

INTRODUCTION

Children with cleft lip and/or palate (CLP) are at increased risk for plaque accumulation, gingival inflammation, and dental caries due to altered anatomy, surgical scarring, and orthodontic appliances. Effective plaque control is essential for long-term oral health.

Dental disclosing solutions provide a visual method for plaque accumulation and can be used along with standardized indices, such as the Modified Quigley-Hein Plaque Index (MQHPI), to quantify oral hygiene status and differentiate between newly formed and mature plaque.

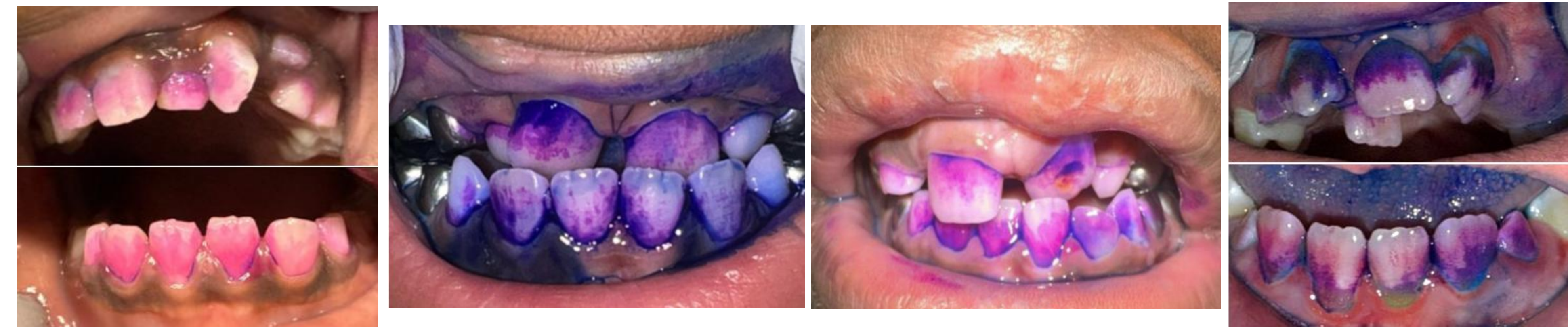
This study evaluates oral hygiene patterns in CLP patients using disclosing solution and MQHPI scoring of the facial surfaces of anterior teeth. Understanding baseline plaque distribution may help guide preventative strategies and oral hygiene education. *This project was designed as a pre-post quality improvement study. Due to limited follow-up compliance, current analysis reflects baseline cross-sectional data while longitudinal data collection is ongoing.*

METHODS

A prospective quality improvement study was conducted to evaluate the oral hygiene status of 45 patients seen in the Children's of Mississippi Cleft Lip and Palate Clinic.

Dental disclosing solution was applied to visualize acquired plaque. The Modified Quigley-Hein Plaque Index (MQHPI) was used as a standardized scoring system to measure the extent of plaque coverage on the facial surfaces of maxillary and mandibular anterior teeth.

For each participant, the following variables were recorded: MQHPI score, mean plaque score per patient, total plaque percentage, percentage of new plaque, and percentage of old plaque. Descriptive statistics were used to summarize plaque levels and evaluate overall oral hygiene status. **This analysis represents baseline data from an ongoing perspective quality improvement study with planned 3-month follow-up.**



RESULTS

After data collection, the records show the following trends:

- 45 participants evaluated using MQHPI on facial surfaces of anterior teeth
- Mean MQHPI: 3.71 ± 1.06 → moderate plaque accumulation
- Plaque present on 74.2% ± 21.3% → of evaluated surfaces
- Old plaque accounted for a greater portion of plaque (52.3%) compared to new plaque (41.5%)
- Mean MQHPI scores across primary dentition (3.71), mixed (3.65), and permanent dentition (3.76)
- Minimal differences in plaque accumulation between male and females were observed
- 3-month follow-up data is limited due to low return rates, and longitudinal analysis is ongoing

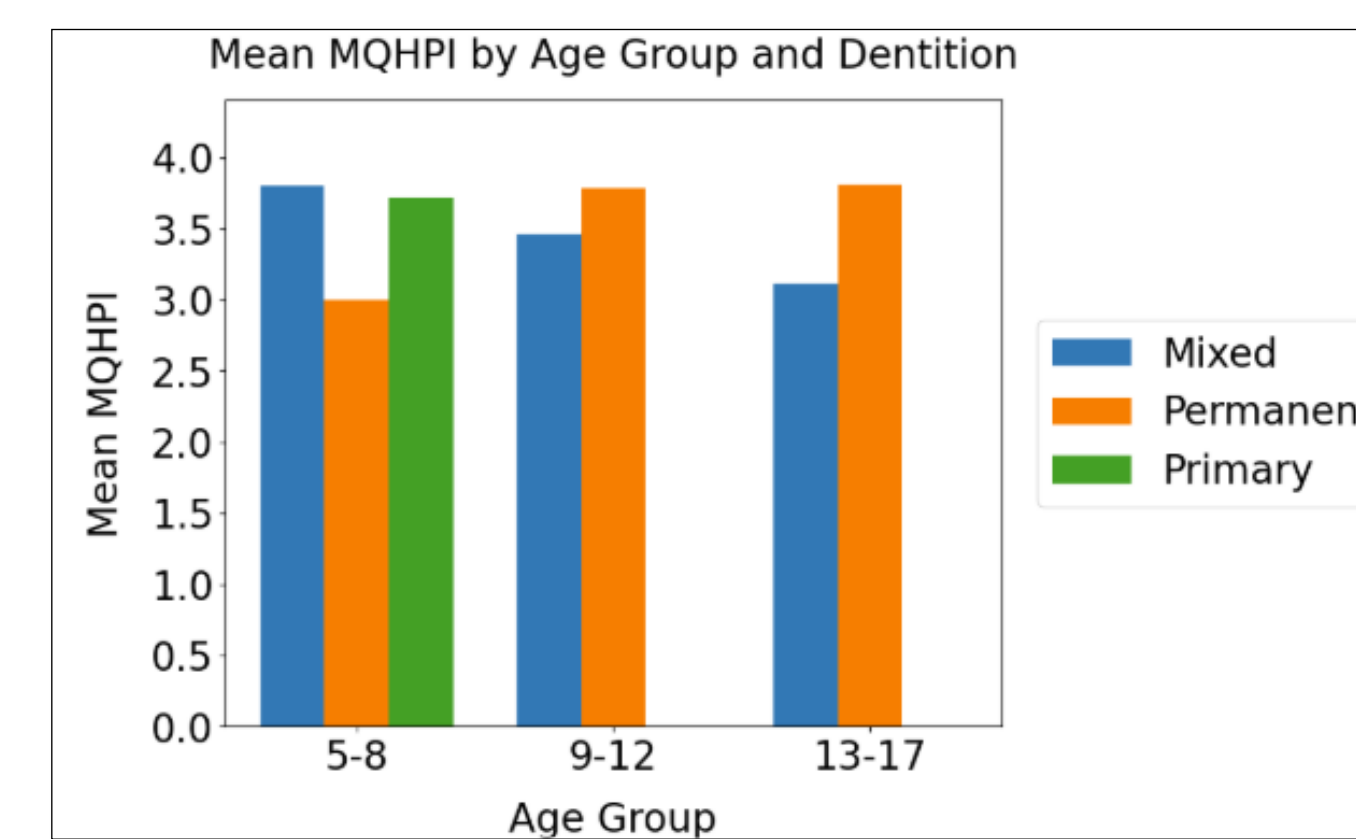


Figure 1: Mean MQHPI scores by age group and dentition type demonstrating variation in plaque accumulation across developmental stages.

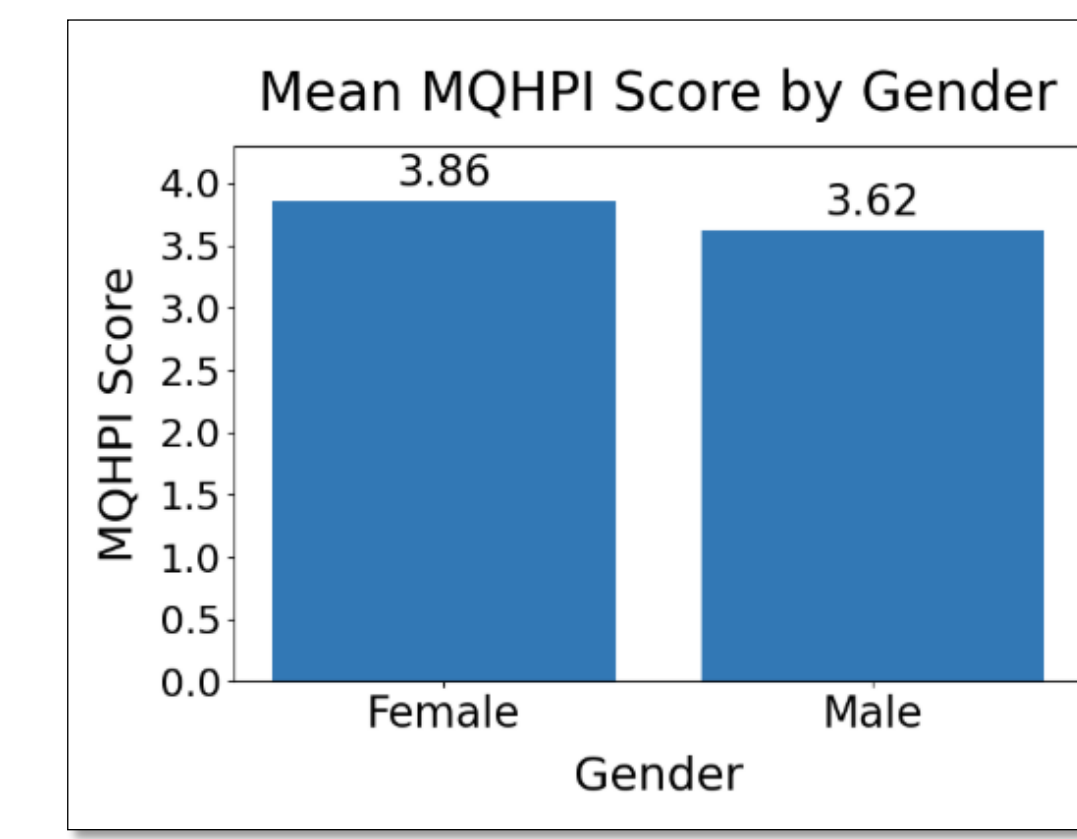


Figure 2: Comparison of mean MQHPI scores by gender, showing no clinical significant differences in plaque accumulation between male and female patients

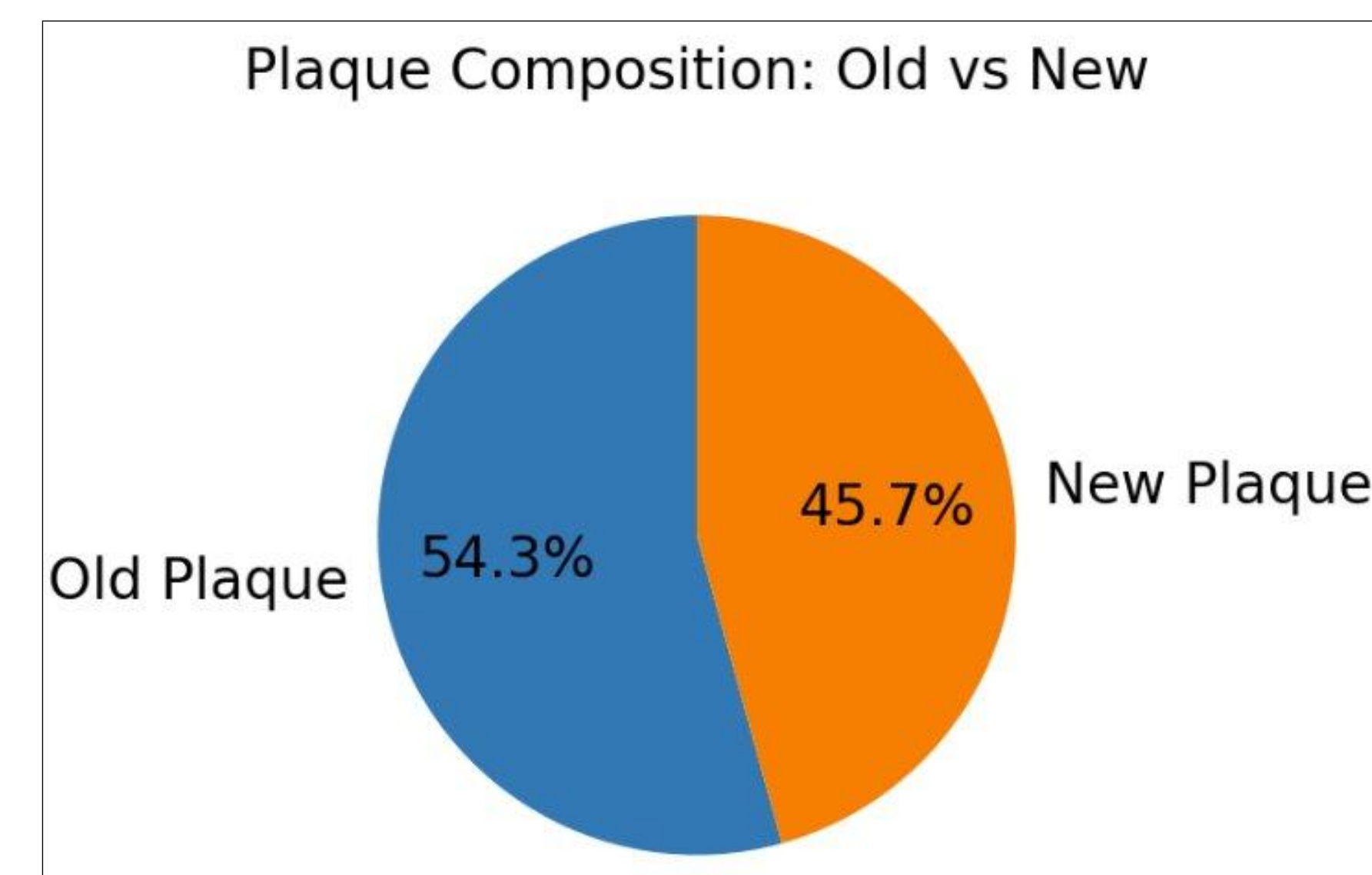


Figure 3: Distribution of plaque maturity shows greater accumulation of old plaque vs. new plaque. This suggests inadequate plaque removal

DISCUSSION

While this study was designed to evaluate changes following oral hygiene education, current findings reflect baseline oral hygiene status due to limited follow-up. Results demonstrated moderate plaque accumulation indicating suboptimal oral hygiene in this patient population. The predominance of mature (old) plaque suggest inadequate plaque removal and inconsistent oral hygiene practices.

Patients with cleft lip and palate may experience unique challenges in maintaining oral hygiene due to anatomical variations, scar tissue, or orthodontic appliances, which can increase plaque retention.

These findings highlight the need for targeted oral hygiene education, caregiver involvement, and preventive reinforcement to improve plaque control and support long-term oral health outcomes in this patient population. Ongoing data collection aims to evaluate the longitudinal impact of targeted oral hygiene education and parental engagement.

LIMITATIONS

- Limited follow-up compliance
- Inability to assess intervention effectiveness
- Single time-point (baseline) analysis
- Potential selection bias

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