ORIGINAL ARTICLE

Factors Affecting Early Childhood Caries Among Special Children in Local Population of Peshawar, KPK

Ifra Sana Khattak[1], Madeeha Bangash[2], Laila Mustafa[3], Khadija Sajid[4], Aamir Mehmood Khan[5]

ABSTRACT

Objective: To access the prevalence and associated causes of early childhood caries among the special children of local population.

Study Design: Descriptive Cross-sectional study.

Place and Duration of Study: This study was conducted at different special schools of Peshawar over a period of 3 months (10th October 2020- 28th December 2020).

Materials and Methods: Sample size was calculated using G-Power (3.1.9.2) using convenience sampling technique.153 children below 6 years of age with unerupted permanent molars were accessed for caries severity using Decayed, Missing, and filled teeth surfaces (dmfs) index using daylight/ artificial torch light.

Results: Prevalence of ECC in our study model was found to be 77%. Child's dietary habits and oral hygiene habits were found to be ominously allied with Early Childhood Caries (P value = 0.000). While age, gender and parental education did not show any remarkable role in the widespread presence of ECC.

Conclusion: This study accentuates high prevalence of ECC (77%) among special children in Peshawar.

Key Words: *Dietary Habits, Early Childhood Caries (ECC), Oral Hygiene habits, Prevalence, Special Children.*

Introduction

Early Childhood Caries (ECC) has been on expansion in numerous nations and has become a huge and significant health issue particularly in publicly distraught populations. The American Academy of Paediatric dentistry (AAPD)[1] has defined ECC as presence of one or more decayed (cavitated or non cavitated), missing (due to caries) or filled tooth surfaces in any primary tooth in child of 71 months of age or younger.

Different studies have been reported to determine prevalence of nursing caries worldwide. An audit nature of one literature proposes that in most established nations the prevalence of ECC is somewhere in the range of 1-12%.

In less developed nations and among distraught factions in the developing nations the prevalence has been accounted for to be as high as 70%.[3,4] Literature shows ECC has been found more frequent in low socioeconomic groups. In contrast to this, various studies in Pakistan expressed the Prevalence of ECC from 27.9% to 51%[5'6] and even 88.6%[7]. Few social and socioeconomic components have all the earmarks of being elements of ECC which incorporate restricted access to caution, assets, and oral health learning[7,8]. However, not much literature is available regarding prevalence of ECC in special children.

The information on the prevalence and related elements of ECC is important to create embattled intercessions for the anticipation of consequent tooth decay and to diminish the number of children that requires emergency treatments.

This study was meant to access the prevalence and associated causes of early childhood caries among the special children of local population of Peshawar, KPK.

Materials and Methods

A descriptive cross-sectional study was conducted over a period of 3 months from 10th September 2020 to 28th December 2020 in different special schools of Peshawar. Sample size was calculated using G-Power (3.1.9.2) with effect size 0.3, α error 0.01 and power 0.95 using convenience sampling technique. 153 children of age less than 6 years were included in the study whereas those with erupted first permanent

[1,2]*Department of Paediatric Dentistry/Operative Dentistry*[5]
Rehman College of Dentistry, Peshawar
[3]*Department of Paediatric Dentistry*
Shifa College of Dentistry, Islamabad
[4]*Department of Dentistry*
Kohat Institute of Dental Sciences, Kohat

Correspondence:
Dr. Madeeha Bangash
HOD Paediatric Dentistry
Rehman College of Dentistry, Peshawar
E-mail: madeeha.bangash@rmi.edu.pk

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molars were omitted from the study. Before the collection of data, ethical approval was obtained from Ethical Review Board at Rehman College of dentistry Peshawar (EC Ref No.: 2020-10-053) and written informed assent was also attained from the parents/Guardians of kids residing there. The data was collected with the help of self-administered questionnaires. The validation of these questionnaire was done by piloting study. These questionnaires were sent to the parents of special children by email who also returned them via email. One questionnaire consisted of sociodemographic characteristics such as age, gender, parental education, oral hygiene habits and dietary habits. The second questionnaire consisted of decayed, missing filled surface (dmfs) score that was filled by the dentist.

Every child was examined by a single Paediatric dentist, on a standard upstanding seat or in knee-to-knee position with the help of wooden spatula in a satisfactory natural daylight or artificial light using torch. Caries severity was accessed by decayed, missing filled surface (dmfs) index for deciduous teeth given by WHO.

Using an evaluator administered questionnaire parents and children were asked about their age, literateness level of their parents, oral hygiene measures comprising teeth cleaning aids. They were also inquired about dietary habits including frequency of sugar consumption, fibrous diet and diet high in carbohydrates.

Data analysis was performed using SPSS version 22.

Results

The study populace included 153 special children in the range of 3-5 years. Out of 153 children 124 (77%) were found to have ECC which included 50 (40.32%) female and 74 (59.67%) male.

Table I: Distribution of Early Childhood Caries in Special Children (n= 153)

	ECC Present (n%)	ECC Absent (n%)	Mean dmfs Score ± S.D
Age (Years)			
3 or above	43 (34.6%)	7 (24.1%)	44.52 ± 22.45
4 or above	40 (32.25%)	11 (37.9%)	36.16 ± 24.625
5 or above	41 (33.06%)	11 (37.9%)	38.60 ± 25.292

ECC: Early Childhood Caries

dmfs: decayed, missing, filled surface.

The females with ECC showed a mean dmfs of 42.38 ± 24.245 SD, whereas males showed a mean dmfs of 38.00 ± 24.247 SD. P value was statistically not significant. (Table II).

When parental education was evaluated 11 (8.87%) of parents had higher level of education and knowledge with mean dmfs score of 33.58. 35(28.22%) had middle education level with mean dmfs of 33.70, while majority 78 (62.9%) had poor education level and knowledge with mean dmfs score of 43.84. Thus, the occurrence of ECC was comparatively greater in children having parents with poor education level. P value was found slightly significant (P=0.000). (Table II).

Regarding dietary habits of special children majority of children consumed high carbohydrate and sugary snacks in between the suppers. About 73 (58.87%) children were habitual consumers of sugary snacks with mean dmfs score 44.09. About 42 (33.87%) children consumed frizzy drinks with mean dmfs score of 48.11 while very minor population 9 (7.25%) consumed fibrous diet with mean dmfs score 7.30. The occurrence of ECC was found less in children who consumed fibrous diet. P value was statistically highly significant (P= 0.000) (Table II).

With respect to oral hygiene only 9 (7.25%) children used brush their teeth twice with mean dmfs score 11.431. 38 (30.64%) accustomed to brush their teeth only once a day with mean dmfs score of 25.44. While majority of the children 77 (62.09%) did not clean their teeth at all with mean dmfs score of 58.79. (Table II).

Table II: Association of Early Childhood Caries with Age, Gender, Parental Education, Dietary habits, and Oral Hygiene habits

	n (%) ECC present	n (%) ECC Absent	dmfs score Mean ± S.D	P value
Age				
3 or above	43 (34.6%)	7 (24.1%)	44.52 ± 22.405	0.325
4 or above	40 (32.25%)	11 (37.9%)	36.16 ± 24.625	
5 or above	41 (33.06%)	11 (37.9%)	38.60 ± 25.292	
Gender				
Female	50 (40.32%)	10 (34.48%)	42.38 ± 24.245	0.277
Male	74 (59.67%)	19 (65.51%)	38.00 ± 24.247	

Parental Education				
Low	78 (62.9%)	13 (44.82%)	43.84 ± 22.768	0.046*
Middle	35 (28.22%)	15 (51.72%)	33.70 ± 26.923	
High	11 (8.87%)	1 (3.44%)	33.58 ± 17.835	
Dietary Habits				
High Carbohydrates	73 (58.87%)	13 (44.82%)	44.09 ± 22.618	0.000**
Frizzy drinks	42 (33.87%)	2 (6.89%)	48.11 ± 18.173	
Fibrous diet	9 (7.25%)	14 (48.27%)	7.30 ± 11.431	
Oral hygiene habits				
Once a day	38 (30.64%)	14 (48.27%)	25.44 ± 16.702	0.000**
Twice a day	9 (7.25%)	14 (48.27%)	7.30 ± 11.431	
Never	77 (62.09%)	1 (3.448%)	58.79 ± 10.944	

P< 0.05 = Significant **

Discussion

ECC is a pervasive and common disease of childhood. The American Academy of Paediatric Dentistry (AAPD) has defined ECC as presence of one or more decayed (cavitated or non cavitated), missing (due to caries) or filled tooth surfaces in any primary tooth in child of 71 months of age or younger[1]. The oral health of special children is disregarded part of child health and wellbeing, particularly in instances of ECC. These children comprise a populace that is at higher risk to caries considering their reliance and inability to communicate with their parents. The current study was thus planned to be directed among special children of Peshawar. The principal purpose behind the enlistment of special children in the study was that there is no such research yet led in Pakistan. Different preventive techniques have been implemented to decrease the burden of ECC in various nations[8]. The World Dental Federation, WHO and international association of Dental Research have set out on setting up the global oral health objectives for the year 2020[8]. Shockingly most of included epidemiological studies demonstrates that ECC stays predominant among pre-school children around the globe[8].

Deciding the pervasiveness pace of caries in special children is a troublesome cycle as the offspring of this age bunch are not easily reachable and are truculent.[9]

In our study, caries prevalence apparently increased with age, which is as per past studies.[10]Current study additionally indicated that caries frequency did not expand fundamentally with age. One possible reason for this could be that many special children with handicapped conditions and increased age are not even admitted to such schools because of their medical conditions[11]. In contrast other studies shows that as kids grow older, the number of erupted primary teeth increases which are then exposed to the oral environment and change in their dietary propensities and oral hygiene measures represent a more noteworthy cariogenic challenge[11,12,13].

This study also showed that male children (60.8%) were more affected than female (39.2%) children. This can likewise be related with increased physical activity that prompts the increase in demand for more food when contrasted with females. This corroborates with the previous study.[14]But in contrast some studies reported increase occurrence of ECC in female children.[15]

This study like past studies did not show any strong correlation of parental education with prevalence of ECC.[16] However in contrast many other studies have shown strong associations between mother education and occurrence of caries.[17,18]

In the current study 56.2% children consumed high carbohydrate snacks amid meals and it supports earlier studies which stated that consumption of sugary snacks in between the meals was a significant risk factor for ECC. The outcome likewise substantiates the previous finding study environment that utilization of sweet snacks multiple times each day was a remarkable risk factor for ECC [19,20]. Frequent intake of sugary snacks, frizzy drinks upsurge the threat for caries. Consequently, dietary proposals of restricting the snacking time amongst children and reassuring standard suppers is basic.

We also found a significant correlation between oral hygiene and dental caries. Special children neither comprehend nor have the physical expertise to keep up good oral hygiene. Hence forth, parental help and direction is fundamental to lessen the menace of increasing caries. Most children in this study either brushed never (51%) or once a day (32%). Tooth brushing by the guardians or parental figures have the capability of eliminating the dental plaque more

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adequately ideally immersing the oral habitat with fluorides thus diminishing the risk of caries among their children.[21]

The pervasiveness of ECC in our study was 77%. The likelihood of ECC was essentially higher in kids with poor oral hygiene and individuals who devoured high carbohydrate snacks in the middle of suppers multiple times a day. One of the objectives was to limit the effect of dental caries on individuals and society and figure out methodologies for early findings, counteraction, viable administration of dental caries.

However, this prevalence rate had some limitations as there's a variety of syndromes associated with special children, each being of different characteristics and medical condition and dental findings, while this study dealt with them in general. Therefore, a detailed study is required in future considering the various medical conditions in specific.

Conclusion

This study accentuates high prevalence of ECC among special children in Peshawar and is correlated with poor oral hygiene and high carbohydrate snacks. Our study alarms the call for a rapid need to carry out preventative and therapeutic health care programs for special children in our society. Aggressive preventive measures should be implemented as these children are at very higher risk for dental caries. Furthermore, clinicians should mark the predisposing factors resulting from the distinctive characteristics of these individual's underlying condition and treatment.

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CONFLICT OF INTEREST

Authors declared no conflicts of Interest.

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DATA SHARING STATMENT

The data that support the findings of this study are available from the corresponding author upon request.