Trends in Pediatric Non-traumatic Dental Conditions at Emergency Departments in Colorado

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Background

- Emergency department (ED) visits for non-traumatic dental conditions (NTDCs) are a public health issue in the U.S.
- Dental-related ED visits for NTDCs are considered as "avoidable", with caries and pulp-related infections are the most common diagnoses in young children.
- ED dental charges rose from 104.2 million USD in 2008 to nearly 3.4 billion USD by 2018 and the average charge per visit rose from 564 USD in 2008 to 1887 USD in 2019.
- Medicaid patients make up 16% to 79.8% of dental-related ED visits, compared to 0.9% to 57.2% for uninsured patients.
- Racial, social, and economic disparities persist for ED visits.
- This project is the first to analyze the prevalence, demographics, and costs of ED visits for NTDCs in Colorado, providing essential data to inform policies, expand preventive programs, and reduce "avoidable" ED visits.

Methods

- De-identified dental claims data from the Colorado All Payers Claims Database (2018–2022) for patients (0–17 years), focusing on charge amounts and predictors: dentition type, service year, insurance, provider type, living area type, and an interaction between race/ethnicity and urbanality.
- Data was statistically analyzed for associations between charge amounts and predictors.

Results

- A total of 2,029 dental claims were analyzed. Among these, 25.9% of patients self-identified as non-Hispanic white, 13.8% as Hispanic, 11.1% as non-Hispanic black, and the remaining 49.3% reported their ethnicity as other.
- Most children who visited the ED for NTDCs were between 6 and 13 years old, with an average age of 8.1 years. All children had medical insurance (98.9%), with Medicaid covering 92.1% of them.
- Regarding residence, 87.3% lived in urban areas, 9.5% in rural areas, and 3.2% in frontier regions.
- The most frequent diagnosis was periapical abscess (85.3%) of the cases, and the mean charge per visit was 789 USD.
- The gender, service year and insurance did not significantly impact charge amounts.
- Compared to urban areas, patients living in frontier areas had charges that were 56% lower (*p<0.05;95%CI:0.32-0.60*), while those in rural areas had charges 29% lower (*p<0.05;95%CI:0.59-0.85*). Compared to medical providers, charges associated with dental providers were 71% lower *(p<0.05;95%CI:0.15-0.55)* and more than double for the provider group not reported *(p<0.05;95%CI:2.05-2.56)*. See figure 1.

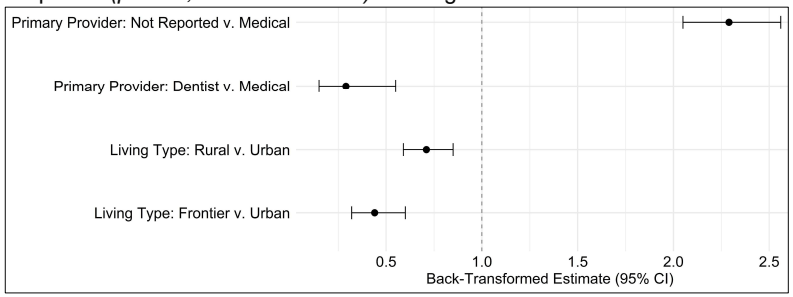

Figure 1: Generalized Linear Regression back-transformed estimates for cost differences in cost between groups of patients. An estimate of <1 indicates a lower cost in the comparator group, a >1 estimate a higher cost.

Discussion

- The reliance on ED for NTDCs highlights significant gaps in access to dental care, particularly for Medicaid patients.
- While Medicaid coverage improves affordability, limited provider availability due to low reimbursement rates, administrative burdens, and dentist shortages keeps ED visits high.
- Expanding access to community-based preventive programs, federally qualified health centers (FQHCs), and alternative workforce models (e.g., dental therapists, hygienists, and tele-dentistry) can reduce ED dependency.
- Strategies like integrating dental teams into EDs, increasing Medicaid reimbursement, and implementing diversion programs can ensure timely, preventive care and promote health equity.
- Future research should evaluate Medicaid expansion's impact, tele-dentistry's role in emergency triage, and exploring access to care models to reduce "avoidable" ED visits.

Conclusions

Cost differences in ED visits based on urbanality and provider type indicate that certain locations are affected by high ED utilization rates and provider-specific costs, which can be the target of interventions.

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