



Tooth Agenesis in Individuals with Down Syndrome: A Meta-Analysis



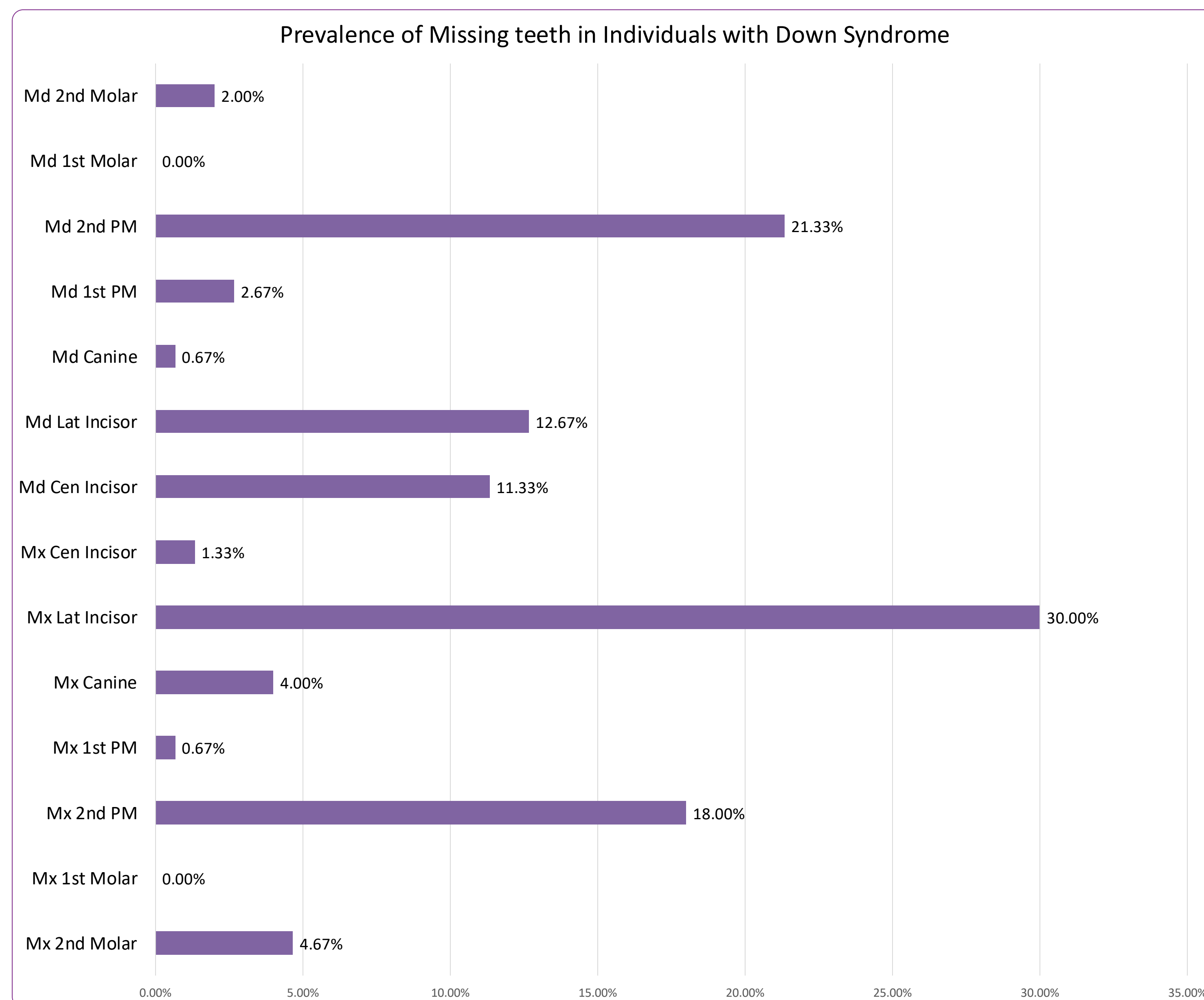
Renee C.I. Bechly, DMD; Tamer Marzouk, BDS, MS
Hennepin Healthcare, Minneapolis, Minnesota, USA

Objectives

- This study aimed to conduct a systematic review and meta-analysis to compare the prevalence of permanent tooth agenesis between individuals with and without Down syndrome (DS).

Methods

- A literature search of indexed databases (PubMed, Web of Science, and Embase) was conducted without language or age restrictions up to and including January 2026. Cross-referencing was used to identify additional articles.
- The eligibility criteria included observational studies with original data that used dental radiographs to assess the prevalence of permanent tooth agenesis among individuals with DS.
- A random-effects meta-analysis using the Mantel–Haenszel estimator was performed to evaluate the association between agenesis and DS, based on odds ratios (ORs) with 95% confidence intervals (CIs).



Results

- The literature search yielded 481 records, of which 28 full-text articles were reviewed. Seventeen studies comprising 6,677 individuals met the selection criteria and were included in the meta-analysis.
- The meta-analysis revealed a statistically significant association between agenesis and DS (OR, 26.06; 95% CI, 11.38–59.70). Among individuals with DS, the pooled prevalence of permanent tooth agenesis (excluding third molars) was 54%.
- The most commonly missing teeth were the maxillary lateral incisors and mandibular second premolars, followed by the maxillary second premolars. Considerable heterogeneity was observed among the included studies ($P < .0001$).

Conclusion

- Individuals with DS are more likely to present with congenitally missing permanent teeth when compared to individuals without DS. These individuals require long-term and multidisciplinary treatment plans to ensure a functional and esthetic dentition.

