

# Assessing the Oral hygiene Status and Dental Caries among patients with Cleft Lip and Palate Visiting a Private Dental Hospital in Chennai

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## Abstract

Cleft lip and or palate are the most common congenital craniofacial anomaly that has been found in mankind. Clefts can be caused by a number of factors that affect the expectant mother early in the first trimester of pregnancy. The aim of the study is to evaluate the oral hygiene and dental caries status of patients with cleft lip, palate and alveolus. From the total of 86000 patient case records, who visited a Private Dental Hospital between June 2019 and March 2020, patients with cleft lip and cleft palate were shortlisted. The final sample size was 61 patients. 3% of males, 3% of females had good oral hygiene, 45% of males and 29% of females had fair oral hygiene and 6% of males and 11% of females had poor oral hygiene. 4% of patients in age group 1-6 years and 11% of patients in age group above 6 years had good oral hygiene, 42% of patients in age group 1-6 years and 24% of patients in age group above 6 years had fair oral hygiene and 8% of patients in age group of 1-6 years and 13% of patients in age group above 6 years had poor oral hygiene. Chi square test shows  $p > 0.05$ , not significant. Males had the highest prevalence of cleft lip, palate and alveolus. The oral hygiene status of the majority of patients was fair, whereas dental caries was reported among only a few of the patients. There was no significant difference between oral hygiene, dental caries status and cleft lip, palate and alveolus patients.

## Keywords:

Cleft lip; Cleft palate; Dental caries; Oral hygiene

## Introduction

Cleft lip and/or palate is the most common congenital craniofacial anomaly that has always been found in mankind. [1]

Oral clefts are birth malformations that involve oral cavity and may also affect the face. [2]

Affected children have a range of functional as well as aesthetic problems. These include difficulties in breast feeding due to improper seal, swallowing and nasal regurgitation, other associated problems are hearing difficulties due to abnormalities in palatal musculature, and speech difficulties due to nasal escape and articulation problems. [3,4]

Cleft lip and palate is a congenital anomaly that occurs by absence of fusion of the maxillary and nasal processes during the formation of the human embryo, compromising the function and aesthetics. [5] Clefts can be

caused by a number of factors that affect the expectant mother early in the first trimester of pregnancy. These factors include infection and toxicity, poor diet, hormonal imbalance and genetic interferences. [6] Depending on the elemental characteristics of embryology, anatomy and physiology of the defect, the varieties of cleft lip and cleft palate may be categorized as those involving the lip and alveolus, those only palates is affected, congenital insufficiency of palate.. [7]

Children with cleft lip and palate rarely escape dental and occlusal complications, since these children and their parents give more importance to the surgical correction of their clefts and neglect their dental health; they tend to have more decayed and missing teeth, amc poor gingival health as compared to normal children. [8] Dental health is often neglected by the

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majority of especially developing countries like India and the prevalence of dental caries is very high particularly among school children and adolescents. [9] Dental caries is the most common chronic disease of childhood that interferes with normal nutrition intake, speech, and daily routine activities. [10] Dental caries is a microbial disease caused by an ecological shift in the composition and activity of the bacterial biofilm when exposed over time to fermentable carbohydrates, leading to a break in the balance between demineralization and remineralization. [11] The prevalence and occurrence of dental caries in a population is influenced by many factors such as sex, age, socioeconomic status, dietary patterns and oral hygiene habits. [12] Cariogenic microorganisms such as *Streptococcus mutans* and *Lactobacillus acidophilus* are the primary causative microorganisms for the development of dental caries. [13] The initial stage of dental caries is known as incipient lesions and if the process is not interrupted here, they might progress from demineralisation to non cavitated lesions and finally to cavitated lesions. [14] Dental carious lesions and cavities commonly occur in pits and fissures of the occlusal surfaces in primary and permanent posterior teeth. [15] Pits and fissures of teeth have been recognized as the most susceptible areas for initiation of caries. [16] Early Childhood Caries (ECC) affects the deciduous teeth of infants, toddlers, and preschoolers causing pain and suffering, which leads to poor dietary intake engendering nutritional deficiencies and later complications in life. [17]

Previously our team had conducted numerous researches over the past five years. [18-25] Now we are focusing on epidemiological studies. Previously our team has a rich experience in working on various research projects across multiple disciplines. [26-40] Now the growing trend in this area motivated us to pursue this project.

The idea for the present study stemmed from the current interest in the community. The aim of the study is to evaluate the oral hygiene and dental caries status of patients with cleft lip, palate and alveolus, visiting a private dental hospital for dental treatment.

## Materials and Methods

### Study design and setting

The study setting is university based single centered study. A retrospective study was conducted on 220 patients who visited a private dental college requiring pulp capping procedures. Thus the population includes patients who underwent pulp capping procedures. The advantage of this study was the flexible data that could be obtained immediately and less expensively. The drawback of this study is that there were geographic limitations and the people involved were from an isolated population. The internal validity of the study was carried out by analysing the age and gender of patients who require pulp capping procedures. The external validity was determined by the type of treatment done.

### Data collection

From the total of 86000 patient case records, who visited a Private Dental Hospital between June 2019 and March 2020, patients with cleft lip and cleft palate were shortlisted. The final sample size was 61 patients. Cross verification was done with the help of photographs. To minimise sampling bias all data available was included. Patients within the age of 1-19 years were taken into consideration. Incomplete and censored data was excluded. Data was entered in a methodical manner. Data was recorded and tabulated on Excel.

The inclusion criteria was patients with cleft lip and cleft palate. The exclusion criteria were patients without cleft lip and cleft palate and patients above the age of 19 years.

### Statistical Analysis

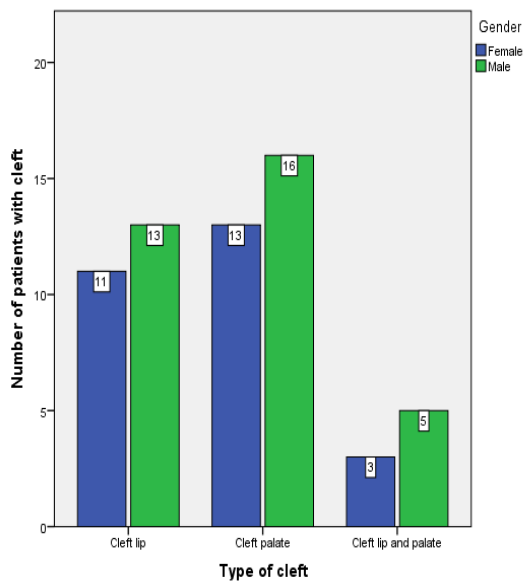
After Excel tabulation, the data was exported to IBM SPSS software (Version 20: IBM Corporation NY USA). Descriptive statistics were used to calculate correlation between age and gender of patients who reported with cleft lip and cleft palate. The dependent variable was cleft lip and palate. The independent variables were age and gender. Pearson chi square test was done to statistically analyze the data. Pearson chi square test was used to identify any significant level of variation of association the significance level was set at 0.05

### Ethical Approval

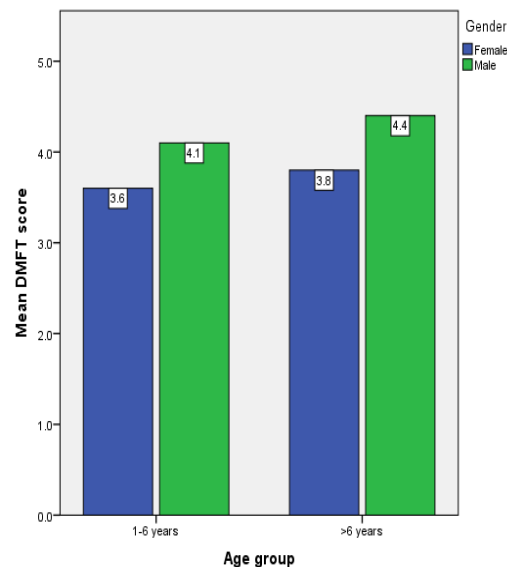
The ethical approval for the retrospective study was obtained from the university (SDC/SIHEC/2020/DIASDATA/0619-0320)

## Results

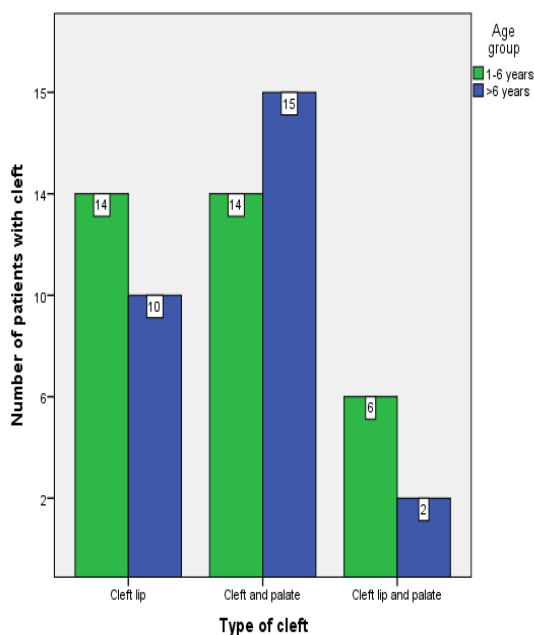
From the results of our study, it was observed that 21% of males and 18% of females had cleft lips, 26% of males and 21% of females had cleft palates, 8% of males and 4% of females had cleft lips and palates [Figure 1]. 22% of patients in the age group 1-6 years and 16% of patients in the age group above 6 years had cleft lip, 22% of patients in the age group 1-6 years and 24% of patients in the age group above 6 years had cleft palate, 4.1 was the mean DMFT score of males in the age group 1-6 years, 3.6 was the mean DMFT score of females in the age group 1-6 years, 4.4 was the mean DMFT score of males in the age group above 6 years and 3.8 was the mean DMFT score of females in the age group above 6 years [Figure 3]. 3% of males, 3% of females had good oral hygiene, 45% of males and 29% of females had fair oral hygiene and 6% of males and 11% of females had poor oral hygiene [Figure 4]. 4% of patients in age group 1-6 years and 11% of patients in age group above 6 years had good oral hygiene, 42% of patients in age group 1-6 years and 24% of patients in age group above 6 years had fair oral hygiene and 8% of patients in age group of 1-6 years and 13% of patients in age group above 6 years had poor oral hygiene [Figure 5].



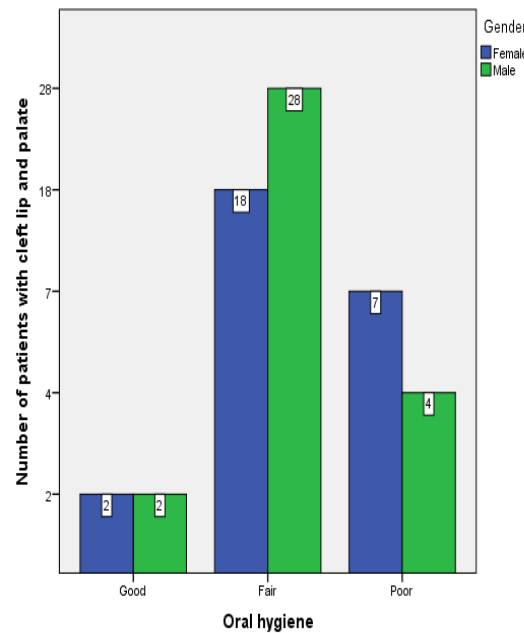
**Figure 1:** Bar graph explains the association between gender and with various types of cleft defects. X axis denotes the type of cleft. Y axis denotes the number of patients with cleft. Majority of the females (blue) and males (green) had a cleft palate. Chi square test shows  $p=0.132$ , not significant, proving that there is no significant association between gender of patients with different types of cleft defects.



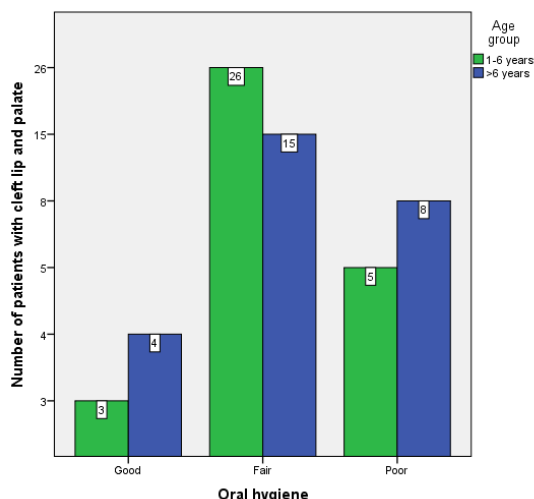
**Figure 3:** Bar graph denotes association between mean DMFT score, gender and age of patients. X axis denotes the age groups. Y axis denotes the mean DMFT score. Males (green) and females (blue) in both the age groups had a mean DMFT score more than 3. Chi square test shows  $p=0.058$ , not significant, proving that there is no significant association between mean DMFT score, gender and age of patients.



**Figure 2:** Bar graph denotes association between type of clefts and the number of patients. X axis denotes the type of cleft. Y axis denotes the number of patients with cleft. Majority of the patients of age >6 years (blue) had a cleft palate and 1-6 years (green) had a cleft palate and cleft lip. Chi square test shows  $p=0.076$ , not significant, proving that there is no significant association between age of patients with different types of cleft defects.



**Figure 4:** Bar graph denotes association between oral hygiene status and gender of patients. X axis denotes the oral hygiene status. Y axis denotes the number of patients. More than 50% of male (green) and female (blue) patients had fair oral hygiene. Chi square test shows  $p=0.053$ , not significant, proving that there is no significant association between oral hygiene status and gender of patients.



**Figure 5:** Bar graph denotes association between oral hygiene status and age of patients. X axis denotes the oral hygiene status. Y axis denotes the number of patients. Patients of belonging to both the age groups exhibited fair oral hygiene. Chi square test shows  $p=0.053$ , not significant, proving that there is no significant association between oral hygiene status and age of patients.

## Discussion

From the results obtained in the study, it was seen that the equal number of males and females patients had a cleft palate. Patients of age  $>6$  years mostly presented with cleft palate and 1-6 years had a cleft palate and cleft lip. Males and females in the age group of  $>6$  years were found to have a higher mean DMFT score. Male and female patients of all age groups had fair oral hygiene.

In our study, it was reported that the majority of subjects had fair oral hygiene. Similar to a study done by Nagappan et al. [41] The poor oral hygiene in cleft children could be attributed to the deformity and surgical scars which makes it difficult to maintain good oral hygiene and to control plaque. [42]

In the present study it was found that the mean DMFT score was higher in patients with cleft lip and palate Similar to a study done by Hazard et al. According to a study, patients with bilateral cleft lip and palate experienced more dental caries than unilateral cleft lip and palate in both dentitions. [43] Mahmoud et al reported that subjects with cleft lip and palate are susceptible to dental caries independently of socioeconomic status. [44] Galitesi et al. reported the presence of cleft lip and palate in subjects. 12 years of age had a negative impact on the quality of life and this impact, was also significant for tooth loss caused by dental caries. [45]

Nagappan et al. reported that mean DMFT was higher in non cleft children than in cleft children. The mean DEFT was higher in non cleft than in cleft children. [46] Al wahdani et al. reported that DMFT were significantly higher in subjects with cleft lip and palate than in control subjects. Nagappan et al. reported the mean DMFT was high in cleft lip and palate when compared to cleft lip and cleft palate subjects.

Madhu et al. reported that Parents had partial knowledge on the importance of deciduous teeth. Many of them said that baby's teeth do not require good care as they will fall off. [47] The parents of cleft children should be informed about potential dental problems in their children, and motivated to consult their dentist for better preventive dental care. The dental profession also needs to be better informed about the special needs of cleft children. Oral rehabilitation programs need to be designed for cleft individuals leading to better dental health. [48] Our institution is passionate about high quality evidence based research and has excelled in various fields. [49-55] We hope this study adds to this rich legacy.

The advantages of the study were the availability of valid data and history of the patient records maintained in the hospital.

## Conclusion

Within the limitations of the study, males had the highest prevalence of cleft lip, palate and alveolus. The oral hygiene status of the majority of patients was fair, whereas dental caries were reported among only a few of the patients. There was no significant difference between oral hygiene, dental caries status, and cleft lip, palate, and alveolus patients. Hence a coordinated team approach for the treatment of all aspects of care should include close supervision of all oral hygiene measures and continuous professional maintenance through a periodic recall system. Similarly Parents of cleft lip and palate children must be educated and encouraged to attend regular oral health screening. Oral rehabilitation programs need to be specially designed for cleft defect individuals.

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