CODEN [USA]: IAJPBB ISSN: 2349-7750

INDO AMERICAN JOURNAL OF
PHARMACEUTICAL SCIENCES

http://doi.org/10.5281/zenodo.2630781

**Available online at: http://www.iajps.com** ***Research Article***

# A CROSS-SECTIONAL RESEARCH TO ASSESS AN ONSET OF ECC (EARLY CHILDHOOD CARIES) AND ITS ASSOCIATION WITH PRACTICE OF FEEDING AMONG CHILDREN

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**Article Received:** February 2019 **Accepted:** March 2019 **Published:** April 2019

**Abstract:**

***Background:*** *ECC (Early Childhood Caries) is a major problem throughout the world taken as an epidemic in the under-developed countries.*

***Objective:*** *This research aims to evaluate the ECC prevalence and its association with the practice of feeding.*

***Material and Methods:*** *This cross-sectional research was completed in the timeframe of three months starting from October 2017 to January 2018 at Allied Hospital, Faisalabad. We selected a research sample of 194 children in the age bracket of (2 – 6) years. A detailed dental assessment of every child was carried out after informed consent of the parents/ guardians. We used a questionnaire to gather information about the mother's education, feeding pattern, brushing, intake of meals, snacks and socioeconomic status of the children.*

***Results:*** *ECC prevalence was 55.2% in our study group. Breastfeeding and bottle feeding were respectively 84% and 16%. ECC percentage was 51.6% among breastfed children which was less than bottle-fed children (72.25%). More carries were observed in those children who carried bottle at night than who did not with respective proportions of 72.5% and 50%. Caries prevalence was 89% among those who took milk with added sugar. Mother's illiteracy was also involved in the increased rate of carries among children as 56% with respect to literate mothers as 10%.*

***Conclusion:*** *High ECC prevalence was reported in the age bracket of (2 – 6) years old children. ECC occurrence was more in bottle-fed children especially among those who took sugar added milk at night time. There is an immediate requirement of awareness in the general public about the onset of ECC and its attitude for the importance of primary teeth of the children. Preventive strategies are also important for the control of ECC.*

**Keywords:** *Breast Feeding, Bottle Feeding, Children, Early Childhood Caries (ECC), Socioeconomic and Education.*

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*Please cite this article in press Safia Moin et al.,* ***A Cross-Sectional Research To Assess An Onset Of Ecc (Early Childhood Caries) And Its Association With Practice Of Feeding Among Children.,*** *Indo Am. J. P. Sci, 2019; 06(04).*

## INTRODUCTION:

ECC is an aggressive dental caries state which begins on the surface of teeth. It has no effect of dental decay which includes maxillary incisors labial surfaces; therefore, it is a strong contemplation about the ECC with an active progression risk factor [1]. ECC refers to caries on one or more than one primary tooth with cavity or non-cavity among the children with age of six years or younger than that [2]. During the night, the use of bottle reduces the flow which increases the salivary buffering capacity causing stagnation of food on the surface of teeth which are exposed to fermentable carbohydrates for long durations. Lower incisors are close for tongue and major salivary glands. These are protected from bottle damage which increases the chances of ECC [3].

The development of chronic infection around buds of the tooth for the development of permanent dentition may lead to developing tooth hypoplasia. A number of deciduous teeth loss because of ECC that results in the shape of reduced space for successor teeth and permanent teeth ectopic eruption. As a result, children face issues like bad aesthetics, low self-esteem, bad speech skills and poor social interaction [4]. ECC is a common dental state which is found all around the world. It is a problem of the under-developed and developed world at the same time [5 – 9]. ECC is prevalent in Pakistan in higher proportions (44.4%) [10, 11]. Various ECC factors include the practice of feeding, the habit of snacks, oral hygiene, mother's educational level and socioeconomic status [11].

Du et al. found bottle-fed children at five times increased caries risk than breastfed children [12, 13]. Bottle feeding at nighttime in bed while sleeping is more cariogenic [14 – 16]. ECC has an increased association of milk with added sugar [17 – 19]. Lida is not sure about the caries association with breastfeeding and its duration of feeding [20]. Whereas, Oulis suggested that the role of breastfeeding about caries is preventive especially for ECC [21]. Gasparoni found that weaning is the sole variable which has a positive correlation with increased ECC [22]. Contrarily, various other research studies dental caries is increased in the long duration breastfed children [23 – 28]. According to Kramer, there is no decrease in the onset of caries with exclusive prolonged breast feeding [29]. No sure report is available about the association of feeding practice and ECC. Therefore, our research aims to evaluate the ECC prevalence and its association with the practice of feeding.

## METHODOLOGY:

This cross-sectional research was completed in the timeframe of three months starting from October 2017 to January 2018 at Allied Hospital, Faisalabad. We selected a research sample of 194 children in the age bracket of (2 – 6) years. A detailed dental assessment of every child was carried out after informed consent of the parents/ guardians. We used a questionnaire to gather information about the mother's education, feeding pattern, brushing, intake of meals, snacks and socioeconomic status of the children. Dental examination was completed after cleaning the teeth with the help of sterilized dental gauze, probe and mouth mirror. We used DFT index in order to detect caries. We included all those children who were under the age of six years with their mothers. Whereas, we did not include all those children who were mixed fed, mentally retarded and handicapped. SPSS software was employed for data analysis. Significant P-Value was 0.05 and CI was 95%. Categorical variables were assessed through the Chi-Square Test.

## RESULTS:

ECC prevalence was 55.2% in our study group. Breastfeeding and bottle feeding were respectively 84% and 16%. ECC percentage was 51.6% among breastfed children which was less than bottle-fed children (72.25%). More carries were observed in those children who carried bottle at night than who did not with respective proportions of 72.5% and 50%. Caries prevalence was 89% among those who took milk with added sugar. Mother's illiteracy was also involved in the increased rate of carries among children as 56% with respect to literate mothers as 10%. Detailed outcomes are given in the tabular and graphical representation.

**Table – I:** Age Distribution

| Age | Number | Percentage |
|---|---|---|
| 2 Years | 16 | 8.2 |
| 3 Years | 43 | 22.2 |
| 4 Years | 67 | 34.6 |
| 5 Years | 37 | 19.1 |
| 6 Years | 31 | 15.9 |
| Total | 194 | 100 |

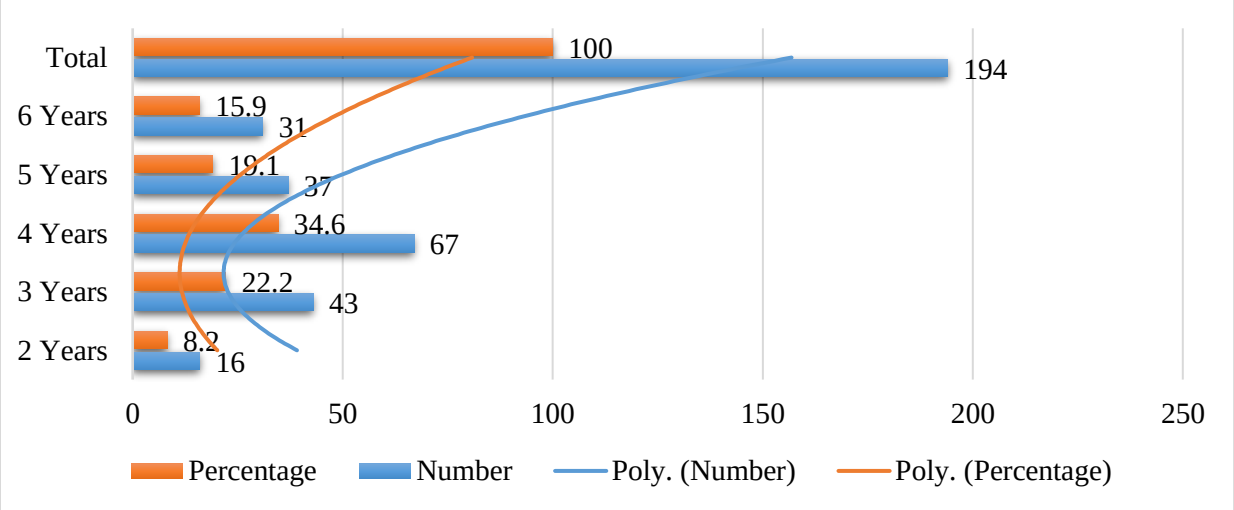



**Table – II:** Breast Feeding Versus Bottle Feeding

| Feeding | Number | Percentage |
|---|---|---|
| Breast Feeding | 163 | 84 |
| Bottle Feeding | 31 | 16 |

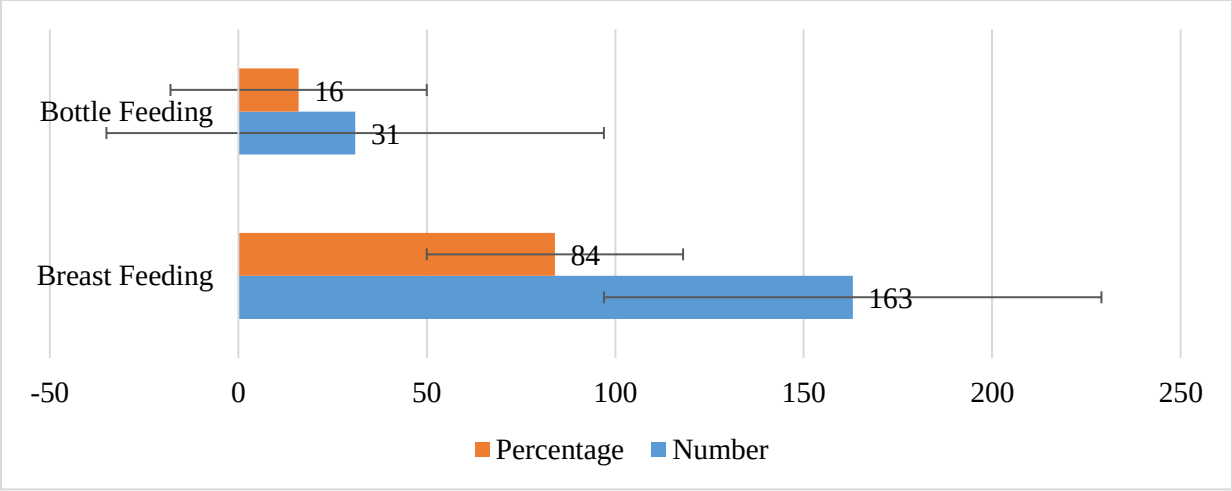
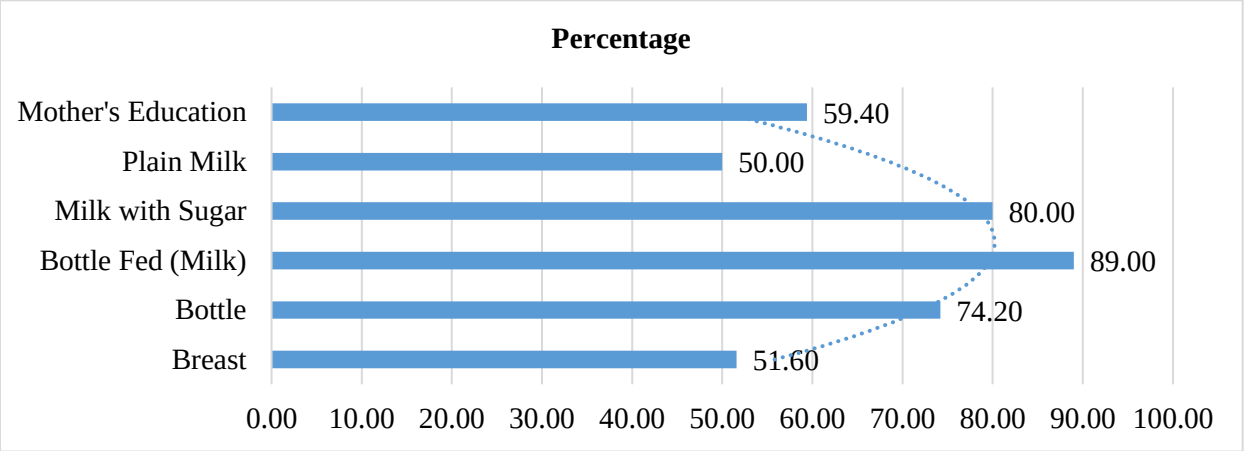


**Table – III:** ECC Percentage

| ECC | Percentage |
|---|---|
| Breast | 51.60 |
| Bottle | 74.20 |
| Bottle Fed (Milk) | 89.00 |
| Milk with Sugar | 80.00 |
| Plain Milk | 50.00 |
| Mother's Education | 59.40 |




## DISCUSSION:

We reported an ECC frequency of 55% which is similar to the outcomes reported in India (44%), Australia (49%) and Korea (56.5%) [5, 12, 13]. Turkey presented a higher ECC prevalence as seventy percent [14]. Whereas, controlled ECC was reported in African countries along with KSA and Japan with respective proportions of 10.5%, 26% and 32% [19, 20]. ECC has a significant association with three variables which are bottle contents, nighttime bottle carrying and bottle feeding.

Douglas and Resin observed a critical time period of caries development just after the teeth eruption with early initiation of bottled milk with added sugar [15]. Similar outcomes are shown in our research. According to Gussy (2006), higher ECC has an association of sugar added milk and nighttime bottle carrying [16]. Oral hygiene factors include feeding practice and initiation of brushing teeth at an early stage of life. Higher ECC prevalence has been documented in the children starting brushing at a later stage. Similar outcomes have been forwarded by an Australian author about the onset of ECC among children [17]. There is a need to promote the practice of caring for oral hygiene for the better management of ECC. ECC was also affected by the variable of mother's educational status. Higher ECC onset (57%) was reported in the illiterate mothers. Our outcomes are also verified by the Arizonian author who presented that ECC was prevalent among pre-school children of 5 months to four years of age [18].

## CONCLUSION:

We can prevent ECC through oral health promotional programs about the promotion of breastfeeding and discouragement of bottle feeding. Other measures include an intake of fluoride at an initial stage of age. Water and salt fluoridation is another viable solution. Water fluoridation is difficult in Pakistan due to multiple reasons; whereas, salt fluoridation is possible. High ECC prevalence was reported in the age bracket of (2 – 6) years old children. ECC occurrence was more in bottle-fed childrenespecially among those who took sugar added milk at night time. There is an immediate requirement of awareness in the general public about the onset of ECC and its attitude for the importance of primary teeth of the children. Preventive strategies are also important for the control of ECC.

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