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RESEARCH ARTICLE

PREVALENCE OF DEMARCATED OPACITIES IN 12-15 YEARS CHILDREN USING DIFFERENT TYPES OF ASTHMA DRUG

***[1] Dr. Nishad Gawali, [2]Dr. Anup, N., [3]Dr. Shweta Bhayade, [4]Dr.Ravi Bhujbal, [5]Dr. Sapnil Gaidhankar and [5]Dr. Aruna Daware**

[1]Assistant Professor Department of Public Health Dentistry, Nanded, Rural Dental College
[2]Professor and Head Department of Public Health Dentistry, Jaipur Dental College
[3]Assistant Professor, Department of Pedodontics, Nanded Rural Dental College
[4]Assistant Professor, Department of Oral Surgery, Nanded Rural Dental College
[5]Assistant professor, Department of Periodontology, Nanded Rural Dental College

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ABSTRACT

Demarcated opacities are the developmental defects characterised by insufficient mineralization in enamel. The defects exhibit clinically as a creamy-white demarcated opacities ,yellowish brown to macroscopic loss of tooth structure. The Aim of this study is to evaluate the demarcated opacities in 12-15 years children using different forms of asthma drug. METHODS: A cross sectional study carried out in SMS Hospital Jaipur, children aged 12-15 years (n= 124) having asthma were included in the study, they were further divided into four groups according to form of asthma drug they were consuming i.e., through Oral route, Inhalation, Parental and consuming drug in any of the above combination(Oral + Inhalation, Inhalation + Parental, Oral + Parental) Modified Developmental Defect Index was used for recording the enamel opacities. RESULTS: Among 124 children 71 were males and 53 were females, the mean age of children was 13.4 years, the mean duration of asthma was 3.6 years for children consuming corticosteroids, 3.5 years for children inhaling and 3.8 years children consuming orally. High prevalence of demarcated opacities in upper right central incisors i.e. 71.1 % children and 72.6 % children with upper left central incisors. Thus it was concluded children using asthma drug through oral route had decreased prevalence of demarcated opacities when compared to children consuming asthma drug in combination and using corticosteroids. Thus the both mandibular molars exhibit other defects i.e. Dental Caries and Macroscopic loss of tooth structure

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INTRODUCTION

Asthma is global health problem. People are affected by this chronic inflammatory airway disorder of all ages throughout the world that can be fatal. Several oral Health conditions are present among Asthmatic patients specially an increased caries risk and demarcated enamel opacity. As compared to old age people children and young adults usually are at a higher risk of demarcated opacities due to their lifestyle and dietary habits. The prevalence of Asthma is 3 % of the total population of India with the prevalence in school children is being 4.5 % to as high as 20.3 % (Mehta *et al*., 2009). Areas with insufficient mineralization of enamel areas characterized as Demarcated Opacities. These are the common developmental defects appears clinically as creamy white, yellowish brown to microscopic loss of tooth structure.

Corresponding author:* **Nishad Gawali,
1Assistant professor Department of Public Health Dentistry, Nanded, Rural Dental College.

Literature review shows asthma drugs have been suspected to increase in the prevalence. The clinical management is therefore hampered. The studies on asthma drug and oral health done previously which examined the association between asthma drug and demarcated opacities did not include the information on which type or form of asthma drug is commonly causing these enamel opacities. Therefore the purpose of the study is to evaluate the demarcated opacities in 12- 15 years children using different forms of asthma drug.

Objective

- To evaluate the prevalence of demarcated enamel opacities.
- To assess the effect of asthma drug on permanent dentition.
- To assess the drug that is commonly causing demarcate enamel opacities.

- To assess the route of drug administration causing enamel opacities

MATERIALS AND METHODS

A cross sectional, descriptive study was carried out in Sawai Mansingh Hospital, Jaipur to assess the prevalence of demarcated opacities caused by the use of asthma drug administrated in different forms amongst 12-15 year children.
Study area and duration of study: The study was carried out from 20 Aug to 20 Sep 2014 in Department of Medicine JK Lon Child Institute Sawai Mansingh Hospital Jaipur. The children visited the OPD of Dept. of Medicine during this period were included in the study.

Study Population: A total of 124 children between the age group of 12-15years were included in the study.

Sampling Technique

Inclusion Criteria

1. Children between the age group of 12-15 years
2. Asthmatic children without ant systemic disorder.
3. Children using Asthma Drug since 3-5 years
4. Children using Asthma Drug by different route i.e

   a.Inhalations
   b.Parental
   c.Oral Route
   d.Combination of any two above.

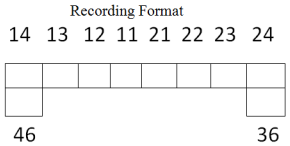
Exclusion Criteria

1. The parents / guardian who did not give the consent
2. Tooth Structure loss due to trauma.
3. Children with other developmental anomalies
4. Children with enamel opacities due to dental fluorosis were excluded.

Ethical clearance: The ethical clearance to conduct the present study was taken from Institutional Review Board of Jaipur Dental College.

Obtaining the approval from the authority: Written permission to conduct a present study was obtained from Principal of SMS College and Head of Department of Dept. of Medicine, JK Lon Children Hospital, Jaipur.

Examination proforma: The examination was carried out using a specific recording proforma comprising name, age, gender, duration of asthma, route of drug administration, frequency of drug intake and Recording format of Modified Developmental Defect Index by JJ Clarkson and O'Mullane D.M in 1989.



Scoring criteria

Normal – 0

Demarcated Opacities – 1

Diffuse Opacities – 2

Hypoplasia – 3

Other defects-4

Demarcated and diffuse opacities -5

Demarcated opacities and hypoplasia -6

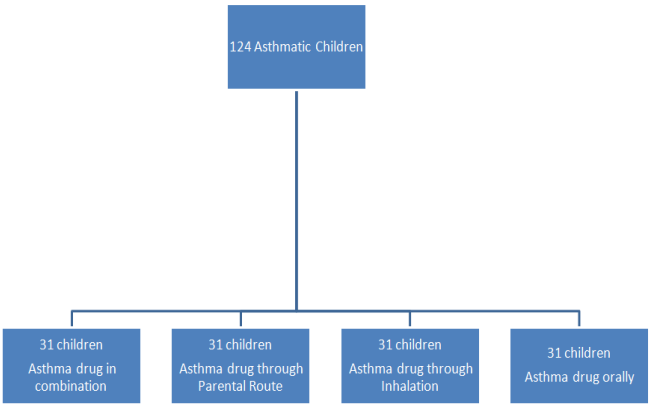
Diffuse opacities and hypoplasia -7.

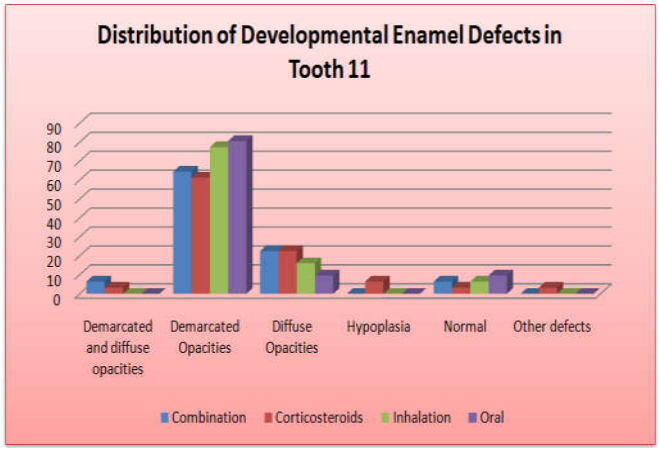
All three conditions -8

Study Design: The present cross sectional study, included a sample of 124 children using different forms of asthma drug. Among these 124 children, 4 groups were selected, each group comprising of 31 children. Group A comprising of children consuming drug in any of the combination (oral + inhalation, inhalation + corticosteroids, oral + corticosteroids) group 2 consist of children using corticosteroids, group 3 consists of children inhaling asthma drug and group 4 consist of children consuming Asthma drug orally.

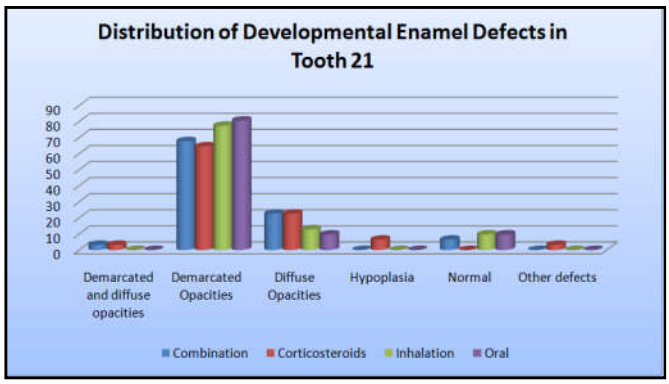
RESULTS

Among 124 children 71 were males and 53 were females (table 1), the mean age of children was 13.4 years, the mean duration of asthma was 3.6 years for children taking through parental route, 3.5 years for children inhaling and 3.8 years children orally.

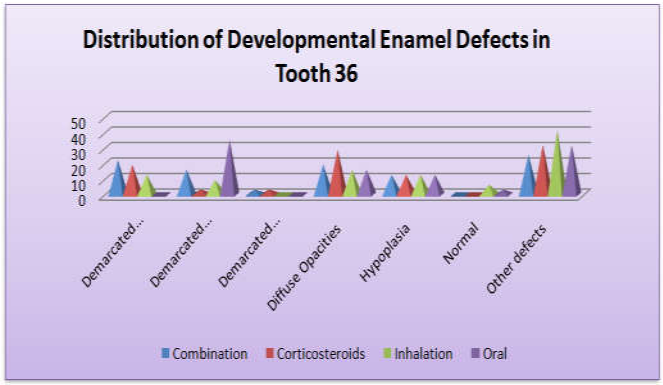




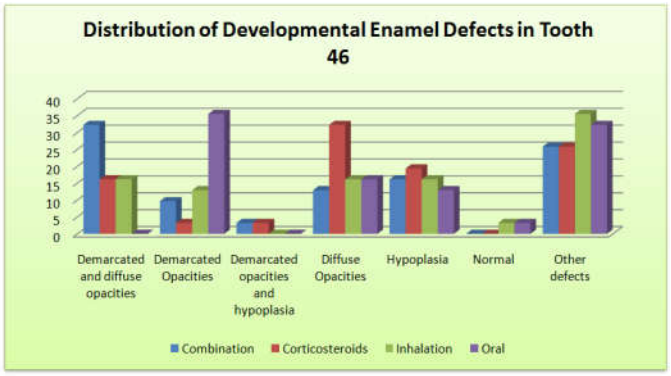
Graph 1.



Graph 2.



Graph 3.



Graph 4.

High prevalence of demarcated opacities in upper right central incisors i.e. 71.1% (Graph 1) children and 72.6% children with upper left central incisors (Graph 2). Both mandibular molars exhibit the high prevalence of other defects i.e. Dental Caries and loss of tooth structure (Graph 3) and (Graph 4).

DISCUSSION

The present cross sectional study carried on 12-15 years children using different types of drug delivery methods, the results showed the increased risk of demarcated opacities in anterior tooth as compared to molars, molars exhibit more loss of tooth structure due to dental caries or any other tooth defect, there is increased risk of diffuse opacities in molars. The possible cause of increased caries risk in asthmatics is the use of β2 agonist in the treatment of asthma which reduce the flow of saliva. Saliva (Mehta, 2009). The children with permanent first molars with demarcated opacities were shown to have affected permanent incisors 2.5 times more frequently than children without affected permanent first molars, thus indicating systemic origin (Woqelius *et al*., 2010). According to study conducted by Rodrigo P *et al*, the occurrence of dental enamel defects correlated with asthma severity and earlier symptom onset. However, dental enamel defects did not correlate with the initiation of treatment or the frequency of medication use. The paediatric patients with severe, early onset asthma are at increased risk of dental enamel defects and therefore require priority dental care. The findings of this study are concurrent with the present study. In the present study children using asthma drug through parental route i.e. corticosteroids showed a high risk of demarcated opacities followed by the children who were inhaling salbutamol. The post eruptive breakdown of enamel may be accelerated or complicated in acidic environment caused by the use of asthma drugs, some which have low pH values (O'Sullivan, 1998). Since demarcated yellowish - brown opacities break down with time, one explanation of the tendency of an aggravation of the demarcated opacities associated with asthma drugs or asthma itself accelerates tooth eruption. The lower proportion of asthma drug users had fully erupted first permanent molars compared with nonusers. Thus, asthma or asthma drug use more likely to delay tooth eruptions (Wogelius, 2008). Corticosteroids therapy suppresses the osteoblast formation and activity, resulting in decreased bone formation (Rehman, 1992). A similar effect on ameloblast is possible and may explain our findings regarding the severe defects (11). Suckling *et al*. conducted a study and found that the prevalence of white or yellow demarcated opacities in permanent first molars and incisors 35% among 9 years children irrespective of their asthma status (Suckling *et al*., 1987). Increased prevalence of demarcated opacities in incisors was reported in present study. The finding of present study showed that there is increased risk of demarcated opacities in incisors and there is high risk of dental caries and loss of tooth structure in children taking Asthma drug

Conclusion

Children using asthma drug through oral route had decreased prevalence of demarcated opacities when compared to children consuming asthma drug in combination and using corticosteroids. Thus the both mandibular molars exhibit other defects i.e. Dental Caries and Macroscopic loss of tooth structure

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