

Assessment Of Association Between Age, Gender, Consanguinity And Cleft Deformity - A Retrospective Analysis

Research Article

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Abstract

The aim of the study was to evaluate the association between age, gender, consanguinity and cleft deformity among patients reported to the “Department of Orthodontics and Dentofacial Orthopaedics” and “Centre for Cleft and Craniofacial Centre” Saveetha Dental College. This retrospective cross-sectional study was done on 110 subjects who reported for the treatment of cleft lip, cleft palate and cleft lip and palate. The prevalence of cleft lip and cleft palate, gender distribution, age of the patient when they first reported to the hospital for treatment was recorded and history of consanguineous marriages was noted. The highest prevalence of cleft lip was in males. Cleft palate was observed equally amongst males and females. The percentage distribution of the cleft lip was 49.09% and cleft palate was 50.90%. 7.40% of cleft lip patients and 14.28% of cleft palate patients had a history of consanguineous marriage in their family. Within the limits of this study, it was found that the cleft patient at first reporting was higher in males in cleft lip and the females in cleft palate.

Keywords: Cleft Palate; Cleft Lip; Craniofacial Syndrome; Consanguineous Marriage; Facial Cleft.

Introduction

Cleft lip and palate is a common human congenital defect which has to be promptly diagnosed at birth. Often children with facial deformities are stigmatised and teased leading to their poor self-confidence. Research has shown that attractive children are seen by others as brighter, as having more positive social behaviour and receive more positive treatment than their less attractive counterparts [5]. Many children with cleft lip and palate (CLP) may have a less attractive facial appearance or speech than their peers. An incidence of teasing over facial appearance is reported among those with CLP [1]. The general notion that follows is that children with cleft lip and palate must experience psychosocial distress as a result of their condition. The literature suggests that an individual's psychosocial well-being is not greatly affected by having a cleft lip and palate; [31, 11, 2]. Many studies have reported the psychosocial functioning of CLP children in a general way. This has

often disguised the specific problems that these children have behavioural problems, self-esteem, self-confidence, satisfaction with physical appearance, speech, social life, anxiety and depression, and learning problems. While overall psychosocial functioning appears to be good.

Associations have been made between behavioural problems and speech ability among children with cleft lip and palate. Treatment and surgical repairing of the clefts by surgery and orthodontic treatment improves the physical health status, social and psychological well being. Postponing palatal surgery may create difficulties in the area of speech development and it is advisable to perform palatal surgery at an early stage and would not interfere with midfacial development [23]. With the socio-economic and cultural changes, education and awareness amongst the various demographics, the practise of consanguineous marriages have reduced in number. Despite the variability driven by socioeco-

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nomie status and ethnic background, the worldwide prevalence of cleft lip and palate is 1:700 live births depending on the methods of assessments may lead to different prevalence rates [18]. Asian and Native American populations have the highest reported birth prevalence rates, which are often as high as 1 in 500. European-derived populations have intermediate prevalence rates at approximately 1 in 1,000, and African derived populations have the lowest prevalence rates at approximately 1 in 2,500. These observations suggest that the relative contribution of individual susceptibility genes may vary across different populations [6]. Approximately 70 percent of cleft lip and palate cases are non-syndromic, occurring as an isolated condition unassociated with any other recognizable anomalies while remaining 30 percent of syndromic cases are present in association with deficits or structural abnormalities occurring outside the region of the cleft [26]. Cleft lip and palate results from the failure of fusion of the maxillary process with the medial nasal bulge of the frontal process of both palatal shelves. These fusions occur between the fourth and seventh week of embryogenesis [18]. The child at age six years usually appears to have adequate midface development, but by the time the pubertal growth spurt is completed a deformity is usually apparent and often severe. This accounts for the frequency of orthodontic relapse in adolescence when the facial form can alter due to differential growth. Majority of reconstructive surgery patients presenting to the rehabilitation hospitals are suffering from cleft lip and cleft palate. In the present study, we understand the importance of the collection of data on the scope of the problem to advocate and plan health services. The aim of the study was to evaluate the association between age, gender, consanguinity and cleft deformity among patients reported to the "Department of Orthodontics and Dentofacial Orthopaedics" and "Centre for Cleft and Craniofacial Centre" Saveetha Dental College.

Materials and Methods

This retrospective cross-sectional study was done on 110 patients who reported to the "Department of Orthodontics and Dentofacial Orthopaedics" and "Centre for Cleft and Craniofacial Centre" in a university-based setting. The study was approved by the ethical committee and institutional research board (SDC/SIHEC/2020/DIASDATA/0619-0320). The data was collected on the number of cleft patients reporting to the department, age of first reporting and number of consanguineous marriages and

gender distribution. Data from 110 subjects were collected. The analysis was carried out using the statistical package for social sciences version 20.0 (SPSS Inc, Chicago, IL, USA). Mean, standard deviation and the Chi-Square tests were evaluated.

Results and Discussion

Previously our team had conducted clinical trials (15; 16; 30; 27; 8; 25; 29), lab animal studies (21; 14; 24; 7; 19) and in - vitro studies (10; 4; 9) over the past 5 years. Now we are focussing on cross sectional study from our database.

In this study, we observed the prevalence of cleft lip and cleft palate, age of the patient when they first reported to the hospital for treatment and prevalence of consanguineous marriages and gender distribution. The highest prevalence of cleft lip was in males and cleft palate was observed equally in both males and females. Cleft palate was observed equally amongst males and females (Figure 1). The percentage distribution of the cleft lip was 51.72% in males and 46.15% in females. The percentage distribution of the cleft palate was 48.28% in males and 53.85% in females (Figure 1). 7.40% of cleft lip patients and 14.29% of cleft palate patients had a history of consanguineous marriage in their family (Figure 2). Age of patients' first visit to a hospital for the treatment of cleft lip and palate patients were assessed. (Figure 3,4).

An orofacial cleft contributes substantially to the long term degree of disability in the whole life of the affected child as well as to emotional and financial stress for the affected family. There are contradictory reports regarding behavioural problems among children with cleft lip and palate. Behavioural problems have been reported among children with CLP, such as a tendency to have higher than average levels of internalizing behaviour, a risk factor for developing anxiety disorders [13, 22]. The type of cleft and its severity appears to have little influence on the individual's overall psychosocial functioning. However, a few differences between cleft types have been found with self-concept, satisfaction with facial appearance, depression, attachment, learning problems and interpersonal relationships. Differences have been established between young people with CLP and controls, such as those with cleft lip and palate dropping out of school more frequently [17, 20]. Treatment is a long term process which should start soon after birth and may continue well into the end of the second dec-

Figure 1. Bar graph depicting the association between the type of cleft deformity reporting to the hospital and gender distribution. X axis represents the type of cleft deformity and Y axis represents the percentage distribution of cleft deformity among the gender. There is no significant association between gender and cleft deformity (Pearson Chi-Square- 0.340, P value-0.560, P value > 0.05, not significant). Blue colour and green colour in the bar graph represents males and females respectively.

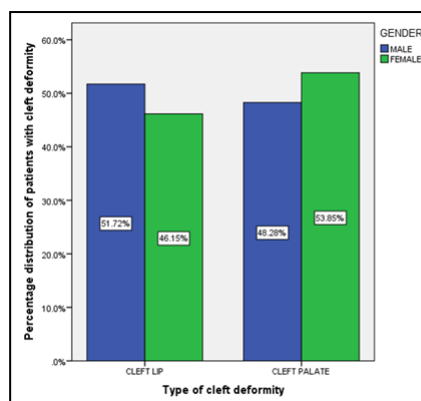


Figure 2. Bar graph depicting the association between consanguinity and type of cleft deformity reporting to the hospital. X axis represents the consanguinity and Y axis represents the percentage distribution of cleft deformity. There is no significant association between consanguinity and cleft deformity. (Pearson Chi-Square- 1.338, P value-0.247, P value > 0.5, not significant). Blue colour and green colour in the bar graph represents cleft lip and cleft palate respectively. History of consanguineous marriage amongst cleft lip patients was 7.40% and the same amongst cleft palate patients was 14.29%.

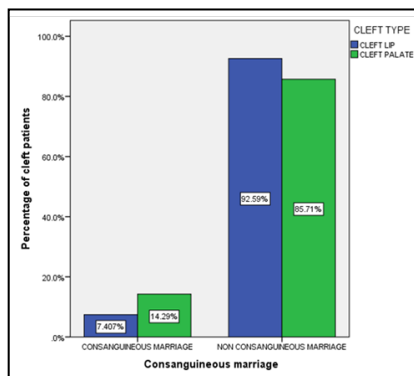


Figure 3. Bar graph depicting the association between gender wise distribution of patients reported with cleft lip and age of first reporting to the hospital. X axis represents the gender distribution and Y axis represents the percentage distribution of patients reporting with cleft lip. There is significant association. (Pearson Chi Square -19.49, P Value - 0.001, P value < 0.05, significant). Blue colour represents the age group of <12 months which showed 68.42% of children were males and 31.58% were females. Green colour represents the age group of 1 to 3 years which showed 35.71% were males and 64.29% were females. Brown colour represents the age group of 4 to 6 years which showed 100% of males. Purple colour represents the age group of 7 to 9 years which showed 100% of females. Yellow colour represents the age group above 10 years of age which showed 40% of males and 60% of females.

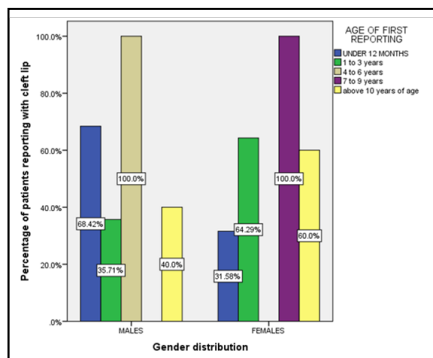
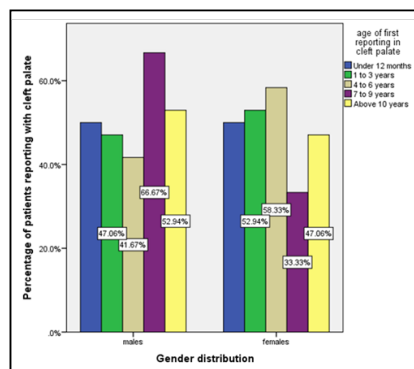


Figure 4. Bar graph depicting the association between gender of patients reported with cleft palate and age of first reporting to the hospital. X axis represents the gender distribution and Y axis represents the percentage distribution of patients reporting with cleft palate. There is no significant association. (Pearson Chi Square -1.118, P Value - 0.891, P value > 0.05, not significant). Blue colour represents the age group of <12 months - males(50%) and females (50%). Green colour represents the age group of 1 to 3 years which showed 47.06% were males and 52.94% were females. Brown colour represents the age group of 4 to 6 years which showed 66.67% were males and 33.33% were females. Purple colour represents the age group of 7 to 9 years which showed 66.67% were males and 33.33% were females. Yellow colour represents the age group above 10 years of age which showed 52.94% were males and 47.06% were females.



ade of life with several surgical procedures and long term speech therapy and orthodontic treatment, oto-rhino, laryngological follow-up and medical as well as dental care.

The department of orthodontics and dentofacial orthopaedics and the cleft and craniofacial centre receives all the patients born and diagnosed as having a cleft lip and cleft palate or craniofacial anomaly in many hospitals as well as many older individuals

with cleft lip and palate who could not afford the treatment. They learnt about the cleft lip and palate centre through the media and activities made by the institution for raising awareness amongst the masses. In most studies across world cleft of lip and palate have a higher incidence than isolated cleft lip [28, 12]. The data recorded in the cleft and craniofacial centre confirm the same pattern for patients in Chennai. The observation of cleft palate patients (48.28% in males and 53.85 in females%) than cleft lip

patients (51.72% in males and 46.15% in females) is different from several studies from observations in the world. It has been reported in the literature that the sex ratio varies between the different types of oral cleft [3], males are more likely to have a cleft lip with or without cleft palate. In this centre, cleft lip cases were more observed in males and cleft palate was seen equally amongst males and females. Consanguineous marriages are an important factor in the development of cleft anomalies as well as a host of other genetic abnormalities and it showed, therefore, be discouraged. In this study consanguineous marriages were observed very often 7.40% of cleft lip and 14.29% cleft palate. Children with cleft lip and palate in general, and especially children that are born preterm and have a low birth weight, should be carefully screened for the presence of other birth defects. Limitation of the study was that it used only data from one centre. Centre-based studies have to be substituted in the absence of exact population studies. Being a cleft and craniofacial centre, the centre receives cases from almost all over Chennai. The potential for selection bias is one of the major limitations of studies like this. Other limitations are its small sample size and lack of representation of all demography and thereby cannot be generalised to a larger population. Further studies have to be done for a larger population and can serve in better diagnosis and treatment planning.

Conclusion

Within the limits of this study, it was found that the highest prevalence of cleft lip was in males and cleft palate was observed equally in both males and females. In the study, results have shown that consanguineous marriage was a contributing factor in cleft palate and cleft lip cases. Further studies for focussing on specific environmental and genetic factors are necessary to facilitate health-related policies that focus on resources use as well as cleft lip and cleft palate prevention and care. Special efforts should be invested in improving the education and awareness about cleft lip and palate of Chennai public and especially families with cleft patients about these deformities. It is known that these are genetic risks associated with consanguinity and major effort should be dedicated to raising awareness of the problem of consanguinity in the population.

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