

The Role of Animal Assisted Therapy in Mediating Pediatric Dental Anxiety

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ABSTRACT

BACKGROUND & OBJECTIVES: Dental anxiety is defined as an emotional state of extreme stress or apprehension when exposed to the environment of a dental setting. This condition manifests in childhood and can cause avoidance behaviors into adulthood if left unresolved. This can increase the risk of oral disease, poor oral health, tooth loss, infection, and in severe cases death. To identify a low-risk, non-pharmacological approach for anxiety and pain management in dentistry, a cross-sectional, prospective pilot clinical trial was conducted. The effects of animal assisted therapy (AAT) on pediatric patients were measured by comparing objective measures of anxiety, along with self-reported measures of anxiety, fear and pain, during an invasive dental procedure.

METHODS: Children aged 7-14 years were consecutively enrolled into an AAT (n=18) or a control (n=21) group. Salivary samples, heart rate, and self-reported measures were collected at key points during the clinical encounter, which involved an invasive dental procedure. Descriptive statistics and bivariate tests with a conventional p<0.05 significance criterion were used to compare objective and subjective measures between groups.

RESULTS: There were significantly reduced levels of heart rate (HR) in the AAT group when compared to the controls. However, salivary cortisol and alpha (α)-amylase levels showed no change between any groups. The AAT group reported significantly reduced post-operative pain compared to the controls. There was a statistically significant difference in relaxed lower body differences, with the AAT group having longer relaxed lower body as compared to the control group.

CONCLUSIONS & IMPLICATIONS: Animal assisted therapy may reduce pediatric dental anxiety and its continued use can result in its permanent implementation as an anxiety management tool within dentistry.

INTRODUCTION

- Dental anxiety is prevalent within 23.9% of the pediatric population of 3-18 years old (1).
- Around 50.9% of adults who displayed avoidant behaviors towards routine oral care and maintenance reported early anxiety onset in childhood due to traumatic dental experiences (2).
- Animal-Assisted Therapy (AAT) is an intervention that utilizes a well-trained therapy animal to achieve treatment goals, such as reducing anxiety (3).
- AAT has been used successfully in a myriad of medical settings, with limited but encouraging data from dentistry. AAT holds promise for anxiety and behavior management, without the risks and costs of sedation.
- A prospective pilot study on AAT was conducted to identify optimal methods for measuring dental anxiety using objective, physiologic measures along with subjective, self-reported scales.



Figure 1: Certified canine therapist, Grayson Sigg, who comforted children at UNC Graduate Pediatric Dental Clinic.

METHODS & MATERIALS

AIMS: Quantitatively determine if animal assisted therapy reduces pediatric dental anxiety and evaluate the effectiveness and sustainability of animal assisted therapy as a long-term tool to reduce pediatric dental anxiety.

Since animal assisted therapy has reduced anxiety among patients within other medical settings, we theorized that pediatric patients would display maintained lower physiological stress data and reduced pain, fear, and anxiety with the intervention of AAT.

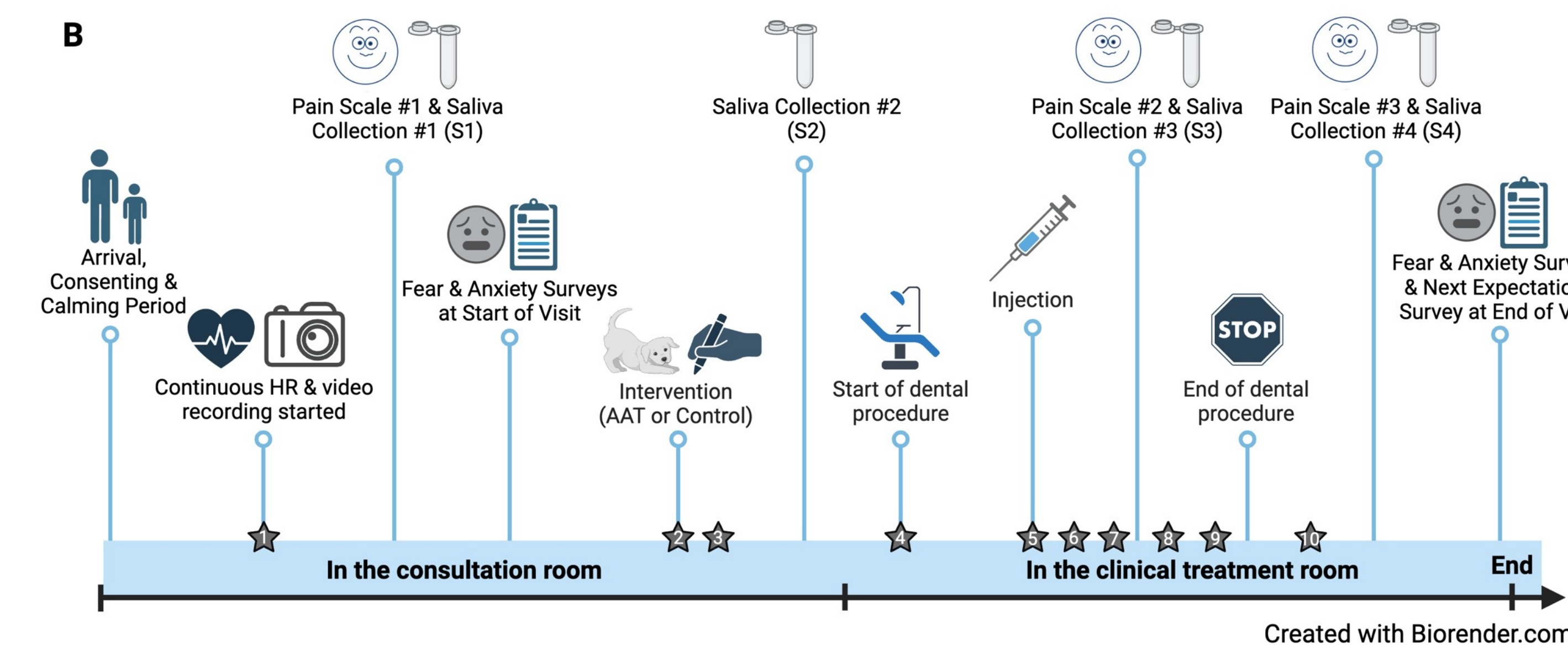


Figure 2: (A) Cohort and Methods. Cohort description and types of physiologic/objective and self-report/subjective measures collected during the pilot controlled prospective clinical trial. (B) Study Visit Summary. Enrolled subjects were randomized to a dog intervention or active control (coloring). Data were evaluated for feasibility, yield and variability. AAT and control data were compared.

KEY TAKEAWAYS:

- Heart rate data were collected via the Shimmer or Polar device.
- Saliva was collected via salivettes; later analyzed for salivary amylase and cortisol which are physiological markers of stress (5). Saliva samples were collected from during key points of the visit starting from before provider interaction, therapy intervention, treatment, and after the visit.
- Behavioral coding was conducted on videos taken throughout visit which was then analyzed using a validated behavioral coding scale (PAFCA).
- The pain, fear, anxiety data was collected through self-reported surveys and assessments.

RESULTS

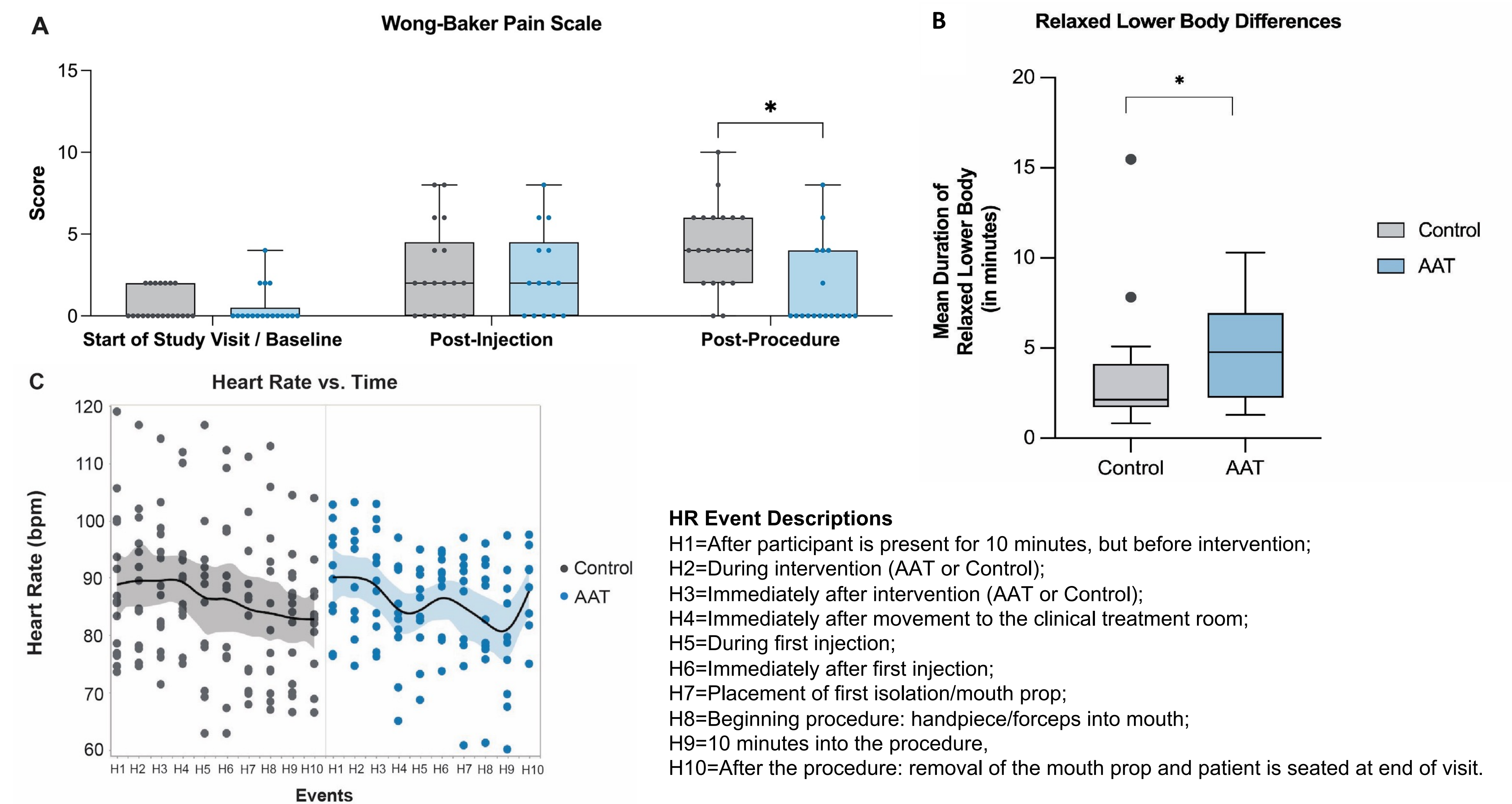


Figure 3: (A) Wong-Baker Pain Scale. A significant difference was observed post-procedure with AAT reporting less pain (p<0.05). (B) Relaxed Lower Body Differences. There was a statistical significance of sustained relaxed lower body physiological differences in the AAT group as compared to the control group. (C) Heart Rate Data with corresponding event points. Less range of HR is observed in the AAT group. Two distinct HR drops can be noted in the AAT group corresponding to moving to the clinical treatment room and beginning the dental procedure, when anticipatory anxiety is often high.

CONCLUSIONS

- There was a significant reduction in post-operative pain in pediatric patients who were exposed to animal assisted therapy.
- Significant trends in sustained relaxed lower body differences as supported through consistent behavioral video data by PAFCA.
- These measures show promise with animal assisted therapy as a continued tool to reduce pediatric dental anxiety.

FUTURE DIRECTIONS & CLINICAL RELEVANCE

- A team approach is needed to manage pediatric dental anxiety with the assistance of a therapy dog, the dental provider, and animal handler.
 - AAT may be an effective adjunctive non-pharmacological anxiety and behavioral management tool in pediatric dental patients to reduce avoidance behavior for improved lifelong dental health.
- FUTURE DIRECTIONS:**
- Continuation of prospective studies on developing animal assisted therapy for a clinical anxiety management tool is needed.
 - Animal assisted therapy can be applied beyond the scope of dentistry into medical settings to aid adults with avoidant and anxiety behaviors

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