

Green Light Exposure in Pediatric Dental Patients with Autism

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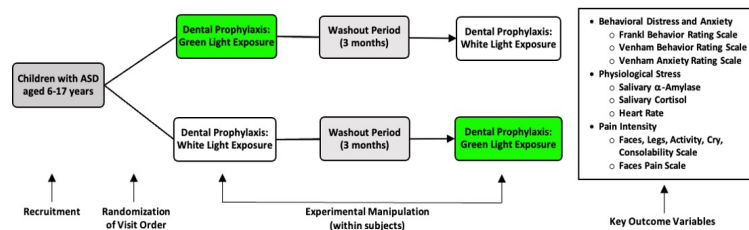
Background

- Light therapy has been used for the management of several medical conditions, including sleep disorders, depression, wound healing, and back pain¹
- Preclinical studies have shown that exposure to green light results in anti-nociception, anti-hyperalgesia, and anxiolysis²
- Adult patients with fibromyalgia³ and migraine⁴ reported improved pain and quality of life when exposed to green light for 1-2 hours daily over 10 weeks
- Green color exposure was shown to significantly reduce anxiety and pain during IV placement for sedation dentistry in healthy adult patients⁵

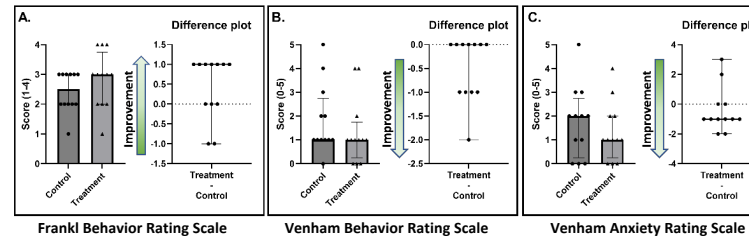
Methods

- Twelve children diagnosed with ASD, aged 6 - 17 years, requiring dental prophylaxis participated in this study
- Using a randomized counterbalanced study design, each participant underwent two visits three months apart: one prophylaxis in a standard white light-exposed dental operator (control) and one prophylaxis in a green light-exposed dental operator (treatment)
- Outcome measures:
 - Physiological stress was measured by heart rate and salivary levels of alpha amylase and cortisol
 - Behavioral distress and anxiety were assessed by the Frankl Behavior Rating Scale, Venham Behavior Rating Scale, and Venham Anxiety Rating Scale
 - Pain intensity was evaluated by both the Faces Pain Scale and the Faces, Legs, Activity, Cry, and Consolability Scale

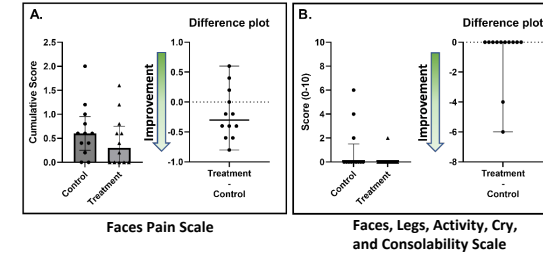
Study Design



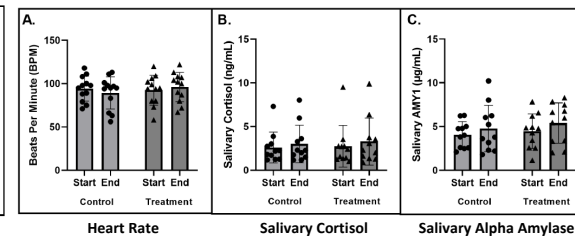
Behavior Results



Pain Intensity Results



Physiological Results



Conclusions and Acknowledgments

- Green light exposure during dental prophylaxis may help to reduce uncooperative behavior in pediatric patients with ASD
- As uncooperative behavior is the most commonly reported barrier for treating children with ASD^{6,7}, the use of green light exposure during dental treatment is a potential technique to increase successful outcomes for this vulnerable patient population, thus increasing access to care
- Further understanding of the mechanism(s) underlying sensory processing difficulties in children with ASD may help to facilitate the development of an individualized clinical management plan for pediatric patients with special health care needs

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¹Hansen et al., 2017 Int J Environ Res Public Health; ²Ibrahim et al., 2017 PAIN; ³Martin et al., 2021 Pain Medicine; ⁴Martin et al., 2021 Cephalogica; ⁵Takemura et al., 2021 Int J Environ Res Public Health; ⁶Casamassimo et al., 2004 J Dent Educ.; ⁷Alshihri et al., 2021 J Autism Dev Disord