

# An Assessment of Cleft Lip and Palate Deformities in a Hospital-Based Population in Sudan

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## Abstract

The frequency and pattern of orofacial clefts in different parts of the world and varies widely. The aim of this study was to conduct a retrospective analysis of cleft lip /or palate cases presented in our clinic and to assess the associated demographic and clinical features. A retrospective descriptive study was conducted at Haj-alsafi Teaching Hospital, located in Khartoum-Sudan, to identify all children with cleft lip and palate that attended or were treated from November 2018 to April 2021. Age at presentation, gender , region of origin, type and laterality of the cleft were recorded. A total of 312 cleft lip /or palate cases were seen during this period. The most common cleft type was the cleft lip and palate constituting 50.3% of the cleft deformities. Isolated cleft palate and cleft lip constituted 16.3% and 33.3% respectively. clefts by side showed a statistically significant preponderance of the left side (47.8%), followed by bilateral cleft (39.4%) and right-side cleft (12.2%). Midline cleft account for only 0.6% of all cleft cases. Patients with cleft lip and palate (43.6%) presented earlier (less than one year) as compared to those with isolated cleft lip or cleft palate. (P-value .012). The most common cleft type in this study was the cleft lip and palate constituting 50.3% of the cleft deformities. Unilateral orofacial clefts were significantly more common than bilateral clefts; with the left side being the most common affected side. History of consanguineous marriage and family history of cleft lip and palate comprised a large percentage of the patients in this study.

## Keywords:

Cleft lip; Cleft palate; Congenital malformation; Newborn

## Introduction

Congenital anomalies defined as abnormalities of structure, function, or metabolism that are present at birth, are a major public health concern due to their life-threatening nature or the potential to result in disability or death.

The prevalence of CLP differs according to gender, ethnicity, and socio-economic status .

Cleft of the lip with or without palate (CLP) is the most common congenital craniofacial anomaly with the global prevalence estimated at 1 in 700 live birth.

Cleft palate-lip and isolated cleft palate are two separate clinical conditions with differences in embryology, etiology and epidemiology.

While the incidence of cleft lip (with or without cleft palate) range from 1/300 and 1/2500, the incidence of isolated cleft palate varies between 1/1000 and 1/1500. In Sudan, demonstrated a prevalence of 0.9 per 1000

of cleft lip and palate [1]. The etiology of cleft lip and/or palate is still largely unknown. The majority of clefts of the lip and palate are believed to have a multifactorial etiology with several genetic and environmental factors Boys are more affected than girls with a reported ratio of 2:1 with cleft lip and/or cleft lip and palate, whilst females have a slightly greater risk for cleft palate only. The aim of this study was to conduct a retrospective analysis of cleft lip and palate cases presented in our clinic and to assess the associated demographic and clinical features.

## Material and methods

A retrospective descriptive study was conducted at Haj-alsafi Teaching Hospital, located in Khartoum which is the capital of Sudan, to identify all children with cleft lip and palate that

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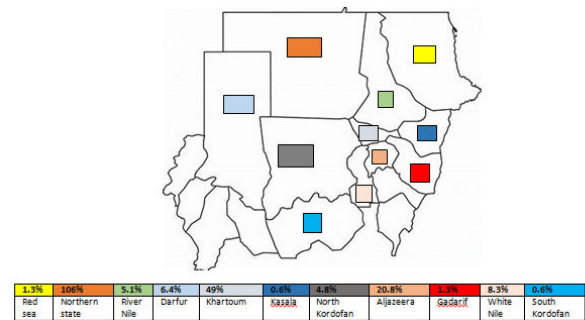
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attended or were treated from November 2018 to April 2021. Most patients with cleft lip and palate in the surrounding regions are usually referred to this hospital as there is a cleft lip and palate clinic at the department of the oral and maxillofacial surgery [2]. Cleft lip and/or palate records were obtained from patient files in the Hospital's. Patient file notes are usually written by interns and surgeons from the time of hospital admission to discharge. Age at presentation, gender, region of origin, type and laterality of the cleft were recorded. Cleft lip and/or palate cases that lacked some of the above information were excluded. Patients were classified into three groups: Cleft lip, cleft lip and palate and isolated cleft palate. The study was reviewed and approved by the ethical committee of both Haj-alsafi Teaching Hospital and Ministry of Health. Data were cleaned, coded and analyzed within a 95% confidence interval and the significance level  $p < 0.05$  SPSS program was used in the analyses.

### Results

A total of 343 patients with cleft lip and palate were seen between November 2018 and April 2021 at cleft lip and palate clinic at Haj-alsafi Teaching Hospital, 31 patients with cleft lip /or palate seen during this study period had incomplete files and thus were not included in the study. The majority of cases were from Khartoum state 49% followed

by Al-jazera state 20.8%. Some patients from while Nile state and Gadarif state were refugee from South Sudan and Ethiopia (Figure 1).



**Figure1: shows the geographic distribution of the cleft lip and palate in different states in Sudan.**

A wide range of age at presentation was observed in this study (range 2 days to 43 years). Age was divided into three groups where the largest group was patients younger than one year old (39.4%). There were 57.4% males and 42.6% females. 51% have a consanguineous marriage and 24.7% mentioned a family history of cleft lip /or palate. (Table 1) shows the demographic characteristic of the patients.

**Table 1: demographic characteristic of cleft lip /or palate patients.**

	Frequency	Percent
Age		
< 1 year	123	0.394
1-10 year	119	0.381
>10years	70	0.224
Gender		
males	179	0.574
females	133	0.426
Family history of CLP		
No	235	0.753
Yes	77	0.247
Consanguineous marriage		
No	153	0.49
yes	159	0.51
Total	312	1

The most common cleft type was the cleft lip and palate constituting 50.3% of the cleft deformities. Isolated cleft palate and cleft lip constituted 16.3% and 33.3% respectively. The distribution of clefts according to the side showed a preponderance of the left side (47.8%), followed by bilateral cleft (39.4%) and right-side cleft (12.2%). Midline cleft account for only 0.6% of all cleft cases (Figure 2).

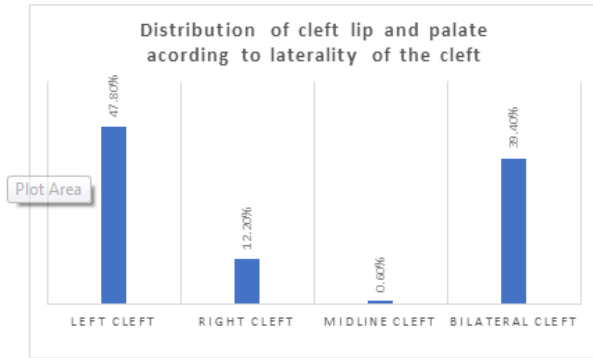


Figure 2: shows distribution of cleft lip and palate according to laterality of the cleft.

Overall, males were slightly more affected than females among all cleft types. However, the association between cleft type and gender was statistically insignificant (P-value .940). A statistically significant correlation was found between the type of the cleft and the age at which patient presented for treatment. Patients with cleft lip and palate (43.6%) presented earlier (less than one year) as compared to those with isolated cleft lip or cleft palate. (P-value .012) (Table:2).

Table 2: shows correlation between the age, gender and laterality, and the type of the cleft deformity.

	Cleft lip	Cleft palate	Cleft lip and palate	Total	p-value
Age					
<1 year	45	10	68	123	
	0.366	0.081	0.553	1	
1-10 year	36	30	53	119	
	0.303	0.252	0.445	1	0.012
>10years	24	11	35	70	
	0.343	0.157	0.5	1	
Gender					
males	59	29	91	179	
	0.33	0.162	0.508	1	
females	46	22	65	133	0.94
	0.346	0.165	0.489	1	
Laterality					
Left cleft	75	0	74	149	
	0.503	0	0.497	1	
Right cleft	18	4	16	38	
	0.474	0.105	0.421	1	
Midline cleft	1	0	1	2	0
	0.5	0	0.5	1	
Bilateral cleft	11	47	65	123	
	0.089	0.382	0.528	1	

## Discussion

A retrospective descriptive Hospital-based study was conducted at Haj-alsafi Teaching Hospital, in Khartoum-Sudan to identify children with cleft lip and palate that attended or were treated from November 2018 to April 2021. The results showed that the majority of cases were from Khartoum state 49% followed by Aljazera state 20.8%. Age was divided into three groups where the largest group was patients younger than one year old (39.4%) which reflected a positive feedback of awareness among parents whom their

babies were born with cleft defect, making them seeking treatment at younger age and expectation of a better result [3]. Older ages at presentation (more than 10 years) constituted 22.4% which revealed a large percentage of ignorance and lack of awareness towards treatment which can affect self-esteem and social life of the patient. Another possible explanation of this finding is illiteracy, financial restrictions and accessibility to local health centers. A significant correlation was found between age of the patients and the type of the cleft P-value (.012). Patients with cleft lip

and palate presented earlier as compared to those with isolated cleft lip or cleft palate which contradict a result from Tanzania, where patients with isolated cleft palate presented earlier than isolated cleft lip or cleft lip and palate. The most common cleft type in this study was the cleft lip and palate constituting 50.3% of the cleft deformities. A similar result was reported in Nigeria where 45% of the patients had cleft lip and palate and Uganda where 60% of cleft children had cleft lip and palate [4]. A contradictory result was reported in south Africa where the cleft palate was the most common cleft type and Tanzania where cleft lip was the most common type (49.2%). CLP have non-random laterality, with left-sided clefts being more common than right-sided clefts, a pattern that may be genetically or environmentally influenced, our study revealed a predominance of the left side (47.8%) which is in agreement with previous studies. A study conducted in south Africa revealed that female were more affected by cleft lip and palate. Another Nigerian study showed equally distributed CLP among both genders. In the present study, males were more affected by CLP than females which is similar to the findings reported in Uganda and Tanzania. The correlation between the gender the cleft type was found to be statistically insignificant P-value (.978). Families with a history of CL/P should be extra cautious about the occurrence of CL/P. In this study, 24.7% mentioned a family history of cleft lip or palate, a higher finding was reported in Uganda where third of the patients mentioned relatives with CLP. A study in turkey reported that 32,8% of the cleft palate were found to have consanguineous parents, a higher result was found in this study where 51% of the parents of the cleft children have a consanguineous marriage history. As far as consanguinity was concerned factor for non-syndromic cleft lip and palate, this finding enables preventive strategies for counselling regarding the occurrence of craniofacial anomaly [5].

## CONCLUSION

This study revealed the demographics of cleft lip and palate deformities in Khartoum, Sudan, which is similar to some other African countries. We found that unilateral cleft is more common than bilateral cleft with predominance toward the left side. History of consanguineous marriage and family history of cleft lip and palate comprised a large percentage of the patients in this study. Owing to the nature of this hospital based retrospective study, it's not possible to estimate the exact patterns of cleft lip and palate deformities in Sudan. Further larger population and birth registry-based studies are needed to obtain more reprehensive results in Sudan.

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