

Relationship among Various Types of Blood Groups and Early Childhood Caries in Children Between Age 2 to 5 Years: A Comparative Study

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ABSTRACT

Background: Early childhood caries (ECC), formerly referred to as nursing bottle caries and baby bottle tooth decay, remains a significant public health problem. The American Academy of Pediatric Dentistry (AAPD) encourages healthcare providers and caregivers to implement preventive practices that can decrease a child's risks of developing this disease.

Materials and Methods: In this current study 150 subject were included in this study. Out of which 89 are boys and 61 are girls. Age group of all the patients are in between 2-5 years. Blood groups of all the subjects were analyzed. All the patients were diagnosed by single examiner.

Results: It was observed that in the boys, presence of early childhood caries was more common in blood group O (46%), which is followed by blood group A (27%), B (20%) and AB (8%). Similarly, in girls, it was observed that presence of early childhood caries was more common in blood group O (47%), which was followed by blood group A (28%), B (16%) and AB (8%)

Conclusion: There may exit a strong correlation between the Blood groups and Early childhood caries.

Keywords: Blood group, early childhood caries, pedodontics.

INTRODUCTION

Dental caries (decay) is an international public health challenge, especially amongst young children. Early childhood caries (ECC) is a serious public health problem in both developing and industrialized countries. ECC can begin early in life, progresses rapidly in those who are at high risk, and often goes untreated.¹

Early childhood caries is defined as "the presence of one or more decayed (non-cavitated or cavitated lesions), missing teeth (due to caries), or filled tooth surfaces in any primary tooth in a child 72 of months age or younger". Various other names for early childhood caries are rampant caries, nursing bottle caries, milk bottle syndrome, nursing caries, baby bottle tooth decay, baby bottle caries.²

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Its consequences can affect the immediate and long-term quality of life of the child's family and can have significant social and economic consequences beyond the immediate family as well. ECC can be a particularly virulent form of caries, beginning soon after dental eruption, developing on smooth surfaces, progressing rapidly, and having a lasting detrimental impact on the dentition.³

The etiology of ECC is multifactorial and is mainly attributed to a time-specific interaction of microorganisms with sugars on a tooth surface. Diet and feeding practices also play an important role in acquisition of the infection and development of caries.⁴ Factors such as high sugar intake, lack of oral hygiene, lack of fluoride exposure, and enamel defects are some of the major factors responsible for the development of ECC.⁵ ECC is higher among the more socially disadvantaged and particularly for children who are refugees or migrants, or whose parents are refugees or migrants from third world countries. This could be related to low socioeconomic status, social exclusion, and sociocultural differences in oral health beliefs and practices. ECC is a serious oral health problem, especially in disadvantaged communities in both developing and industrialized countries in which undernutrition is very common. The study and research of blood grouping is of prime importance because blood plays crucial role in genetics and blood transfusion as well as forensic pathology. So, keeping this fact in mind, the present study is designed to find whether there is any co-relation exist between early childhood caries and blood group.⁶

MATERIALS AND METHODS

In this current study 150 subject were included in this study. Out of which 89 are boys and 61 are girls. Age group of all the patients are in between 2-5 years. Subjects having all the erupted deciduous tooth in oral cavity was included in the study. Patients with any craniofacial syndrome, who underwent orthodontic treatment, and having any permanent tooth were excluded in the study.

All the clinical procedures were explained to the parents of children in detail. The informed consent from parents were obtained.

Blood samples were obtained from the subjects in the presence of their parents. The blood samples were checked for their blood groups with the help of antisera. The final blood group were noted down. A single operator diagnosed the caries to avoid the interoperator bias. The instruments used for diagnosing caries were mouth mirror and probe. Carries were checked by walking probe technique. In case of conflict about the presence of caries, Radiograph were advised. After the confirmed diagnosis, Parents were counselled regarding the dietary habits and brushing techniques. After collecting the data of blood samples and caries, the data is sent for analysis.

RESULTS

In this study, a total 150 patients participated, out of which 89 (60%) were boys and 61 (40%) were girls. After collection of data of blood group and caries, the data was analyzed. It was observed that in the boys, presence of early childhood caries was more common in blood group O (46%), which is followed by blood group A (27%), B (20%) and AB (8%) (Table 1).

Similarly, in girls, it was observed that presence of early childhood caries was more common in blood group O (47%), which was followed by blood group A (28%), B (16%) and AB (8%) (Table 2). It was observed that blood group O is most common blood group showing presence of early childhood caries in both boys and girls.

Table 1. Distribution of Blood group and Early childhood caries in boys

Gender	Blood group	Early childhood caries
Boys	A	24
	B	17
	AB	07
	O	41

Table 2: Distribution of Blood group and early childhood caries in girls

Gender	Blood group	Early childhood caries
	A	17

Girls	B	10
	AB	05
	O	29

DISCUSSION

Early childhood caries (ECC) is one of the most prevalent diseases in children worldwide. ECC is driven by a dysbiotic state of oral microorganisms mainly caused by a sugar-rich diet. Additionally, poor oral hygiene or insufficient dental plaque removal leads to the rapid progression of ECC.³ ECC leads not only to dental destruction and pain with children, but also affects the quality of life of the caregivers. Children with extensive ECC are at high risk to develop caries with the permanent dentition or will have other problems with speaking and/or eating.⁷ To prevent ECC, several strategies should be taken into account. Children should brush their teeth with toothpastes containing gentle ingredients, such as mild surfactants and agents showing antiadherent properties regarding oral microorganisms.⁷ Parents/caregivers have to help their children with brushing the teeth. Furthermore, remineralizing and nontoxic agents should be included into the toothpaste formulation. Two promising biomimetic agents for children's oral care are amorphous calcium phosphate [$\text{Ca}_x(\text{PO}_4)_y\text{H}_2\text{O}$] and hydroxyapatite [$\text{Ca}_5(\text{PO}_4)_3(\text{OH})$].⁷

In the present study, a total of 150 school going children participated. Out of these, 89 are boys and 61 are girls. All the children were in an age group of 2-5 years. We observed that in boys, the most common blood group which shows increase chances of early childhood caries is blood group O (46%), which is followed by blood group A (27%), blood group B (20%) and blood group AB (8%). In girls, the most common blood group which shows increase chances of early childhood caries is blood group O (47%), which is followed by blood group A (28%), blood group B (16%) and blood group AB (8%).

The improper feeding patterns like bottle feeding beyond one year, prolonged or on-demand breast feeding and children put to bed with nursing bottle are responsible for an increase in the exposure of primary teeth to fermentable carbohydrates.⁸ This

increase is likely to promote both an early colonization by oral mutants streptococci and an increase in the number of these microorganisms in the dental plaque and saliva, which increases the risk of developing caries.⁹ These bacteria are usually transmitted to the child by their mothers within the first 2 years of life which is known as the window of infectivity period in preschool children. The earlier these microorganisms are transmitted, the more severe will be the ECC in primary dentition.¹⁰

A study has shown that dipping a pacifier in sugar is associated with early colonization of mutans streptococci in pre-dentate infants, but a systematic review conducted by Perssini did not show any consistent correlation between the use of pacifiers and the development of ECC regardless of dipping the pacifier in sugar or not dipping. The present study also did not show any significant relation between the use of pacifiers and ECC.¹⁰

CONCLUSION

In the present study it has been shown that children's having blood group O is on higher risk for development of early childhood caries. Study with a greater number of children should be recommended so as to get more accurate data. A large number of studies should be undertaken to reach to a valid conclusion.

CONFLICTS OF INTEREST

The authors declare they have no potential conflict of interests regarding this article.

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