

Risk Factors of Dental Trauma in a Hospital Emergency Department

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Introduction

- According to the 2018 National Hospital Ambulatory Medical Care survey, 1.2% of all emergency department (ED) visits are for dental-related emergencies.¹
- The American Dental Association estimates that 79% of all dental emergencies triaged in the ED could be diverted to a dental office for comprehensive management of the injury.²
- Children from low income and minority families disproportionately struggle with access to dental care due to insurance status and often must seek dental care in the ED instead.³
- One study found that the emergency dental visit was the first contact with a dentist for 80% of children 3.5 years old and younger.⁴
- There is limited research on what specific factors contribute to a caregiver's decision to seek emergency dental treatment in a hospital emergency department rather than in a dental office.

Objectives

1. Assess the demographics and risk factors of pediatric dental emergencies at a Level 1 urban pediatric emergency department.
2. Identify trends and barriers to accessible emergency dental care.

Methods

- This prospective study evaluated existing medical records and collected data points from pediatric dental resident encounters at the Cincinnati Children's Hospital Medical Center (CCHMC) ED from January 1 2023 to December 31 2023.
- Specific variables included: age, gender, ethnicity, day of week, month of year, referral source, payer status, dental home status, zip code, dental injury diagnosis and treatment rendered, sedation utilization, and length of stay (LOS).
- Descriptive statistics were used to analyze results.
- This study was approved by CCHMC IRB 2023-0044.

Tables and Figures

Table 1. Patient Demographics N=187 (%)		
Age	Mean (SD)	8.07 (4.72)
	Min, Max	0.33, 19.00
	Male	105 (56.1)
Gender	Female	81 (43.3)
	Non-binary	1 (0.5)
	Ethnicity	
Ethnicity	Asian	8 (4.3)
	African American	39 (20.9)
	Hispanic or Latino	10 (5.3)
	White	130 (69.5)
Payer Status	Private Insurance	60 (32.1)
	Medicaid	101 (54.0)
	Medicaid + Private Insurance	9 (4.8)
	Self-pay	17 (9.1)
Dental Home	Yes	130 (69.5)
	No	57 (30.5)
Referral Source	Community Dentist	26 (13.9)
	Faculty On-call	2 (1.1)
	Resident On-call	18 (9.6)
	Liberty Hospital ED	22 (11.8)
	Community Emergency Room	11 (5.9)
	Self	95 (50.8)
	Other	13 (7.0)



Table 2. Encounter Characteristics N=187 (%)		
Day of Week	Sunday	29 (15.5)
	Monday	17 (9.1)
	Tuesday	23 (12.3)
	Wednesday	22 (11.8)
	Thursday	21 (11.2)
	Friday	32 (17.1)
	Saturday	43 (23.0)
LOS in minutes	Mean (SD)	311.48 (171.33)
	Min, Max	47.00, 1066.00
	Dental Trauma Type	
Dental Trauma Type	Primary tooth	72 (38.5)
	Permanent tooth	112 (59.9)
	Soft tissue injury	3 (1.6)
Injury Diagnosis	Fracture of any type	32 (17.1)
	Luxation injuries	44 (23.5)
	Avulsion	11 (5.9)
	Avulsion + other injuries	26 (13.9)
	Multiple injuries (w/o avulsion)	61 (32.6)
	Other	13 (7.0)
	Avulsion	
Avulsion	Primary tooth	10 (27.0)
	Permanent tooth	27 (73.0)
	Treatment Rendered	
Treatment Rendered	None	21 (11.2)
	Extraction	57 (30.5)
	Splint +/- other treatment	65 (34.8)
	Resin Bandaid	26 (13.9)
	Other	18 (9.6)
Sedation Required	Yes	75 (40.1)
	No	112 (59.9)

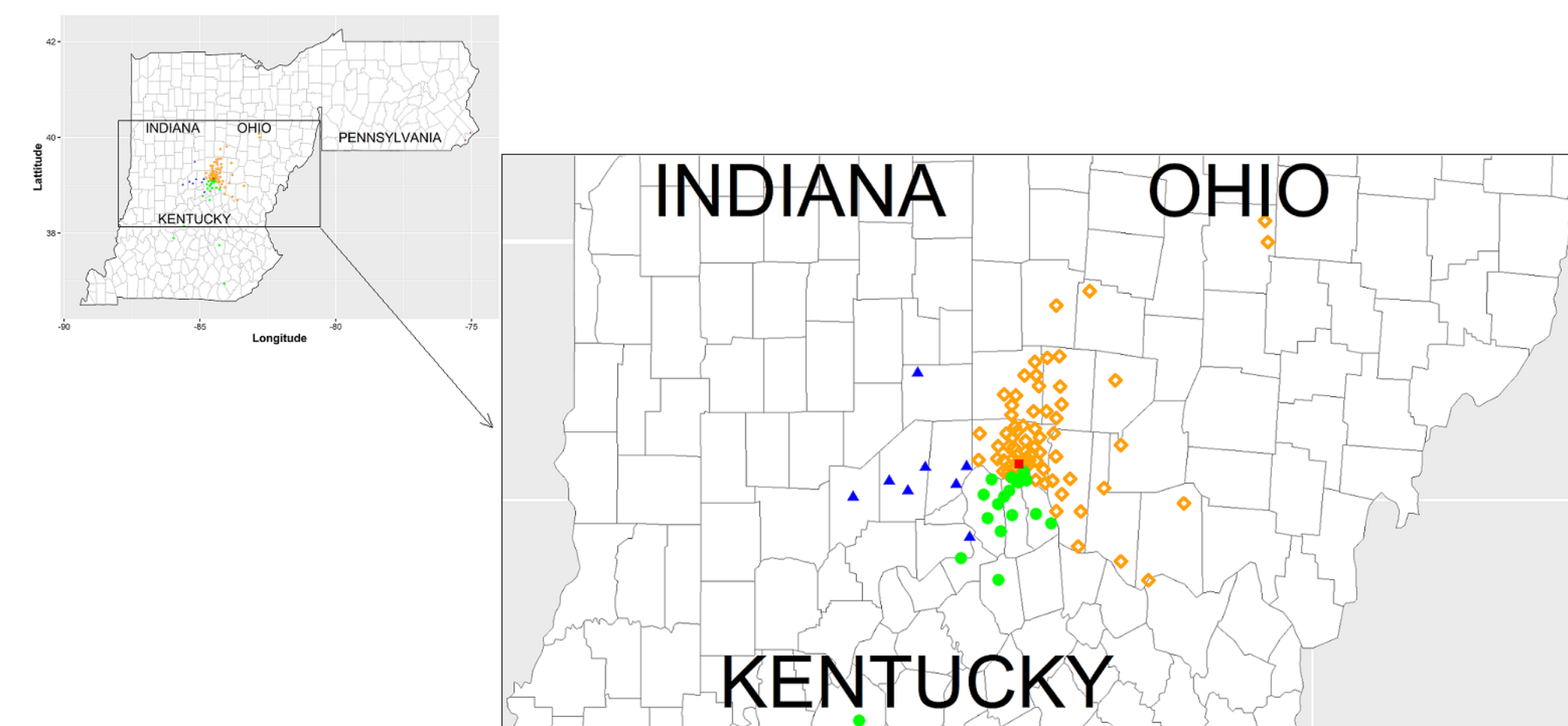
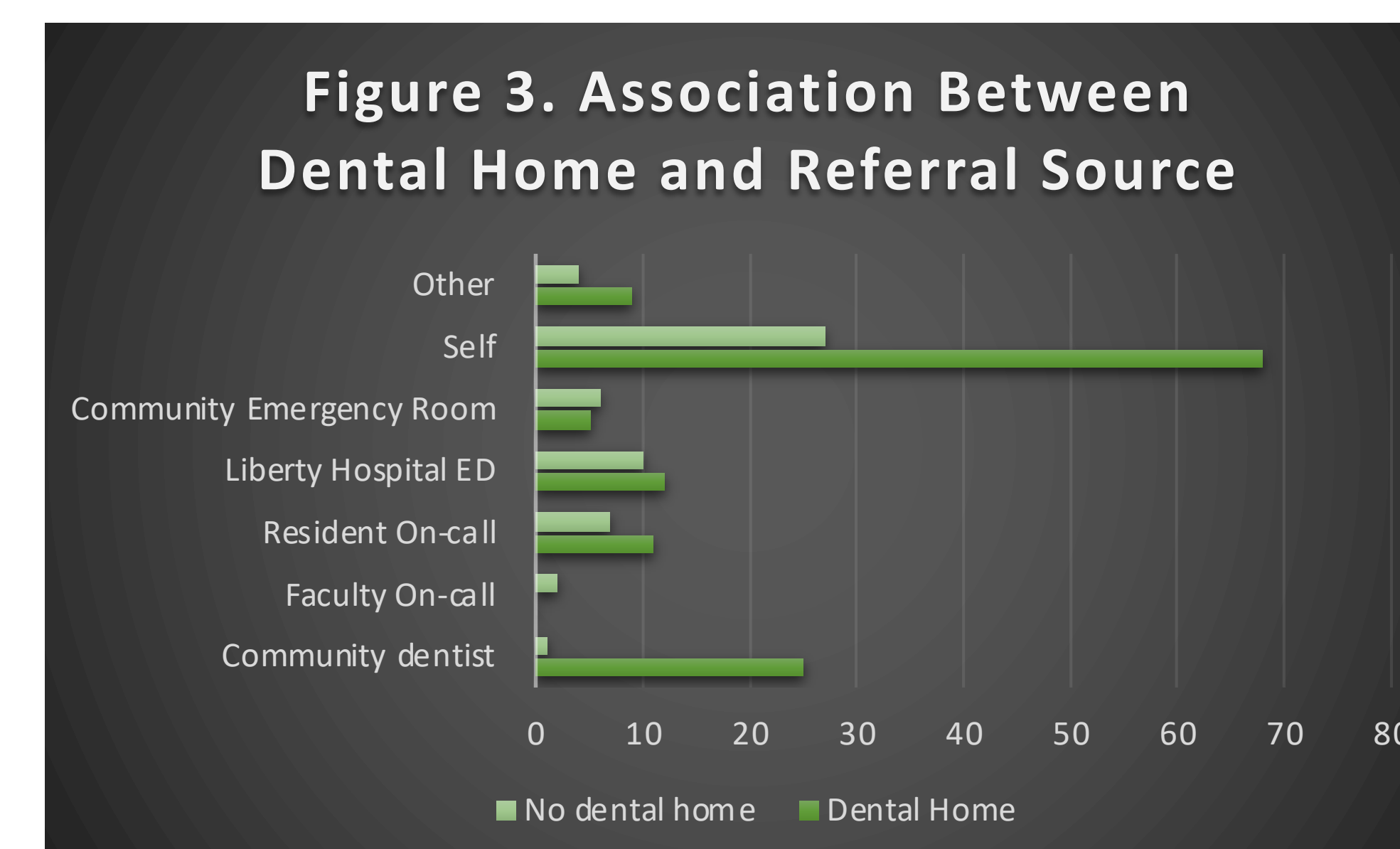
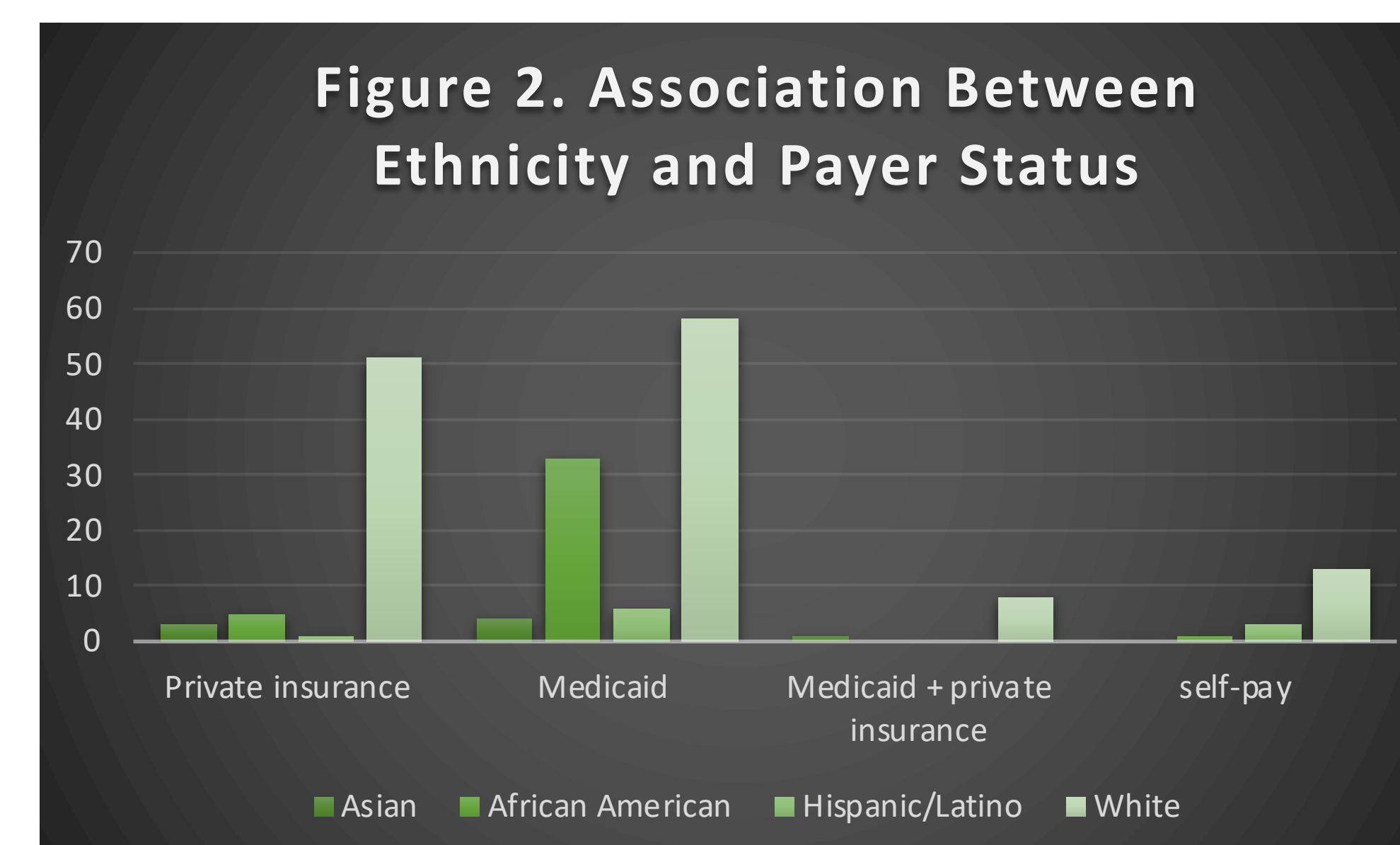


Figure 1. Map of CCHMC Emergency Department catchment area



Results

- In 2023, the pediatric dental residents at Cincinnati Children's Hospital Medical Center treated **187 patients** in the emergency department.
- **58.8% of the patients treated in the ED participated with Medicaid or Medicaid with a supplemental private insurance.**
- **84.6% of the African American patients treated in the ED participated with Medicaid insurance (p = <0.001).** Otherwise, differences in treatment rendered, dental home status, sedation required and length of stay in the ED were not statistically significant across ethnicities.
- **The average age of those without a dental home was 5.94.**
- **71.5% of patients who self reported to the ED had an existing dental home (p = 0.001).**
- **85.2% of patients who presented to the ED with a permanent tooth avulsion had an existing dental home (p = 0.008).**
- **The average time spent in the ED was 311.48 minutes.**

Conclusions

1. The majority of children who reported to the Cincinnati Children's Hospital Medical Center ED for dental trauma had an existing dental home, including by self-referral and their community dentist.
2. The average time spent in the ED for dental trauma was over 5 hours, irrespective of dental trauma type, treatment rendered or use of sedation.
3. The patients treated in the CCHMC ED were predominantly supported by state insurance.
4. A disproportionate number of minority patients treated in the ED for dental trauma participated with Medicaid insurance.

References

1. U.S. Dept. of Health and Human Services, Public Health Service, Centers for Disease Control and Prevention, National Center for Health Statistics. National Hospital Ambulatory Medical Care Survey: 2018 Emergency Department Summary Tables; 2018.
2. Wall T., Nasseh K., Vujicic M. American Dental Association Health Policy Institute; 2014. Majority of Dental-Related Emergency Department Visits Lack Urgency and Can Be Diverted to Dental Office.
3. Rowley ST, Sheller B, Williams BJ, Mancl L. Utilization of a hospital for treatment of pediatric dental emergencies. *Pediatr Dent.* 2006;28(1):10-17.
4. Lombardi S, Sheller B, Williams BJ. Diagnosis and treatment of dental trauma in a children's hospital. *Pediatr Dent.* 1998;20(2):112-120.