

# Oral Health Determinants and Access in Cleft Lip and Palate



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## BACKGROUND & OBJECTIVE

Cleft lip and/or palate (CL/P) affects approximately 1 in 700 live births, making it one of the most common orofacial birth defects in the U.S. These children require complex, multidisciplinary dental care across their development.

Dental general anesthesia (DGA) is frequently necessary when routine office treatment is not feasible. High DGA utilization may signal geographic or systemic barriers to routine preventive care.

**OBJECTIVE:** To describe oral health status, sociodemographic characteristics, and DGA utilization, and evaluate the association between **distance to dental home** and DGA utilization among pediatric CL/P patients at the UNC Craniofacial Center.

## METHODS & MATERIALS

**Study Design:** Cross-sectional • IRB-approved (#24-1787)

**Population:** Birth–19 years with CL/P presenting at UNC CFC, Aug 2023–Oct 2025

**Data Collection:** Caregiver questionnaires + Epic EHR → REDCap. Hispanic/non-Hispanic classified by primary language (Spanish = Hispanic)

**Geographic Analysis:** Addresses geocoded in ArcGIS Pro (v3.4). Euclidean distance (XY to Line, NAD 1983 StatePlane NC) divided into quartiles. Rural/urban via RUCA codes (USDA, 2020)

**Primary Outcome:** History of DGA

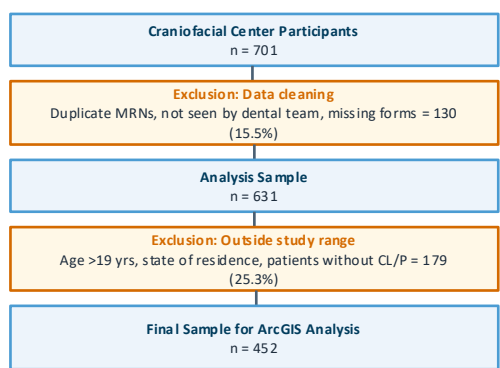
**Secondary Outcomes:** Dental caries, restorations, gingivitis, dental trauma

**Analysis:** Bivariate comparisons; Cochran-Armitage trend test; multivariable logistic regression (SAS 9.4). Distance as ordinal variable (Q1–Q4); covariates: age, sex, language, rural residence.

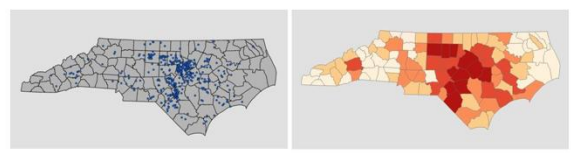
## TABLE 1. DEMOGRAPHICS (n=452)

Variable	n (%) or Mean (SD)
Age (years)	9.2 (5.4)
Female	198 (43.8%)
White	209 (46.2%)
Hispanic American	72 (15.9%)
Black/African American	55 (12.2%)
Other/Multi/Unknown	86 (19.1%)
Rural Residence	111 (24.7%)
Medicaid-insured	255 (57.1%)
Cleft lip only	65 (14.4%)
Cleft palate only	166 (36.7%)
Cleft lip + palate	221 (48.9%)

## FIGURE 1. STUDY POPULATION



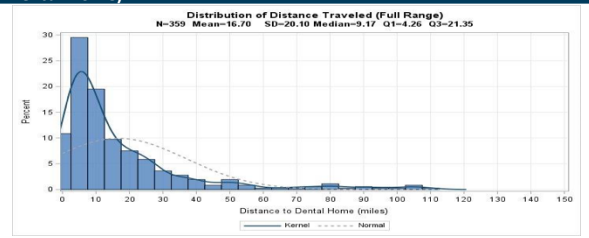
## FIGURES 2–3. PATIENT DISTRIBUTION ACROSS NC COUNTIES (ArcGIS)



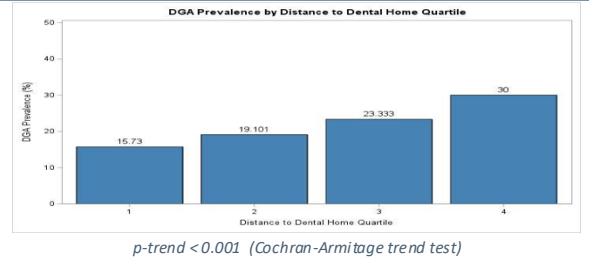
## TABLE 2. DISTRIBUTION OF SYNDROMES (n=87)

Syndrome	n
Pierre Robin sequence	29
Vander Woude	6
DiGeorge	3
Goldenhar	3
Moebius	2
Klippel-Feil	2
Stickler	2
Cornelia de Lange	2
Ectrodactyly-EDS-CL/P	2
Other (Apert, Crouzon, CHARGE, Treacher Collins, etc.)	38

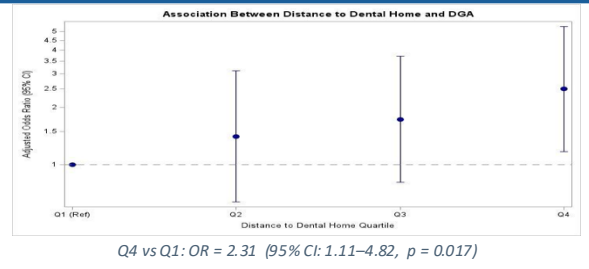
## FIGURE 4. DISTRIBUTION OF DISTANCE TRAVELED (Patients with Dental Home)



## FIGURE 5. DGA PREVALENCE BY DISTANCE-TO-DENTAL-HOME QUARTILE



## FIGURE 6. ADJUSTED OR FOR DGA BY DISTANCE QUARTILE (Ref = Q1)



## TABLE 3. MEAN DISTANCE TO DENTAL HOME BY OUTCOME

Outcome	Mean (Yes)	Mean (No)	p-value
Dental Caries	16.9 mi	16.8 mi	0.98
Restorations	18.7 mi	14.8 mi	0.07
Gingivitis	21.3 mi	13.5 mi	<b>0.0004</b>
Dental Gen. Anesthesia	20.4 mi	15.7 mi	0.07

**OR = 1.35** per quartile increase in distance (95% CI: 1.06–1.70 | p = 0.014)

## TABLE 4. ORAL HEALTH FINDINGS (n = 452)

Variable	Yes n (%)	No n (%)
<b>Dental History</b>		
Dental trauma	47 (10.7%)	389 (89.2%)
Oral habits	182 (41.5%)	257 (58.5%)
<b>Oral Health Status</b>		
Dental caries	111 (26.1%)	314 (73.9%)
Restorations	191 (45.8%)	226 (54.2%)
Gingivitis	176 (41.7%)	246 (58.3%)
Crossbites	237 (61.1%)	151 (38.9%)
<b>Dental Care Utilization</b>		
Dental Gen. Anesthesia	96 (21.3%)	354 (78.7%)
DGA (>1 visit)	18 (4.0%)	432 (96.0%)
Dental home	378 (84.0%)	72 (16.0%)

## CONCLUSIONS

- Each quartile increase in distance was associated with **35% higher odds of DGA** (OR=1.35; 95% CI: 1.06–1.70; p=0.014), adjusting for age, sex, language, and rural residence.
- Children in the farthest quartile (~43 mi avg) had **2.3x higher odds of DGA** vs. those nearest their dental home (OR=2.31; CI: 1.11–4.82; p=0.017).
- 84% had a dental home, yet 21% had a DGA history — dental home alone does **not guarantee adequate access** when geographic barriers exist.
- Geographic distance is a **modifiable determinant** of care. Telehealth, community dental integration, and Medicaid transportation are actionable interventions.
- Craniofacial care teams should routinely screen for dental home proximity and facilitate referrals to geographically accessible community dental providers.

**84%**  
had dental home

**21%**  
had DGA history

**58%**  
Medicaid-insured