

Abstract

Primary Objective: 1) Utilize a questionnaire that will assess the dental knowledge of caregivers with infants who have cleft lip and palate, at initiation and completion of NAM therapy. 2) Determine the effectiveness of at-home care by measuring bacterial activity via rapid adenosine triphosphate (ATP)-driven bioluminescence assay from the infant’s palate and NAM appliance.

Methods: The intervention group received an in-depth oral hygiene education program every NAM therapy visit, and the comparison group included caregivers who only received the standard oral hygiene education every visit. Each group consisted of 15 parent-child dyads. The initial and final visit required parents to complete a pre-therapy and post-therapy questionnaire assessing their dental knowledge. Appliance adjustments occurred every week for a total of 3 months therapy duration. Plaque was collected from the infant’s palate and appliance and tested for level of bacterial activity via (ATP)-driven bioluminescence assay (CariScreen Caries Susceptibility Monitor, CariFree of OralBiotech, Albany, OR). In addition, the palate, tongue and appliance were visually evaluated and graded for degree of cleanliness using the following plaque index: 0” = no plaque, “1” = minimal plaque, “2” = moderate plaque, “3” = gross plaque buildup. Those infants that established a dental home at the same clinic were evaluated for dental caries in the primary dentition.

Results: Questionnaires and bacterial activity were completed from 11 and 12 of the intervention and control parent-child dyads respectively. By completion of NAM therapy, the dental IQ of caregivers in the intervention group increased on average by 13 points compared to the control group that increased an average of 1 point. The intervention group had significantly lower bacterial activity on the NAM across the 12 weeks. In both groups, the CariScreen scores of the NAM increased with time, however, this was not significant. In contrast, the CariScreen scores of the palate slightly decreased with time, however this finding was not significant. Both groups had similar bacterial activity on the palate throughout the duration of the NAM appliance with a slightly lower CariScreen scores in the experimental group.

Conclusion: Implementation of anticipatory guidance topics during NAM appointments increased parent's dental IQ and led to improved cleanliness of NAM appliances.

Background

- Children born with cleft lip and palate are at an increased risk of dental caries in the primary dentition.
 - Pre-surgical nasoalveolar molding (NAM) is an adjunct to therapy used in some patients to reduce the severity of the cleft defect prior to initial lip surgery.
- Study Question:** Because acrylic appliances may harbor cariogenic bacteria, in this study, we evaluated if patient education during NAM appointments improves dental IQ, and if it would translate to cleaner appliances and reduced caries in the primary dentition.
- Hypothesis:** Improved dental IQ will correlate with less oral bacteria and reduced dmft scores in the primary dentition.

Methods

- Control and Experimental group each consisted of 15 parent-child dyads.
- The intervention group received an in-depth oral hygiene education program every NAM therapy visit, and the comparison group included caregivers who only received the standard oral hygiene education every visit.
- All parents took a pre-therapy and post-therapy questionnaire assessing their dental knowledge.
- At NAM adjustment appointments, plaque was collected from the infant’s palate and appliance and tested for level of bacterial activity via (ATP)-driven bioluminescence assay.
- dmft scores for those patients that established their dental home at our office were recorded at the end of the complete primary dentition (age 6).

Results

- Assessment of Dental Knowledge:**
- By completion of NAM therapy, the dental IQ of caregivers in the intervention group increased an average of 13 points which was significantly greater than that of the control group which increased an average of 1 point ($p<0.05$; Figure 1).
- Assessment of Bacterial Activity**
- The intervention group had significantly lower bacterial activity on the NAM throughout treatment ($p<0.05$; Figure 2).
 - In both groups, the NAM CariScreen scores increased with time (Figure 2).
 - There was no difference in bacteria activity on the palate (Figure 3).

- Primary Dentition Caries Rate**
- 41% of patients established their dental home in the NAM clinic (22% of control group, 54% of intervention group)
 - Average dmft score in intervention group was 0.52 (range 0.05-0.75).
 - Average dmft score in control group was 0.425 (range 0.35-0.5).
 - Insufficient sample size to draw conclusions.

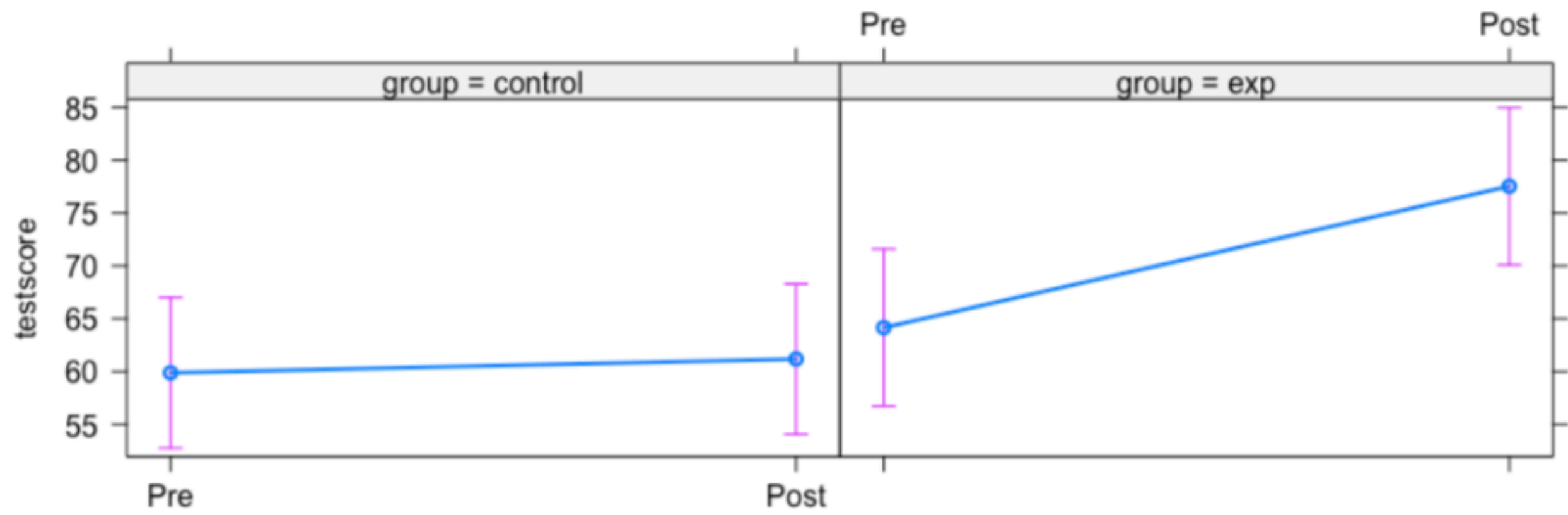


Figure 1: Dental IQ Questionnaire Scores

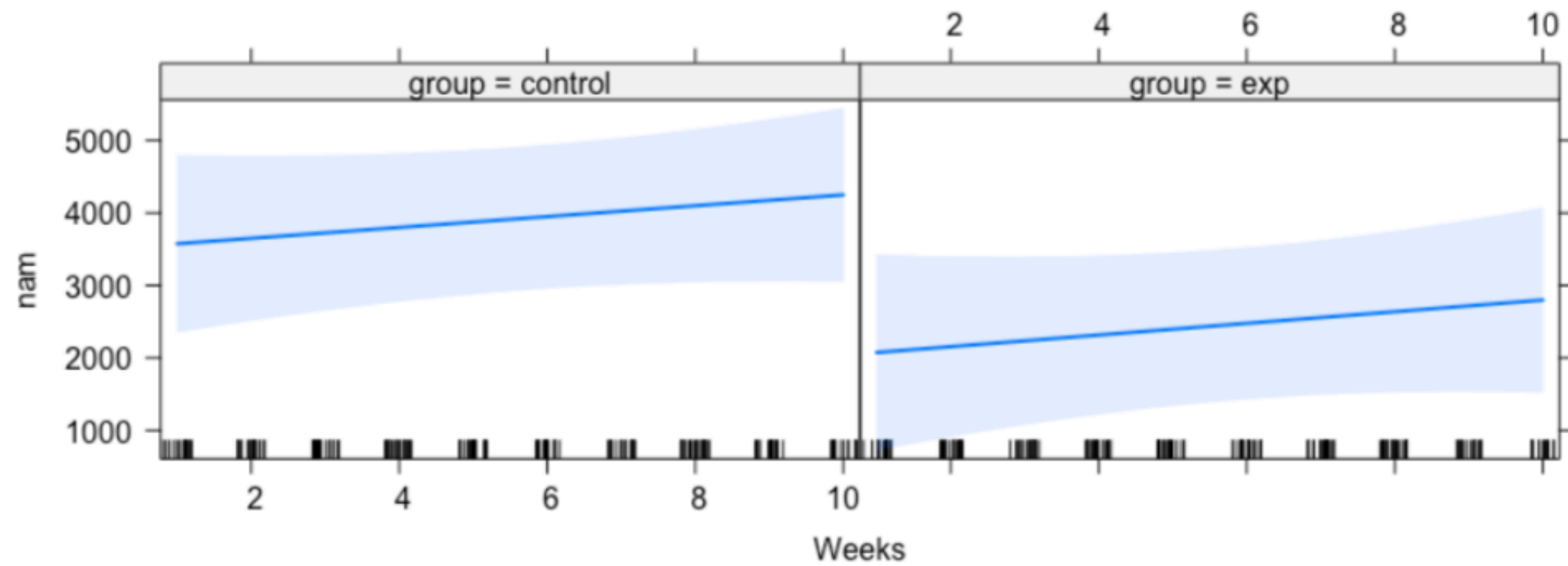


Figure 2: CariScreen NAM Bacteria Activity

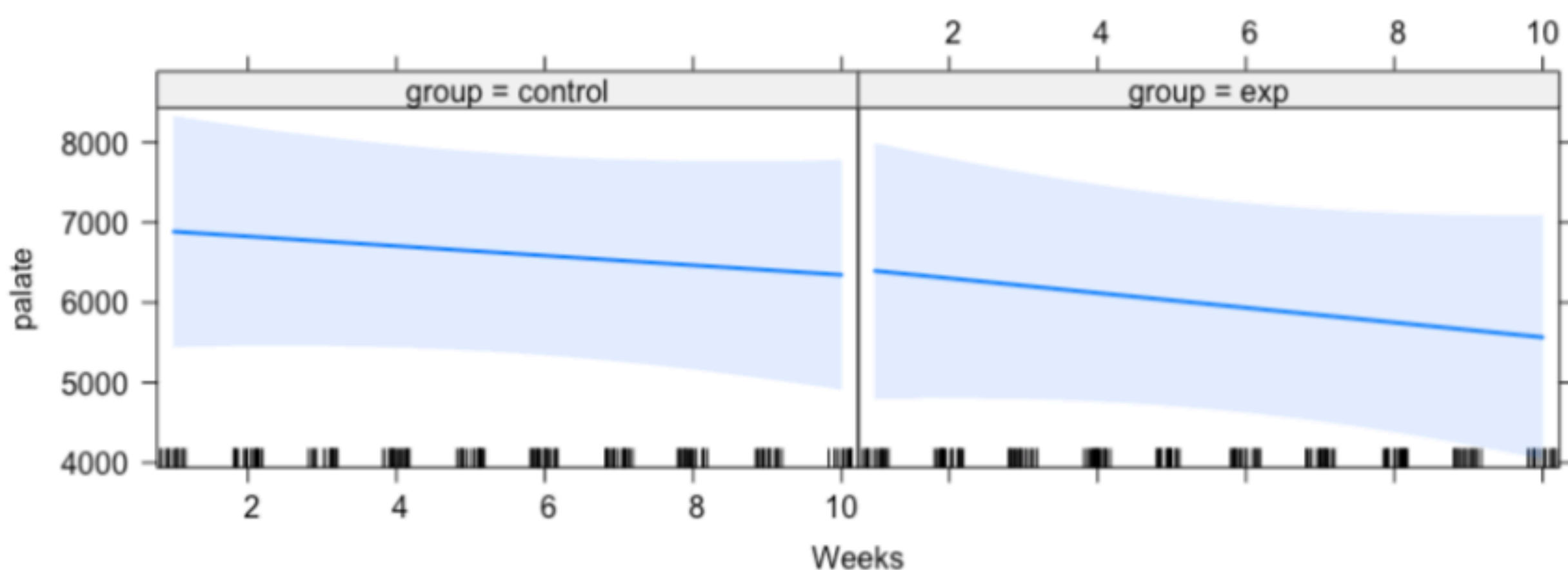


Figure 3: CariScreen Palate Bacteria Activity

Conclusions

- Implementation of anticipatory guidance topics during NAM appointments increased parent's dental IQ and led to improved cleanliness of NAM appliances.**
- Infant oral health education prior to tooth eruption can have a positive impact on parental dental knowledge, and should be emphasized in prenatal counseling.**
- dmft scores in the primary dentition were not affected by study group.**
- A larger sample size is necessary to determine the effect of anticipatory guidance during NAM appointments on oral health in the primary dentition.**

Acknowledgments

- Thank you to CariScreen for donating their CariScreen device for this research project.
- Thank you to the families that participated in this study.