Prevalence of Dental Anomalies in Male vs. Female Pediatric Patients

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BACKGROUND

Developmental dental anomalies are structural or morphological deviations in teeth that occur during the early stages of tooth development (1). These anomalies may affect the number, size, shape, structure, or position of teeth. Common examples include hypodontia, supernumerary teeth, ectopic eruptions, microdontia, macrodontia, and dens invaginatus. Such anomalies can occur as isolated findings or in association with genetic syndromes. They may be congenital or influenced by environmental factors such as trauma, infections, nutritional deficiencies, or exposure to teratogens during pregnancy (2).These dental irregularities can have significant implications on a child's oral health and quality of life. Functionally, they may lead to difficulties in chewing, speech development, and maintaining oral hygiene. Esthetically, visible anomalies can contribute to self-esteem issues, especially during school years (3). Moreover, untreated anomalies can result in malocclusion, crowding, and the need for complex orthodontic or surgical interventions later in life. The prevalence and pattern of dental anomalies can vary across populations, influenced by sex, age, and ethnic background (3). Despite these variations, there is limited research comparing the frequency and types of anomalies between male and female pediatric patients. This study aims to fill this knowledge gap by examining a large sample of children.

PURPOSE

To identify and compare the prevalence of dental developmental abnormalities and pathology, (excluding dental trauma), in male versus female pediatric dental patients.

METHODS

This retrospective study reviewed dental records of 500 pediatric patients aged 7 to 12 years. Data were collected from a dental clinic's database over a one-year period.
Demographic details such as age, sex, and race were recorded. Panoramic radiographs were used to identify developmental dental anomalies. Anomalies were categorized based on type and number per patient. Data were analyzed to compare the prevalence and distribution of anomalies between male and female patients. Descriptive statistics and frequency distributions were calculated.

RESULTS

A total of 500 pediatric patients 245 males (49%) and 255 females (51%) were included in the study. Median age was 9.6 years (IQR: 8–11). The age distribution was nearly equal, with 50.4% aged 7–9 years and 49.2% aged 10–12 years. The majority of children were African American (55.4%), followed by White (21.6%), Arab (8.4%), Hispanic/Latino (4.6%), Other (6.2%), Mixed/more than one race (3%), and Asian (0.8%).

Overall, dental anomalies were found in 150 or 30% of patients. The prevalence of anomalies was comparable between sexes, with 75 males (30.6%) and 75 females (29.4%) affected. Most patients presented with only one anomaly—82.7% in both males and females. A smaller percentage had two anomalies (16% males; 13.3% females), and very few had three (1.3% males; 4% females).

Figure 1: Comparison of Anomalies between Males and Females
*** - p < 0.05 indicates a statistically significant difference*

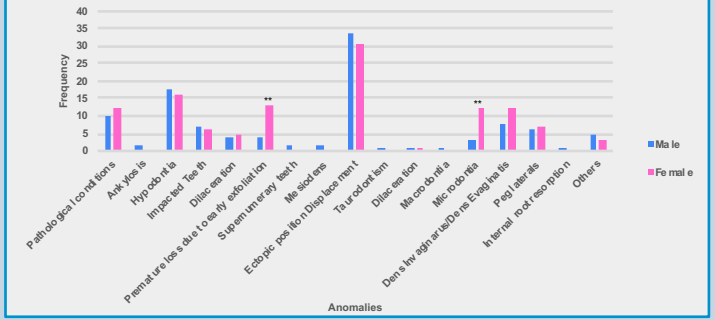
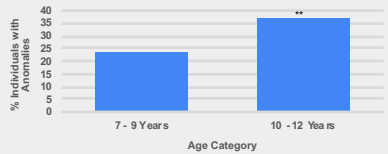


Figure 2: Comparison of Rates of Anomalies between Age Groups
*** - p < 0.05 indicates a statistically significant difference*



"Children aged 10–12 years had about 1.5x the rate of anomalies as children aged 7–9 years."

CONCLUSIONS

This study highlights the significant prevalence of dental anomalies in the pediatric population, with nearly one in three children affected. The overall distribution of anomalies was relatively balanced between males and females, suggesting no substantial gender-based predisposition.

The most commonly observed anomaly was ectopic tooth position or displacement, followed closely by hypodontia and dens invaginatus/evaginatus. These anomalies, primarily developmental or positional in nature, may impact normal dental function, esthetics, and future oral health. Most of the children affected by anomalies presented with only one condition, but a small percentage showed multiple anomalies. This indicates that while the majority of anomalies may be isolated incidents, clinicians should remain vigilant for the possibility of coexisting conditions, especially in cases requiring orthodontic or surgical management. Interestingly, microdontia was more prevalent in females, and dens invaginatus/evaginatus occurred slightly more frequently in girls, suggesting subtle sex-linked trends that merit further investigation.

In conclusion, dental anomalies are a relevant clinical concern. Dentists, dental specialists and pediatricians should work collaboratively to ensure that children undergo routine dental assessments with proper diagnostic imaging, when necessary, during their formative years to avoid complex oral health problems

ACKNOWLEDGEMENTS

I would like to express my gratitude to the following individuals who made this project possible:
Donna Kritz-Silverstein, PhD, for her continuous support and insightful guidance during the course of this project.
A special thank you to Mary Calek, DDS, for offering your unlimited help and assistance.

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