



Prevalence of Class I Dental Caries in Children Treated Under General Anesthesia - A Retrospective Cohort Study

G. Nivedhita^{1*}, Lavanya Govindaraju²

¹Saveetha Dental College and Hospitals, Saveetha Institute of Medical and Technical Sciences (SIMATS), Saveetha University, Chennai 77.

²Department of Pedodontics, Saveetha Dental College and Hospitals, Saveetha Institute of Medical and Technical Sciences (SIMATS), Saveetha University, Chennai 77. Email: Glaavuu@gmail.com

Corresponding Author Email: 151801007.sdc@saveetha.com

Article History	Abstract
<p>Received: 03 July 2023 Revised: 23 Sept 2023 Accepted: 27 Sept 2023</p>	<p>Dental caries is a multifactorial disease. Microorganisms, flow and composition of saliva, type of food consumed, exposure to fluoride and preventive behaviours are the criteria for the intensity of the manifestation. Dental caries are classified into various types based on parameters such as site of caries, extent, duration, progression, tissue involvement, pathway of spread, number of teeth etc. G.V Black classified dental caries based on the type of tooth affected. Class I dental caries from G.V Blacks classification is defined as caries affecting the occlusal thirds of molars, premolars, and palatal/lingual aspect of anterior teeth. The aim of this study is to find the prevalence of class I dental caries in children treated under general anaesthesia in a private dental hospital. This is a single center day retrospective study done in a hospital setting. A total of 121 patient details were collected from the hospital management system. The details of children under the age of 10 who were treated under general anaesthesia was only considered. Statistical analysis (Chi-square) was done in the latest version of SPSS software. The results showed that out of the total 121 children who were treated under general anaesthesia 42.15% of the children had class I dental caries. It was also evident that the number of three-year-old children (16.53%) who had class I dental caries were more followed by four-year-olds and two-year-olds.</p>
<p>CC License CC-BY-NC-SA 4.0</p>	<p>Keywords: Dental caries, General anaesthesia, Innovative, Multiple caries, Uncontrollable children.</p>

Introduction

Dental caries is a worldwide prone disease that affects all ages. It is due to the destruction of the enamel by microorganisms in the oral cavity. Though being the most prevalent disease across the world, it is also the most preventable disease. It can be arrested and reversed back in very early stages. It is a localised destruction of the susceptible site on the tooth, by acidic productions from bacterial fermentation of dietary carbohydrates.

Dental caries is a multifactorial disease. Microorganisms, flow and composition of saliva, type of food consumed, exposure to fluoride and preventive behaviours are the criteria for the intensity of the manifestation (Pitts *et al.*, 2017). Dental caries is prevalent in young children due to the lack of knowledge among parents in maintenance and hygiene of the child's teeth. Most parents think primary teeth are not important and need not to be cared as much due to its replacement by permanent teeth. Hence proper care is not taken in the oral hygiene and young children are most affected by dental caries. It is also due to the notorious behavior of the child that the parents are not able to constrain the children from repeated treats/sweets and proper oral hygiene measures (Selwitz, Ismail and Pitts, 2007).

Dental caries is classified into various types based on parameters such as site of caries, extent, duration, progression, tissue involvement, pathway of spread, number of teeth etc. G.V Black classified dental caries based on the type of tooth affected. Class I dental caries from G.V Blacks classification is defined as caries affecting the occlusal thirds of molars, premolars, and palatal/lingual aspect of anterior teeth (Macri and Chitlall, 2017). It is important to access caries in such a state as it is easy to reverse the process and prevent further destruction of the tooth structure which leads to extensive treatments like root canal treatment, extraction and artificial replacement of teeth.

General anesthesia is a combination of drugs that is given to take a patient to a sleep-like state to perform certain surgical or painful procedures. It is mostly used in dentistry to do multiple/long procedures in a child's mouth as it is not possible to restrain the child for a long time. The overall aim of administering general anesthesia is to ensure unconsciousness, amnesia, analgesia, and loss of reflex to the autonomic nervous system (Campbell *et al.*, 2018). Under a single general anesthetic session various treatment such as amalgam or composite restorations, pulpal treatments like root canal treatment, placement of crowns and extractions can be completed. General anesthesia is preferred for long duration treatments. It is also considered in situations where local anaesthesia is ineffective on the patient due to various other reasons like acute infection, allergies etc (Ramazani, 2016). Extremely uncooperative children who are fearful, anxious and physically resistant are treated under general anesthesia. Researches show that dental treatments done under general anesthesia correspond to an overall improvement in the quality of the life of the patient. It also facilitates dental access for very young patients.

There are a wide range of complex procedures that are done under general anesthesia in pediatric dentistry. Just like adults, even pediatric patients have complex medical considerations. The most frequently done surgery in pediatrics is dentoalveolar surgery. Unrestorable caries, supernumerary teeth are common cases for surgery under general anesthesia. Patients with neonatal teeth are also extracted at a very young age. Pediatric patients are also prone to maxillofacial trauma from fall or fights (Cunha *et al.*, 2001). Mandibular fractures are common in children who just start walking. It occurs in the mandibular symphysis, parasymphysis, body or angle of the mandible. Pathological lesions such as mucocele or mucous extravasation phenomenon require surgical excision. Pyogenic granuloma, dentigerous cysts, and odontomas are common in children. Congenital anomalies such as cleft lip and cleft palate are to be treated as early as possible for the proper development of the children's speech and feeding abilities. Primary lip repair is performed within 3-4 months of birth. Orthognathic surgery is done to correct the occlusion of the teeth. It is preferred for various reasons (Kutcipal, 2013). Therefore, the use of general anesthesia in pediatric dentistry is very vast and numerous.

The aim of the study was to find out the prevalence of class I dental caries in children treated under general anesthesia in a private dental hospital.

Materials And Methods

This is a retrospective study done within a private dental college in a hospital setting. Ethical approval was obtained from the institutional review board before the commencement of the study. Details of children under the age of 10 years who were treated under general anesthesia were collected. A total of 121 patient details were collected that satisfied the inclusion and exclusion criteria. The inclusion criteria were children under the age of 10 years who were treated under general anesthesia. The exclusion criteria were all other patients who were treated under general anesthesia. The data was tabulated in an Excel sheet. The data was tabulated under the headings age, gender, and presence of class I dental caries. The data was then manipulated and transferred to the latest version of SPSS software for statistical analysis. Frequency distribution and chi square tests were done. The p value of 0.05 was set as level of significance.

Results and Discussion

From the data collected it was found that 51.2% of the total population was male children and 48.8% of the population was female children. The average age of the children treated under general anesthesia was 3.50 ± 1.766 . (Table 1)

Table 1: Demographic details of the total population.

	Age	3.50 ± 1.766
Gender	Male	51.2%
	Female	48.8%

Out of the total 121 children who were treated under general anesthesia 42.15% of the children had class I dental caries. (Fig. 1). It was also found that children of 3-year-olds (16.53%) had the highest incidence of class I dental caries followed by children of age 4-year-olds (9.09%) and 2-year-olds (8.26%) (Fig.2).

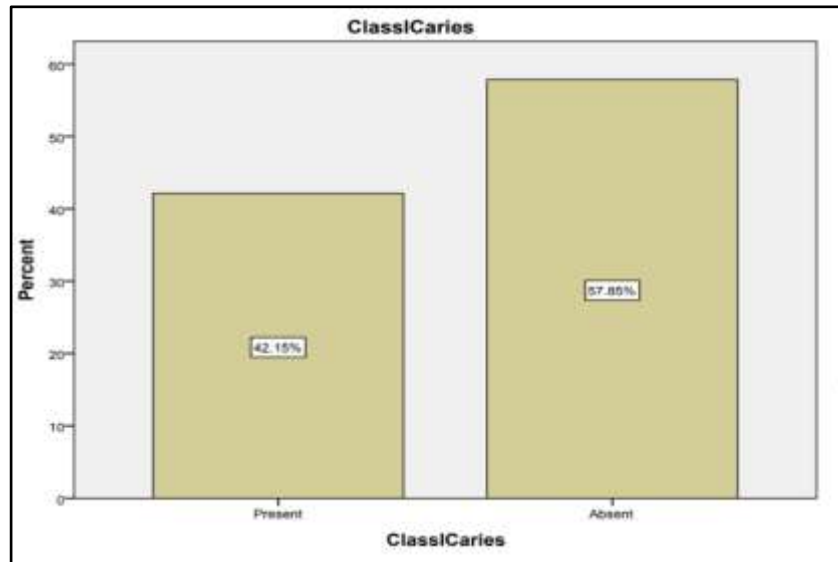


Fig. 1: Prevalence of class 1 Dental Caries in children treated under GA.

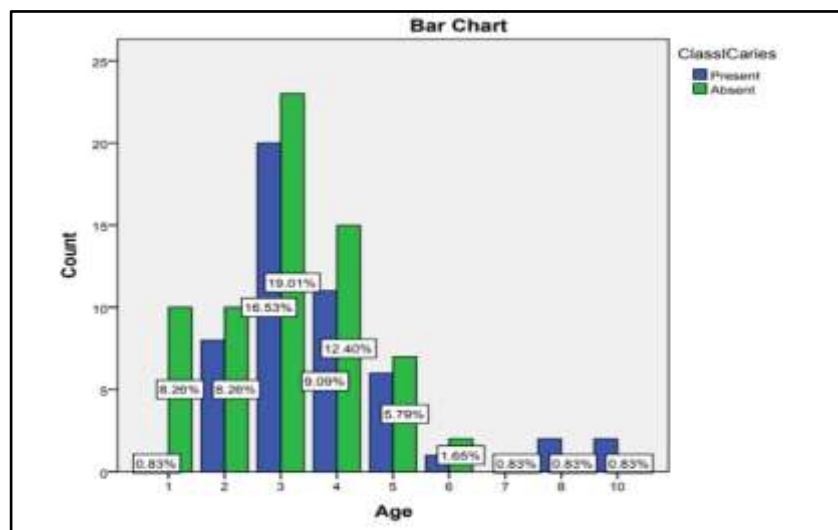


Fig. 2: Age wise distribution of Prevalence of Class 1 Dental Caries in children treated under General anesthesia. The p value is 0.464(>0.05) which is statistically insignificant.

Oral health of children is mostly overlooked by parents in the assumption that it is not necessary to maintain the health of primary teeth as they are replaced by secondary teeth in later times. Lack of knowledge and awareness among parents about the importance of primary teeth and its association with the growth of children is one of the major causes for young children being affected by dental caries(Kumar *et al.*, no date). This caries left unattended progress to worse conditions where full mouth rehabilitation is required to correct the overall health of the oral cavity. Feeding habits and type of food consumed also plays a role in the occurrence of dental caries in young children. In recent times, dental procedure under general anesthesia for pediatric patients has become quotidian especially when the child is non-cooperative and is medically compromised with the necessity of multiple treatments.

In the present study it was seen that Class 1 dental caries was present in 42.15% of children undergoing dental treatment under general anesthesia and the majority (16.53%) of it was seen in children of 3 years of age. In an article published by Mahejabeen R, et al. the results show that dental caries were prevalent in children of age 5 which contradicts to the results of the present study as the results shows that children of age 3 have higher incidence of class I dental caries when compared to 5 year olds(Mahejabeen *et al.*, 2006). However, the present study evaluated only the children undergoing dental treatment under general anesthesia and not the general population as done in the study by Mahejabeen et al.

In the article published by Zerfowski, M., et al., it was found that the incidence of caries has decreased as the child ages which correlated with the data of the present research. In the present study it was noted that class 1 dental caries was more in 3-year-old children (16.53%) and gradually reduced with increase in age. The possible reason attributing to this finding could be As a child ages the oral health is being taken care of more

effectively by both parents and the child itself. The child is more aware of the necessity of oral health and its maintenance (Zerfowski *et al.*, 1997). In an article published by Mohebbi SZ, *et al.*, it was found that the incidence of dental caries was more in children of 26 to 36 months old (Mohebbi *et al.*, 2006). It was also stated that the incidence of dental caries was also correlative to parents' level of education.

In an article published by Anand Hiremath, *et al.*, where the prevalence of dental caries among primary school children were analyzed, it was found that 8-9 year old children had the highest incidence of dental caries out of the total population (Hiremath *et al.*, 2016). It also stated that children of age group 6-11 had the highest occurrence of dental caries which was higher than other countries like Sri Lanka, China, South Africa, and the United States. It was also proven that the percentage of children affected with dental caries in Karnataka was more than that found in research done in Tamil Nadu. In a cross sectional study done by K.B.Naziya, *et al.*, it was found that dental caries among 6-12 years is higher than 3-5 year olds. It was also concluded that organizing oral health programs in school would be optimal to reinforce the importance of oral health (Naziya *et al.*, 2017). It is also crucial to increase the awareness among children of the consequences of consuming high carbohydrates. The potential limitation of the present study was that it was single centered study and the sample size was small.

Conclusion

Within the limitations of the study, it is found that 42.13% of children undergoing dental treatment under general anesthesia have class 1 dental caries with the highest recorded at the age of 3 years. Early intervention can help in further development of the caries and arrest it at the early stages.

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