

Do Certified Therapy Dogs Improve Behavior and Reduce Anxiety in Children Who Receive Administration of a Local Anesthetic for Dental Procedures? A Randomized Controlled Trial

Robert Griffeth, DMD

Julie L. Marshall, PhD; Deirdre S. Williams, DDS, MS; Michael G. Schmidt, PhD; Jackson Algiers, DMD; Mary Elizabeth Shue; Cathy Bennett; Suzanne Craig, DVM, DACLAM, MBA

BACKGROUND

In 2023, the American Academy of Pediatric Dentistry (AAPD) released guidelines for nonpharmacological behavior guidance for pediatric dental patients. Among the recommendations was animal-assisted therapy (AAT), though the authors note that “There is a need for high quality research to substantiate the effect of AAT during dental treatment”. This study aims to contribute to the growing literature on AAT.

METHODS

This study is a prospective, single-center, parallel-arm randomized controlled trial, conducted in the Pediatric Dental Clinic in the James B. Edwards College of Dental Medicine at the Medical University of South Carolina (MUSC). Participants were randomized into the therapy dog group or the control group on a 1:1 basis. Pediatric dental patients between the ages of 3 and 7 who will undergo a restorative procedure requiring the use of nitrous oxide and the injection of a local anesthetic and meet other eligibility criteria were eligible for the study. Behavior was measured at four time points using the Frankl score, and anxiety was measured at the same four time points using heart rate. We used an independent samples t-test to evaluate the heart rate between the two groups at each time point and the Mann-Whitney test to evaluate the Frankl scores at each time point. The accompanying parent of each participant was surveyed to gauge their interest in the use of therapy dogs in the dental office.

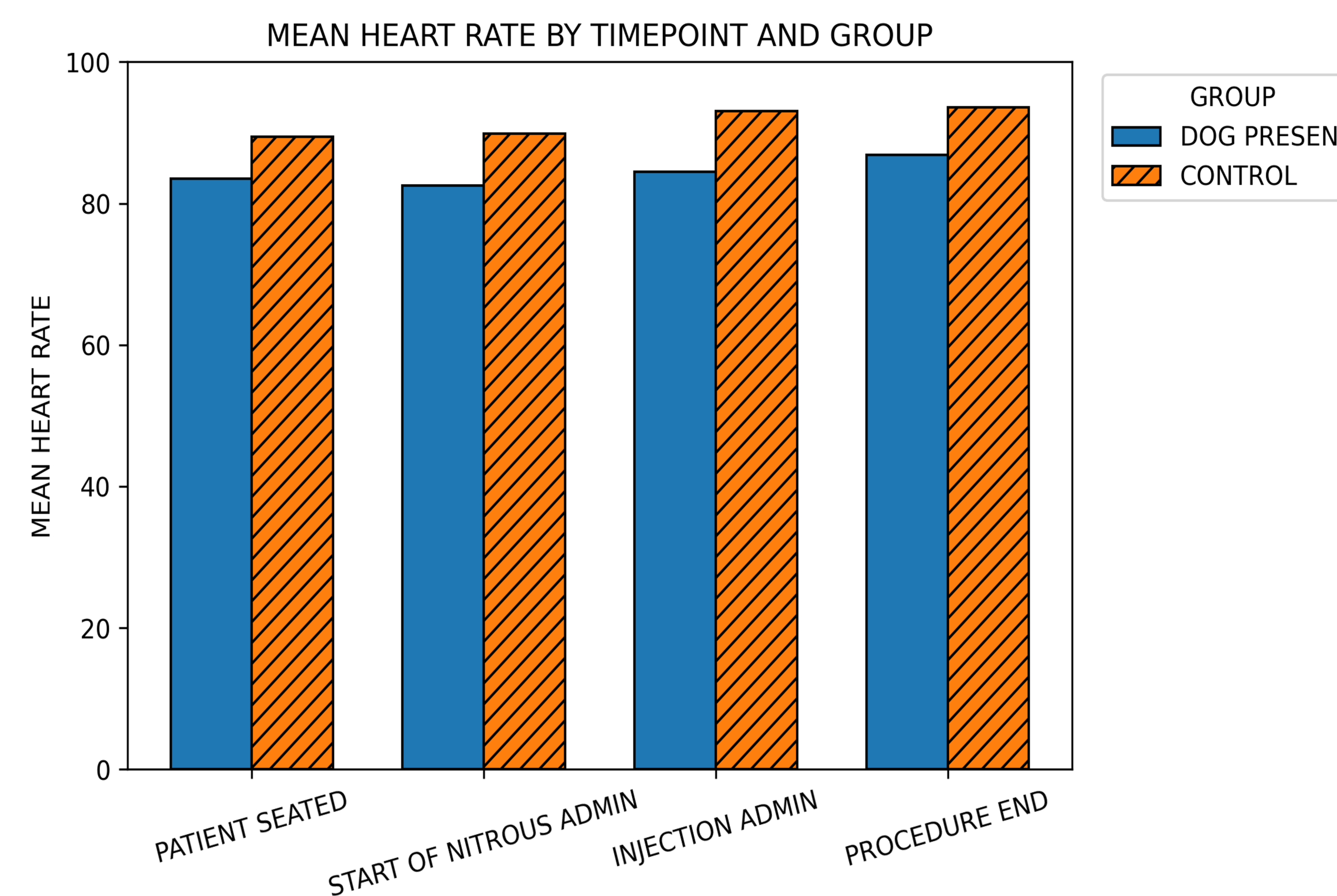
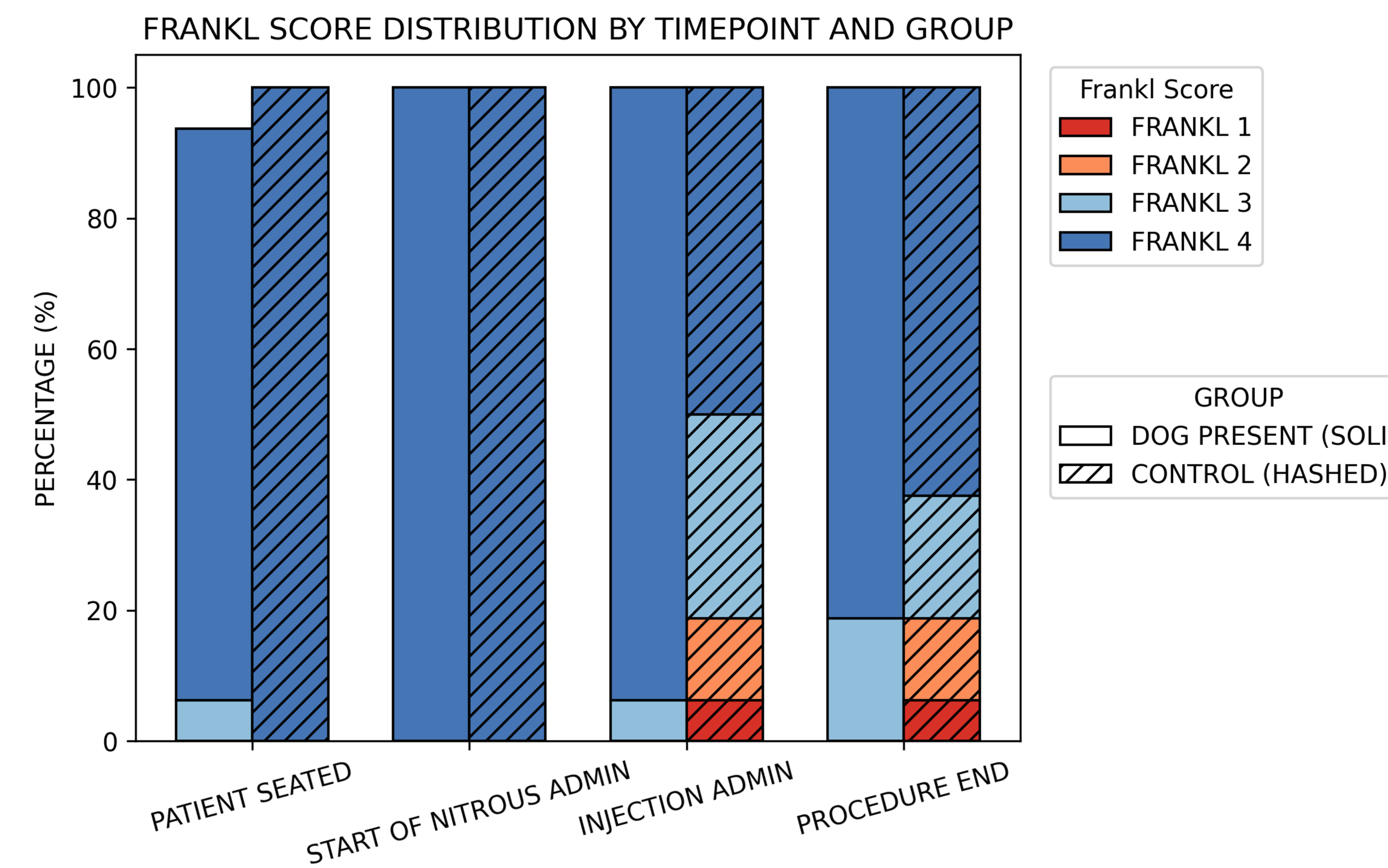
Data Analysis

HEART RATE — INDEPENDENT T-TEST (n=32)

TIMEPOINT	DOG MEAN HR	CONTROL MEAN HR	P VALUE
PATIENT SEATED	83.5	89.44	0.2603
NITROUS START	82.56	89.88	0.1035
INJECTION ADMIN	84.44	93.06	0.1391
PROCEDURE END	86.88	93.62	0.2101

FRANKL SCORES — MANN-WHITNEY U (n=32)

TIMEPOINT	DOG MEDIAN FRANKL	CONTROL MEDIAN FRANKL	P VALUE
PATIENT SEATED	4.0	4.0	0.1639
NITROUS START	4.0	4.0	1.0
INJECTION ADMIN	4.0	3.5	0.0065
PROCEDURE END	4.0	4.0	0.181



Study is being conducted under MUSC IRB Approval Pro00129098 and NCT06057090

RESULTS

Heart rate was not significantly different between the intervention and control groups at any timepoint ($p > 0.05$). Frankl scores were significantly higher in the group with therapy dogs during the administration of injection ($p = 0.0065$). However, there were no statistically significant differences at the three other data collection timepoints. Further research will need to be done to conclude their impacts on physiological aspects. A limitation of this study is its small sample size ($n=32$).

CONCLUSIONS

The results indicate that therapy dogs did not produce a measurable effect on heart rate, as no significant differences were observed between groups at any timepoint. However, the presence of therapy dogs was associated with significantly higher Frankl scores during the injection phase, suggesting improved behavioral responses at a critical moment of treatment. No significant differences were found at the other measured timepoints, indicating that the effect may be limited or situation-specific. In pediatric dentistry, this finding suggests that therapy dogs could be a useful non-pharmacological tool to reduce anxiety and improve cooperation during procedures such as injections. Nonetheless, the small sample size limits the generalizability of the results, and further research is needed to better understand their broader physiological and behavioral impacts in clinical practice.

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