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Prevalence of Early Childhood Caries in Thiruvallur District: A Cross Sectional Hospital Based Study

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Author's contribution

The sole author designed, analysed, interpreted and prepared the manuscript.

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ABSTRACT

Oral health is an essential and important component that is involved in the total health and well-being of an individual. It affects various aspects of a person's health status such as the quality of life including self-esteem, ability to masticate, speak and various other levels of routine activities. The aim of this study was to determine the prevalence of early childhood caries in a particular district since the obtained results can serve as a guide in assessing the current practice as well as planning of additional education about early childhood caries. This prospective study was done among children in Saveetha dental college from June 2019 to December 2019. A total sample size of 181 patients were included as part of the study which consisted of both male and female participants. The inclusion criteria for the study was that the child should be within the age group of 3-6 years of age, and should be from Thiruvallur district . A total of 181 children were studied as part of the present study of 3-6 years of age out of which 92 (50.8%) candidates were males and 89 (49.2%) candidates were females. In the age groups of 3-4 years, 4-5 years and 5-6 years the number of candidates that were examined were 70 (38.6%), 54 (29.8%) and 57 (31.4%) respectively. As a conclusive aspect it is important to take care of oral health and appropriate policies are to be adopted and incorporated for the betterment of the society.

Keywords: Early childhood caries; oral health; children; epidemiology study.

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1. INTRODUCTION

Oral health is an essential and important component that is involved in total health and well-being of an individual. It affects various aspects of a person's health status such as the quality of life including self-esteem, ability to masticate, speak and various other levels of routine activities [1]. Dental caries is the most common disease of the oral diseases that are available in the literature [2]. It affects people irrespective of their Gender, socioeconomic status, race and age [3].

Early childhood caries commonly abbreviated as ECC in spite of the availability of various methods of prevention and treatment modalities is one of the prevalent diseases of dental origin in children. This disease is even present in most socially disadvantaged communities [4,5]. ECC is defined as “the presence of one or more decayed (non-cavitated or cavitated lesions), missing (due to caries) or filled tooth surfaces in any primary tooth in a preschool-age child between birth and 71 months of age.” which is given by AAPD [6]. The disease progression may be chronic in nature and affects most of the young children where the lesion may begin as a white spot lesion in the maxillary central incisors and progress to the level of the margin of the gingival [7]. If the disease in not diagnosed and treated promptly it may lead to various consequences such as pain, discomfort during mastication, malocclusion, difficulty in speech, poor systemic and oral health, and lowered self-confidence [8]. Although the disease is not life threatening, ECC is one of the major dental public health problems that affects infants and preschool children which creates social, behavioral, medical, psychological, economical, and dental complications affecting quality of life of preschool children and imposing financial burden on their families [8,9].

In young growing children, there are a number of unique risk factors which may lead to the formation of ECC. One of these factors which is predominantly the cause is their feeding practices and it plays a significant role in the development of ECC because teeth are more prone to dental caries immediately after eruption into the oral cavity [10]. Biology of the oral cavity can be altered by several factors unique to young children such as the immaturity of the defense system, the varying behavioral patterns with feeding. The severity of the problems appear to vary with cultural, genetic, and socioeconomic differences within a community based on literature. In general communities such as marginal farmers, laborers, agricultural laborers, and those living below poverty line generally send their children to work as Anganwadis [11]. These children predominantly belong to lower levels of the socioeconomic status, along with poor feeding conditions and dietary patterns. The parents of these children lack health awareness and have limited utilization of health facilities [12,13]. The lack of knowledge as a result leads to developing early childhood caries. Thiruvallur district is primarily a rural area and hence the prevalence needs to be assessed. The aim of the study is to estimate the prevalence of early childhood caries in Thiruvallur district.

2. MATERIALS AND METHODS

The present study was carried around from June 2019 to December 2019 in Saveetha Dental College, located in Thiruvallur District, TamilNadu, India. A total sample size of 181 patients were included as part of the study including male and female participants.

The inclusion criteria for the study was that the child should be within the age group of 3-6 years of age, should be from Thiruvallur district. The exclusion criteria included children with any major functional or psychological disability, children with ongoing dental treatment and children with any other debilitating diseases. A randomised sampling method was followed for the particular study. Calibration between investigator and guide was done prior to the study to ensure that there was no bias involved in the study. The diagnosis of ECC was based on the AAPD definition. Diagnosis was done through clinical examination with the use of a mouth mirror and a straight probe. Examination was carried out in the presence of daylight or any artificial light source such as dental chair light if required. Sterile gauze pads and three way syringe were utilised to clean and dry the teeth surfaces before examination.

3. RESULTS

A total of 181 children were studied as part of the present study of 3-6 years of age out of which 92 (50.8%) candidates were males and 89 (49.2%) candidates were females. In the age groups of 3-4 years, 4-5 years and 5-6 years the number of candidates that were examined were 70 (38.6%), 54 (29.8%) and 57 (31.4%) respectively.

Out of the total study population of 181 candidates, 73 (40.3%) candidates had early childhood caries, out of which 42 (23.2%) were males and 31 (17.1%) were females (Table 1).

Table 1. Total population of the study

Total population =181	
Males	**Females**
92	89
50.80%	49.20%

From Table 2 it is evident that 31 (17.1%) candidates in the age group of 3-4 years, 23 (12.7%) candidates in the age group of 4-5 years and 19 (10.5%) candidates in the age group of 5-6 years had early childhood caries. Within the three study groups there was an occurrence of 44.28% early childhood caries in the 3-4 years age group, 42.5% in the 4-5 years age group and 35.1% in the 5-6 years age group.

4. DISCUSSION

There are various Epidemiological studies that have been carried out in various parts of the world which have shown that dental caries is one of the most widely distributed dental diseases across the globe [14]. Despite the availability of evidence-based preventive strategies for dental caries, the burden of dental caries is rapidly rising in India, which makes it important at this time to adopt and implement effective oral health policy for the governance of the country. In the present study it is evident that the incidence of early childhood caries is more prevalent in the age group of 3-4 years of age which is synonymous to the study conducted in the United States [14].

In the study conducted by Singh et al. [15] conducted in Bangalore, in the age group of 3,4 and 5 year old, 44.7%,34.9%, 41.02% of children were affected with dental caries when assessed within the same age group. In comparison to the present study in the age group of 3-4 years it is almost the same, whereas it is increased in the age group of 4-5 years and slightly decreased in the age group of 5-6 years of age. Even though Thiruvallur is a rural area, the incidence is almost at the same level as of an urban area and thus it is evident that the oral hygiene practices and education regarding the same is at par with that of an urban area. But, the knowledge regarding the same is a lacunae present in all areas which is now evident.

In the study conducted by Tyagi P et al. [16]. in Maharashtra, in the group of 3 year olds, 4 year olds and 5 year olds, only 25.5%,32.98%,33.3% had dental caries respectively whereas in the present study a higher number of candidates are affected as visualised in Table 2. The total population affected in the Tyagi P et al. [14] study was only 32% whereas in the present study 40.3% of the candidates are affected. This can be attributed to the fact that the Tyagi P et al study was based on schools which included a wider population whereas the present study was hospital based and hence it was primarily patients who came in with dental complaints.

In a study conducted by Srikanth Koya et al. [17]. in the West Godavari District of Andhra Pradesh, the prevalence rate is about 41.9% which is actually higher than the present study which was attributed to diet practices in the particular geographic area such as rewarding the children with sweets which lead to further development of caries.

In a study conducted by Jose B et al. [18] in Kerala the prevalence rate is about 44% which is again higher than the present study and the same is attributed to intermittent snacking habits that were present among the study population. On a broader perspective the prevalence of Early Childhood Caries in India is more prevalent in South India than in North India [19] which can be attributed to geographical factors as well as dietary habits that are varied between the two locations.

Table 2. Age group

Age group					
3-4 years		*4-5 years*		*5-6 years*	
Total Population	With ECC	Total Number	With ECC	Total Number	With ECC
70	31	54	23	57	19
38.60%	17.10%	29.80%	12.70%	31.50%	10.50%
Prevalance within group= 44.28%		Prevalance within group=42.5%		Prevalance within group=35.1%	

On a global scale when the present study is being compared in well developed countries such as Sweden and Italy the prevalance rates are about 11.4% and 7-19% respectively [20,21]. This is significantly lower than the present study, this can be attributed to the fact that the aforementioned countries have varied water fluoridation projects incorporated into the drinking water, which would inturn improve oral health and reduce the incidence of dental caries in all. The same can be undertaken in India as well to bring forth improvement in the oral hygiene of patients.

A high prevalence of Early Childhood Caries has been reported in some Middle Eastern countries, such as Palestine (76%) and the United Arab Emirates (83%) [19,20]. This when compared to the present study appears that India is in a better position but the overall oral hygiene can be improved. Developed countries such as the United States have a prevalence of about 3-6% [22,23] which is significantly lower. There is a wide variation of caries prevalence throughout the country, This could be attributed to differences in dietary practices, cultural beliefs and the perceived importance of oral hygiene and oral health.

5. CONCLUSION

As a conclusive aspect it is important to take care of oral health and appropriate policies are to be adopted and incorporated for the betterment of the society.

ETHICAL APPROVAL AND CONSENT

Ethical approval was obtained from the institutional committee (ethical approval number- SDC/ SIHEC/ 2020/ DIASDATA/ 0619-0320) and informed consent was obtained from the guardian of all the patients that were taken as part of the study.

COMPETING INTERESTS

Author has declared that no competing interests exist.

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