Research Article
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Prevalence of Unilateral Cleft Lip/Palate in Children Presented at Ahmadu Bello University Teaching Hospital, Shika-Zaria

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ABSTRACT

Background: The epidemic proportion of cleft lip and/or palate constitutes a great concern to maxillofacial surgeons worldwide. The aim of this study was to determine the prevalence of unilateral cleft lip in children presented at Ahmadu Bello University Teaching Hospital, Shika-Zaria, Nigeria. Materials and Methods: Informed consent was obtained from the parents or guardians of all the patients and a structured proforma was used for data collection. Children, 2-10 months of age, presented at the Oral and Maxillofacial Surgery Department (Paediatric Plastic and Reconstructive Surgery Unit) of ABUTH were assessed for the type of cleft. Logistic regression analysis was used to analyse the data. Results: The most common type of cleft was unilateral cleft lip and palate (UCLP) (45.0%) followed by unilateral cleft lip and alveolus (UCLA) (40.0%) and isolated unilateral cleft lip (15.0%); was more common in males (60.0%) than females (40.0%), and in children between the ages 2-6 months (70.0%) than 6-10 months (30.0%) of age. The type of cleft lip showed no statistically significant ($P > 0.05$) association with gender, age of patients, age, tribe, number of life pregnancies of mother and history of cleft lip in the family. Conclusion: Male children 2-6 months of age were the most affected by cleft lip and palate.

Keywords: *Cleft, Maxillofacial, Prevalence, Children*

Introduction

Orofacial clefts involving cleft lip, alveolus and palate has been reported to constitute the most common congenital malformations affecting the craniofacial region among live births (Gorlin *et al*., 2001; Bouhjar *et al*., 2019; Jodeh *et al*., 2021). They are considered one of the most common birth defects that pose significant medical, psychological, social, and financial burden on the affected individuals and families (Mossey *et al*., 2009). Historically, clefts of the lip and palate have varied significance ranging from being regarded as marks of beauty to a sign of supernatural ability (Mossey *et al*., 2009). In most

cultures, however, they are regarded as major, life-threatening abnormalities and infants with these defects were often not allowed to live (Mossey *et al*., 2009; Sinno *et al*., 2012).

Cleft lip and palate deformities were described greatly in terms of cleft width and other characteristics. Genetic and environmental factors, their interaction effects and phenotypic variability during early development have been documented to constitute aetiological factors responsible for the predominance of cleft lips and/or cleft palates (Melnick, 1992; Murray *et al*., 1997). A few reports from several studies have shown that the occurrence of orofacial clefts vary substantially based on geographic origin, ethnicity and socio-economic conditions (Vanderas, 1987; Mossey and Little, 2002). The few reported incidences of cleft lip and palate in Nigeria has necessitated the management and care of cleft patient (Omo-Aghoja *et al*., 2010).

The incidence and geographic distribution of cleft lip and palate around the world was reported to vary tremendously due to differences in birth prevalence as well as the deficiencies in recording of births and birth defect surveillance systems, particularly in many developing countries (Mossey *et al*., 2011). Studies have shown that unilateral clefts are more common than bilateral cleft (Murray *et al*., 1997; Suleiman *et al*., 2005). Hence, the aim of this study was to determine the prevalence of unilateral cleft lip in children presented at Ahmadu Bello University Teaching Hospital, Shika-Zaria, Nigeria.

Materials and Methods

Ethical Approval and Consent

The ethical approval for this study was granted by the Scientific and Ethics Committee of Ahmadu Bello University Teaching Hospital, Shika-Zaria; consent of guardian was obtained for this study using informed consent form.

Study Area

The study was conducted at Ahmadu Bello University Teaching Hospital (ABUTH), which is located in Zaria Kaduna State, North-west Nigeria and constitute the major referral centre for the North-west, North east and North-central with 724 beds for patients admission.

Study Design and Population

This was a prospective cross sectional study. The study population included all patients between the ages of 2 months and 10 months presented to the hospital and assessed for cleft lip with or without palate within 6-9 months of the study.

Selection Criteria

All patients within the age range whose parent/guardian signed informed consent form.

The exclusion criteria were; patients presented for revision surgery and patients above 10 months of age.

Data Collection

Data from the patient in this study was collected by the researcher using a structured proforma. Data collected from the patients included gender, age and type of cleft. From the mothers, data collected included age at delivery, number of life pregnancies and history of cleft in the family.

Data Analyses

The data collected were analyzed using both descriptive and inferential statistics. Demographic variables were tested using logistic regression analysis. Values of $P \leq 0.05$ were considered significant.

Results

Out of the 40 cleft lip patients, 60.0 % were males and 40.0 % were females, and this was more common on the left side; 70.0 % of the patients were aged 2-6 months old while 30.0 % were between 6-10 months of age; 42.5 % of the patients' mothers were 25-34 years old at first delivery, 45.0 %) of them were Hausa and 37.5 % have had 3 life pregnancies (Table 1).

Based on history of cleft patient, 35.0 % have had cleft patient(s) in the family with 25.0 % having 1 patient. Out of the 40 patients presented, 6 (15.0 %) had unilateral cleft lip, 16 (40.0 %) had unilateral cleft lip and alveolus while 18 (45.0 %) had unilateral cleft lip and palate (Table 2).

The most common type of cleft was unilateral cleft lip and palate (UCLP) (45.0%), followed by unilateral cleft lip and alveolus (40.0%) and unilateral cleft lip (15.0%). Cleft lip was more common in males (60.0%) than females (40.0%) and was more common in children between the ages 2-6 months (70.0%) than 6-10 months (30.0%) of age (Table 3).

There was no statistically significant ($P > 0.05$) association between the type of cleft lip and gender ($X2 = 4.815$, $df = 2$, $P = 0.090$), age ($X2 = 1.376$, $df = 2$, $P = 0.503$) of patients, age ($X2 = 6.265$, $df = 8$, $p = 0.618$), tribe ($X2 = 8.427$, $df = 10$, $P = 0.587$), number of life pregnancies ($X2 = 3.386$, $df = 6$, $p = 0.759$) of mother and history of cleft lip in the family ($X2 = 4.621$, $df = 2$, $P = 0.099$) (Table 3).

Table 1: Bio-data of cleft lip patients and their mothers.

Bio-data	Frequency (N = 40)	Percentage (%)
Gender		
Male	24	60.0
Female	16	40.0
Age of patient at surgical repair		
2-6 months	28	70.0
6-10 months	12	30.0
Age of mother at delivery		
Less than 15 years	3	7.5
15-24 years	14	35
25-34 years	17	42.5
35-44 years	4	10.0
45 years and above	2	5.0
Tribe of patient mother		
Hausa	18	45.0
Fulani	8	20.0
Northern minorities	3	7.5
Igbo	5	12.5
Yoruba	4	10.0
Others	2	5.0

Table 2: Assessment data of patients and their mothers.

Pre-operative assessment data	Frequency (N = 40)	Percentage (%)
Number of life pregnancies by mothers		
1	8	20.0
2	10	25.0
3	15	37.5
More than 3	7	17.5
Any history of cleft lip in the family?		
Yes	28	70.0
No	12	30.0
If yes, how many?		
1	3	7.5
2	14	35
3	17	42.5
Greater than 3	4	10.0
Type of cleft diagnosed in patient		
Unilateral cleft lip	6	15.0
Unilateral cleft lip and alveolus	16	40.0
Unilateral cleft lip and palate	18	45.0

Table 3: Distribution of type of cleft according to gender, age of patients, age, tribe and life pregnancies of mother, family history of cleft, and deviations from expected frequencies.

Parameter	N (%)	UCL (%)	UCLA (%)	UCLP (%)	X2 (p)
Cleft lip cases	40(100)	6(15.0)	16(40.0)	18(45.0)	
Gender					
Male	24(60.0)	2(33.3)	8(50.0)	14(77.8)	
Female	16(40.0)	4(66.7)	8(50.0)	4(22.2)	4.815(0.090)
Age of patient at repair					
2-6 months	28(70.0)	3(50.0)	12(75.0)	13(72.2)	
6-10 months	12(30.0)	3(50.0)	4(25.0)	5(27.8)	1.376(0.503)
Age of mother at delivery					
Less than 15 years	3(7.5)	0(0.0)	1(6.25)	2(11.1)	
15-24 years	14(35.0)	3(50.0)	3(18.75)	8(44.4)	
25-34 years	17(42.5)	2(33.3)	10(62.5)	5(27.8)	
35-44 years	4(10.0)	1(16.7)	1(6.25)	2(11.1)	
45 years and above	2(5.0)	0(0.0)	1(6.25)	1(5.6)	6.265(0.618)
Tribe of patient mother					
Hausa	18(45.0)	3(50.0)	7(43.75)	8(44.4)	
Fulani	8(20.0)	2(33.3)	1(6.25)	5(27.8)	
Northern minorities	3(7.5)	0(0.0)	2(12.5)	1(5.6)	
Igbo	5(12.5)	0(0.0)	2(12.5)	3(16.7)	
Yoruba	4(10.0)	1(16.7)	2(12.5)	1(5.6)	
Others	2(5.0)	0(0.0)	2(12.5)	0(0.0)	8.427(0.587)
Number of life pregnancies by mothers					
1	8(20.0)	0(0.0)	4(25.0)	4(22.2)	
2	10(25.0)	2(33.3)	4(25.0)	4(22.2)	
3	15(37.5)	2(33.3)	5(18.75)	8(44.4)	
Greater than 3	7(17.5)	2(33.3)	3(31.25)	2(11.1)	3.386(0.759)
History of cleft in the family					
Yes	28(70.0)	4(66.7)	3(18.75)	7(38.9)	
No	12(30.0)	2(33.3)	13(81.25)	11(61.1)	4.621(0.099)

UCL = unilateral cleft lip;
UCLA = unilateral cleft lip and alveolus;
UCLP = unilateral cleft lip and palate

Discussion

In this study, unilateral cleft lip and palate was more common constituting 45.0% of the total type of cleft in patients presented. This is in agreement with the study of Omo-Aghoja, *et al*. (2010) and Onah, *et al*. (2008) who reported cleft lip and palate to be more common in Nigeria. In contrast, Iregbulem (1982) reported that isolated cleft lip was more frequent in Nigeria. Study by Manyama, *et al*. (2011) has shown that unilateral clefts were more common than bilateral clefts and affecting the left side mostly in Tanzania. Other types of cleft lip presented were isolated cleft lip (15.0%) and unilateral cleft lip and

alveolus (40.0%). The variations in these sets of observations might be due to level of awareness on the possible management of the condition (Butali, *et al*., 2014).

Based on gender, cleft lip was more common in males in this study and this is in agreement with reports of similar clinic-based studies in Nigeria (Iregbulem, 1982; Adekeye and Levery, 1985), Kenya (Onyango and Noah, 2005) and Tanzania (Manyama *et al*., 2011). This is in contrast to cleft predominance in females reported in Nigeria (Omo-Aghoja *et al*., 2010) and for Caucasian populations (Croen *et al*., 1998; Shapira *et al*., 1999). The observed pattern of cleft predominance in males in this study might be due to the fact that more males were presented than females.

The age of presentation (2-10 months) of cleft patients in this study is in agreement with reports in Kenya and Tanzania in which a greater proportion of cleft patients were under 1 years of age at presentation (Onyango and Noah, 2005; Manyama *et al*., 2011). This however disagrees with previous hypothesis on the presentation of patients with orofacial cleft at a later age in low and middle income countries due to unavailability of specialized medical facilities (Adekeye and Levery, 1985). The surgical repair of CLP has been suggested to be performed early in life with cheilorhinoplasty performed between 3-6 months of age and palatoplasty performed between 6-12 months of age hence, the focus on this age group (2-10 months) in this study (Vasan, 1999; Alonso *et al*., 2013; Taib *et al*., 2015).

The type of cleft in this study showed no association with age, tribe and number of life pregnancies of mother, and family history. This is in contrast to the study of Omo-Aghoja, *et al*. (2010) who reported paternal and maternal ages, family history, low socio-economic status, alcohol consumption, and intake of herbal medications during pregnancy as risk factors for the development of cleft lip and palate. Other risk factors documented to influence cleft lip occurrence include number of family members with cleft, how closely related these people are, race and sex of the affected individual, and the type of cleft each person has (Agbenorku, 2013). The reason for the outcome in this study might be due to false information resulting from shame or low self-esteem. This study was limited by refusal to give consent by some of the patients' mothers and decreased number of cases presented to the department due to the COVID-19 pandemic.

Conclusion

Cleft lip and palate was more common in male children 2-6 months of age. Hence, it is recommended that public awareness on the need for presentation of cleft cases should be carried out to boost the self-esteem of parents and ensure prompt repair.

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