

## PREVALENCE AND PATTERNS OF EARLY CHILDHOOD CARIES AMONG SCHOOL CHILDREN IN PESHAWAR

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### ABSTRACT

**Objective:** The objectives of this Study were to determine the prevalence and evaluate the different patterns of early childhood caries in children in Peshawar.

**Material and Methods:** A cross-sectional study was conducted in schools of Peshawar and nearby rural area. Age of children ranged from 3-6 years. A self prepared questionnaire was sent to the parents of participant children before the clinical examination to obtain data regarding feeding pattern, tooth brushing habit and frequency of intake of sugary diet. Clinical examinations were performed in schools by a single examiner using mouth mirror, explorer and a white light torch with the child sitting on the office chair in front of the examiner (knee to knee position). World Health Organization criteria was used to record dmft and dmfs.

**Results:** A total of 406 children were examined and it was found that 88.6% had experienced Early Childhood Caries. Severe Early Childhood Caries were recorded in 64.2% of children. Results show a trend for Early Childhood Caries to be more prevalent in urban (89%) than rural areas (83%). Nursing habit-associated pattern was found to be the most prevalent pattern (72.5% of the affected children).

**Conclusions:** Results of our study show that prevalence of Early Childhood Caries and Severe Early Childhood Caries is very high in Peshawar. The Nursing habit-associated pattern was observed to be the most common pattern.

**Key words:** Early Childhood Caries, Nursing Habit-associated pattern

### INTRODUCTION

Caries among toddlers and preschool children remains the most chronic problem in developing as well as the developed countries. The understanding of the disease burden, pattern, characteristic and distribution is necessary for the paediatric dentist particularly and other health care givers in general, for the prevention and management of the disease. Early childhood caries (ECC) also called “nursing bottle caries, night bottle caries, aggressive caries, rampant caries”<sup>1</sup> is defined as “the presence of one or more decayed (cavitated or non cavitated), missing (due to caries), or filled tooth surfaces in any tooth/teeth under 6 years of age”. The term severe early childhood caries (S-ECC) refers to “caries in children younger than three years of age with any sign of smooth surface caries, Whereas in

children from 3-5 years S-ECC is defined as “one or more cavitated, missing (due to caries), or filled smooth surfaces in primary Maxillary anterior teeth, OR a decayed, missing or filled score of  $\geq 4$  (at age 3),  $\geq 5$  (at age 4), or  $\geq 6$  (at age 5) surfaces.”

Early childhood caries has different clinical presentation which reflects the different patterns of the disease<sup>2</sup>. The understanding of the disease pattern is important because each pattern is related to the difference in the biologic and behavioral etiologic risk factors<sup>3</sup>, likelihood of progression<sup>4</sup>, social determinants<sup>5</sup>, disease severity and possible prevention and management intervention by the individuals and at the community levels<sup>6</sup>.

The three most common patterns that hold strong utility for diagnosis and management of the disease are: (i) Nursing habit-associated pattern also called Maxillary anterior pattern/Faciolingual pattern and Faciolingual molar pattern. This pattern is earliest of all other types, the most aggressive, destructive and most consequential type of ECC<sup>2</sup>. (ii) Molar occlusal/

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pit and fissure pattern and hypoplasia pattern in which caries develop in normal pit and fissure or Hypoplastic occlusal surface. Its main association is with food or is subsequential to the nursing habit pattern<sup>7</sup> or may be found independently. (iii) Molar proximal caries in which the carious lesion is present on the proximal surfaces of the primary molars<sup>8</sup>.

It is well established that dietary habits and lack of oral hygiene practice such as frequent consumption of high sugary foods and the presence of pathogenic levels of *Streptococcus mutans* play an important role in the development of ECC. Prolonged bottle feeding or breast feeding ad libitum, lower socioeconomic status, minority ethnicity also had effect on ECC<sup>9</sup>.

The occurrence of ECC is reported to be different in different parts of the world, ranging from 3-85%. The prevalence of ECC is reported to be 19%<sup>10</sup>, 27.9%<sup>11</sup>, 41.9% , 4.7 %<sup>12</sup> in Italy, USA, UK and Canada respectively. ECC level in India was reported to be 37.3% in the preschool children of Marathali<sup>13</sup>. In Pakistan a study conducted in Clifton Karachi reported prevalence of ECC to be 29.1% while another study in the same city reported 50.1% prevalence<sup>14</sup>. Studies conducted in Peshawar reported prevalence of ECC to be 85%<sup>15</sup> and 55%<sup>16</sup> but these studies were conducted in dental hospitals.

## METHODS AND MATERIALS

This cross-sectional study was conducted in different schools of Peshawar from 20th April 2015 to 10th of June 2015 .The schools were randomly selected with different socio economic levels and from rural and urban population. Age of children ranged from

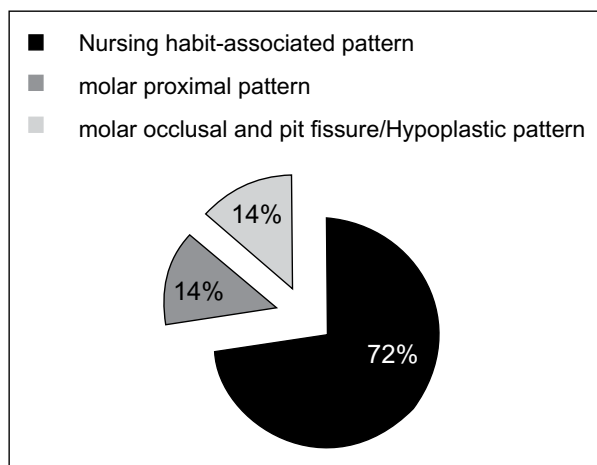


Fig- 1: Pattern of ECC

3-6 years. Sample size was calculated before the study, according to the “WHO sample calculator”, assuming that ECC level is 50.1%<sup>14</sup>. A written permission was obtained from the Ethical committee of the Khyber College of Dentistry Peshawar. Written consent was taken from parents of each child.

A total of 406 children were included in this study. A self prepared questionnaire was sent to the parents of children through their schools administration two days before the clinical examination to obtain data regarding feeding pattern, tooth brushing habit and frequency of intake of sugary diet. The clinical examination of the participant children was performed by a single examiner using mouth mirror, explorer and a white light LED torch with the child sitting on the office chair in front of the examiner, (knee to knee position). WHO criteria were used to record dmft and dmfs. The data was then analyzed.

## RESULTS

A total of 406 school children were examined. Out of 406 children, 360 children (88.9%) were found to have ECC. S-ECC were observed in 64.2% of children. ECC was found to be more common in urban area (89%) as compared to rural population (83%). Out of 360 children with ECC, 261 (72.5%) were found to have Nursing habit-associated pattern followed by molar proximal pattern (13.9%) and molar occlusal and pit fissure/Hypoplastic pattern was observed in 13.6% ( Fig – 1).

Table-1: Pattern of Feeding

Pattern	n	%
Breast Feeding	184	45.3
Bottle Feeding	47	11.5
Both	134	33
Not answered	41	10.2
<b>Total</b>	<b>406</b>	<b>100</b>

Table-2: Tooth Brushing Habit

Habit	n	%
Do Not brush Teeth	109	26.8
Morning	238	80.1
Before Going to Bed	29	9.8
Both	30	10.1
<b>Total</b>	<b>406</b>	<b>100</b>

Out of 406 children, 45.3% were breastfed, 11.5% were bottle fed and both patterns of feeding (i.e; breast fed and bottle fed) were found in 33% of children while parents of 10.2% children did not reply as shown in Table - 1. Most of the children examined belonged to high social class (n=214) followed by middle social class (n=124) and lower social class (n=68).

Out of 406 children, 128 (31.5%) were taking sugary diet three times a day or more, 63 (15.5%) taking sugary diet two times a day and 99 (24.3%) once a day. Parents of 31 (7.6%) children replied that their child do not take sugary diet other than routine meals while 85 (20.9%) children were taking sugary diet occasionally. A significant number of children brushed their teeth daily (73.2%) while 26.8% children did not brush their teeth. The time of brushing is shown in Table-2.

## DISCUSSION

This study was conducted to determine the burden and pattern of ECC in Peshawar. The prevalence of ECC and S-ECC in our study was 88.6% and 64% respectively. This is a very high prevalence when compared to studies in Canada (4.7%)<sup>12</sup> and U.S (27.9%)<sup>11</sup>. This shows that awareness and preventive measures are very remarkable in these countries. Educational level and socioeconomic condition in these countries might have contributed<sup>14</sup>.

The results of this study are in agreement with a study by Urojj saleem conducted in Peshawar dental hospitals. However results of this study are more reliable as it was conducted in schools<sup>17</sup>. The low prevalence of ECC in the study conducted by Makhdoom et al (55.2%) compared to this study (88.6%) may be due to difference in diagnostic criteria<sup>16</sup>.

The most common pattern observed in our study was Nursing habit-associated pattern (72.5%) followed by molar proximal caries pattern (13.9%) and molar occlusal and pit fissure/Hypoplastic pattern (13.6%). In a study carried out in Beijing children, the most common pattern found was molar occlusal and pit & fissure caries followed by nursing habit-associated pattern (43%) in 3-year-olds<sup>18</sup>. This difference in results may be due to different feeding habits in Chinese children. Early onset of caries in maxillary anterior teeth may be a good predictor of the development of caries in posterior teeth<sup>19</sup>.

Almost 50% of children in our study were purely

breast fed. This figure is quite high when compared to a study in Southern Italy in which 15.7% of children were reported to be purely breast fed<sup>10</sup>. This difference in feeding practice may be due to cultural differences.

It has been shown that the frequency of ECC decreases with increasing frequency of toothbrushing. In our study 73.2 % of children brushed their teeth and majority of them (80%) brushed only once a day. These results are not in agreement when compared to other studies where a much higher percentage of children were reported to be brushing their teeth and more frequently<sup>20</sup>.

## CONCLUSIONS

The prevalence of ECC and S-ECC is very high in Peshawar. Nursing habit associated pattern is the most common pattern of ECC in Peshawar.

## RECOMMENDATIONS

Looking at the high prevalence of ECC and its most prevalent pattern, the following recommendations are made:

1. Special awareness and preventive programs need to be initiated. Gynecologists, Pediatricians and school teachers should be involved. Massive awareness program should be initiated by government through Media.
2. The private dental schools in Khyber Pakhtunkhwa need to introduce Paediatric Dentistry as a separate subject to equip their graduates with the knowledge of prevention and treatment of ECC (Government dental schools affiliated with Khyber Medical University have already introduced Paediatric Dentistry as a separate subject since 2013).
3. It is now high time for Pakistan Medical and Dental council to introduce Paediatric Dentistry as a separate subject in BDS curriculum.

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