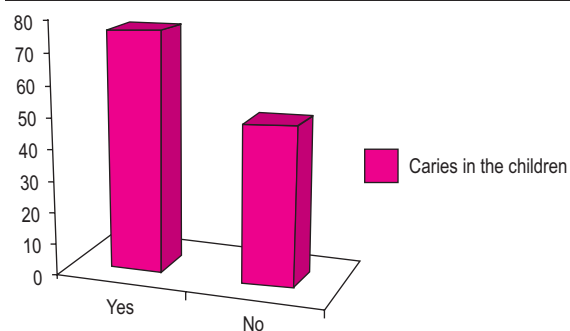


Fig 3: Caries in Children bottle-fed at night

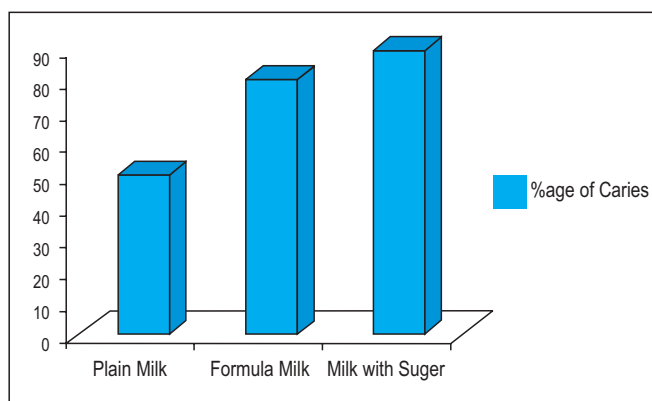


Fig 4: Contents of Bottle% age of caries

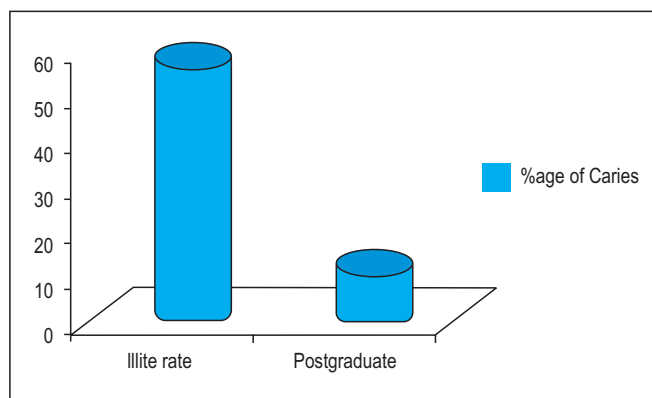


Fig 5: %age of Caries vs Mother's level of education

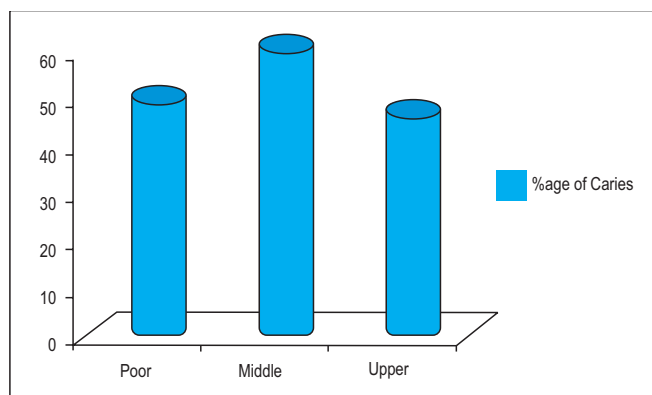


Fig 6: %age of caries vs Socio Economic Status

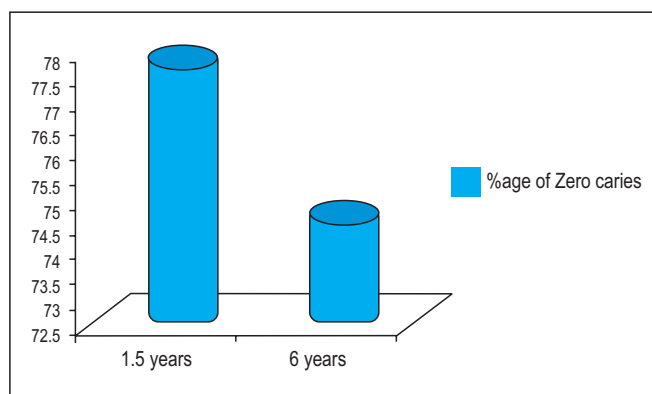


Fig 7: %age of Zero Caries

Among factors related to feeding practices three variables have significant association with ECC. These include frequency of bottle feeding, taking bottle especially at night, and contents of bottle.

Resin and Douglas<sup>32</sup> showed in their study that critical period of developing ECC may be soon after eruption of teeth into mouth and that early use of bottle containing sweet milk support the early establishment of ECC. These finding are in agreement with the findings of the present study. Gussy et al<sup>33</sup> in 2006 also found that use of bottle at night time and milk added sugar were more likely to have higher ECC.

Among factors related to oral hygiene, practices are age of starting tooth brushing. Children who started brushing at later age had a higher prevalence of ECC. These findings are in agreement with the study conducted on Australian children.<sup>34</sup> Thus promotion of early hygiene care should be encouraged.

The variable of mother education also affected ECC. Children of illiterate mothers have higher caries i.e. 57%. A study investigated ECC prevalence in preschool children (5 months to 4 years) in Arizona also support these findings.<sup>11</sup>

## CONCLUSION

ECC is a preventable disease, oral health promotion programs should be targeted towards parents specially mothers for discouraging bottle feeding and promoting breast feeding.

There are other preventive measures that can be applied during initial age of child, like fluorides which can be delivered systemically and topically. The most effective way is water fluoridation but it is not possible in Pakistan, because access to community water is very less, therefore government should pay attention towards salt fluoridation. Like iodine added salt, fluoride can also be added to salt fluoride supplement beverages, tablets, and drops can be utilized. Supervised regular mouth fluoride rinsing can be done.

## RECOMMENDATIONS

Results revealed an urgent need to increase awareness among public about ECC and institute preventive strategies. Media should promote breast feeding. Supervised brushing should also be encouraged.

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