

Evaluation of pain-alleviating strategies during allergy shots (subcutaneous immunotherapy): A randomized controlled study

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Introduction/Background

Background

Subcutaneous immunotherapy (allergy injections) is a potentially disease-modifying therapy that is effective for the treatment of allergic rhinitis/conjunctivitis, allergic asthma, and stinging insect hypersensitivity. Pain, which results from the irritation of nearby nerves, is a common concern of patients, particularly in children, during or after the injections. This can be a stressful and negative experience for children that makes it difficult for parents and children to return for future injections. These injections are given every 1-6 weeks for 5 years. Currently, there are various techniques available to minimize pain in general. However, there is a lack of published research on how to use these techniques in children receiving allergy injections.

Literature Review

- Databases: PubMed, Clinical Key, & Google Scholar databases were searched.
- Keywords: "subcutaneous immunotherapy" OR "allergy shot*" AND "pain" were entered.
- Results: Only able to find 3 studies that even mention pain in conjunction with subcutaneous immunotherapy/allergy shots.

Purpose of the Study

The purpose of this study is to evaluate and compare the efficacy of the standard of care method (ethyl chloride/Pain Ease spray) and three non-pharmacological pain-control devices (Buzzy Bee I, Buzzy Bee II, and Shot Blocker) in decreasing the perception of pain during subcutaneous allergy injection in a pediatric allergy/immunology clinic setting.

Methods

Study Design and Duration

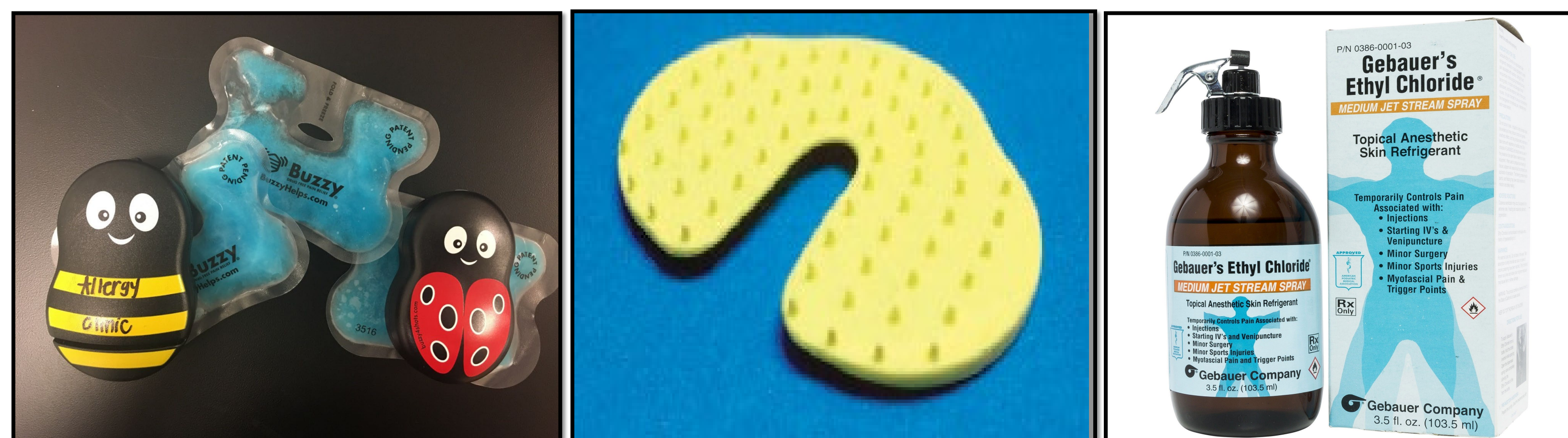
- This is a randomized controlled pilot study in which 40 children aged 4-18 years who presented to receive their immunotherapy injection in our Allergy and Immunology Clinic were enrolled and randomly assigned to one of five color-coded study groups (4 intervention/experimental groups and 1 comparison/control group):

Interventional Groups

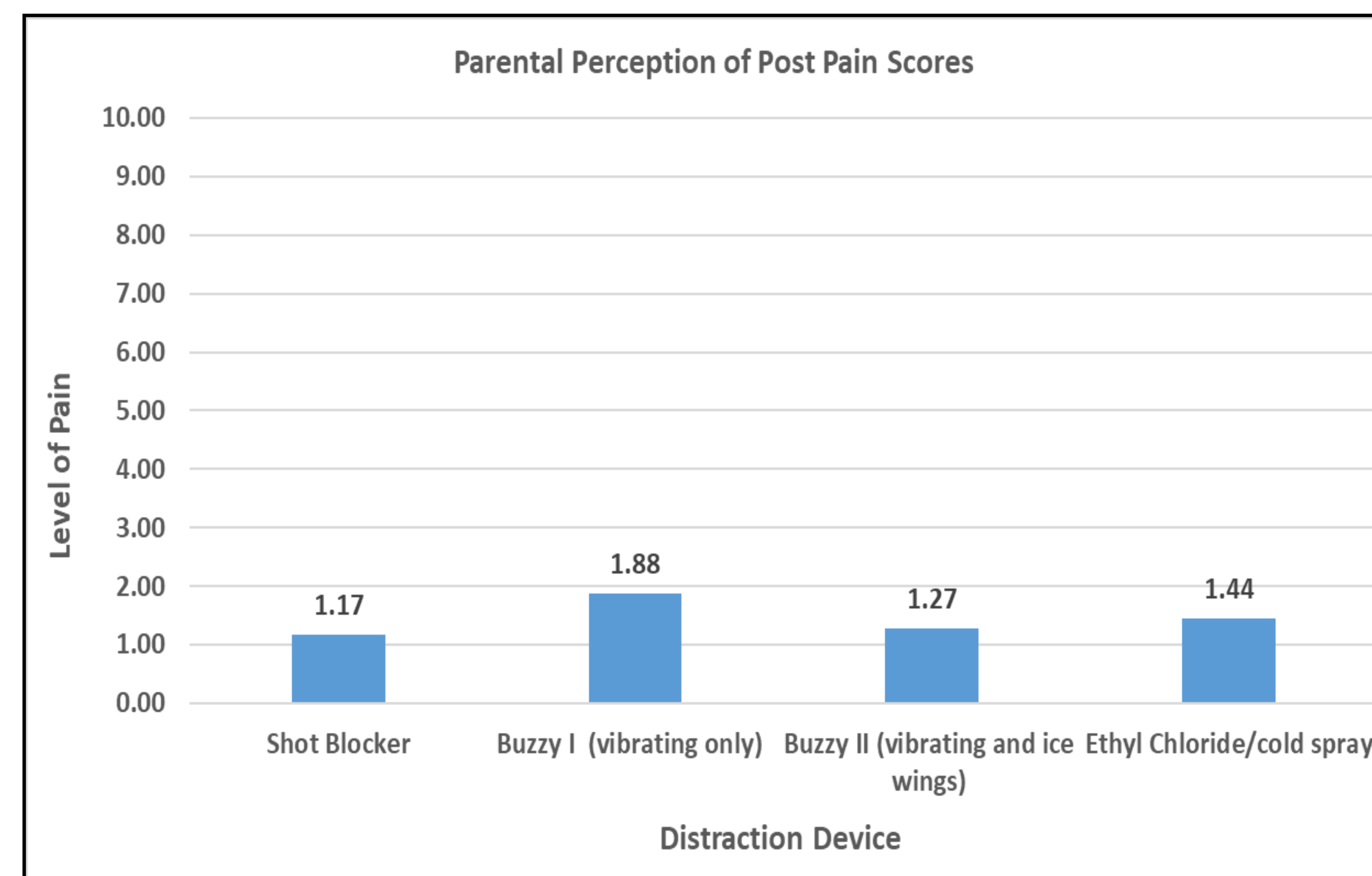
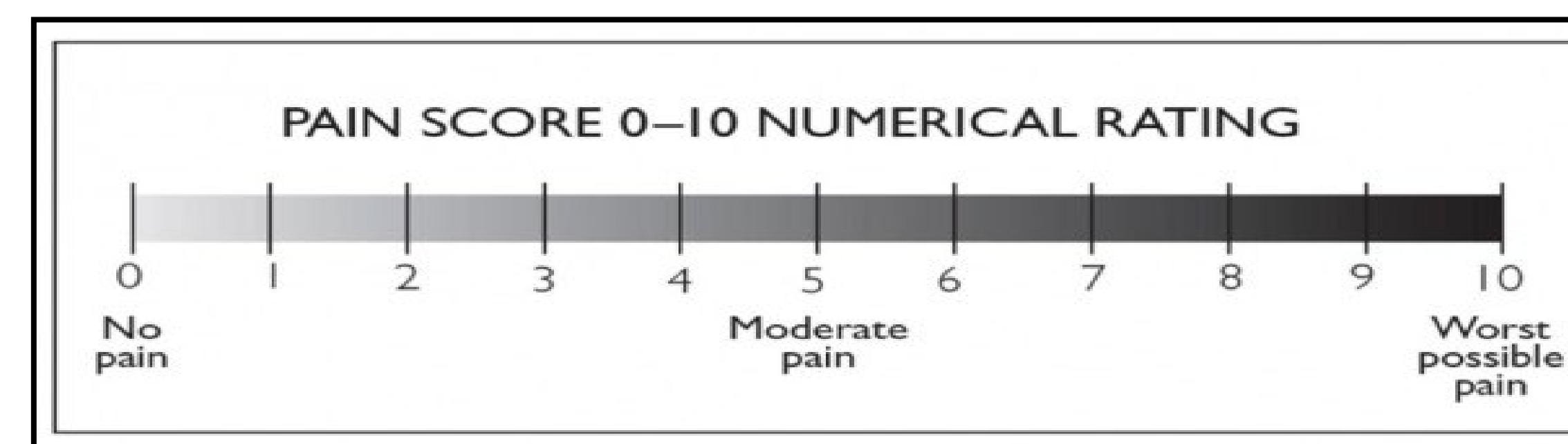
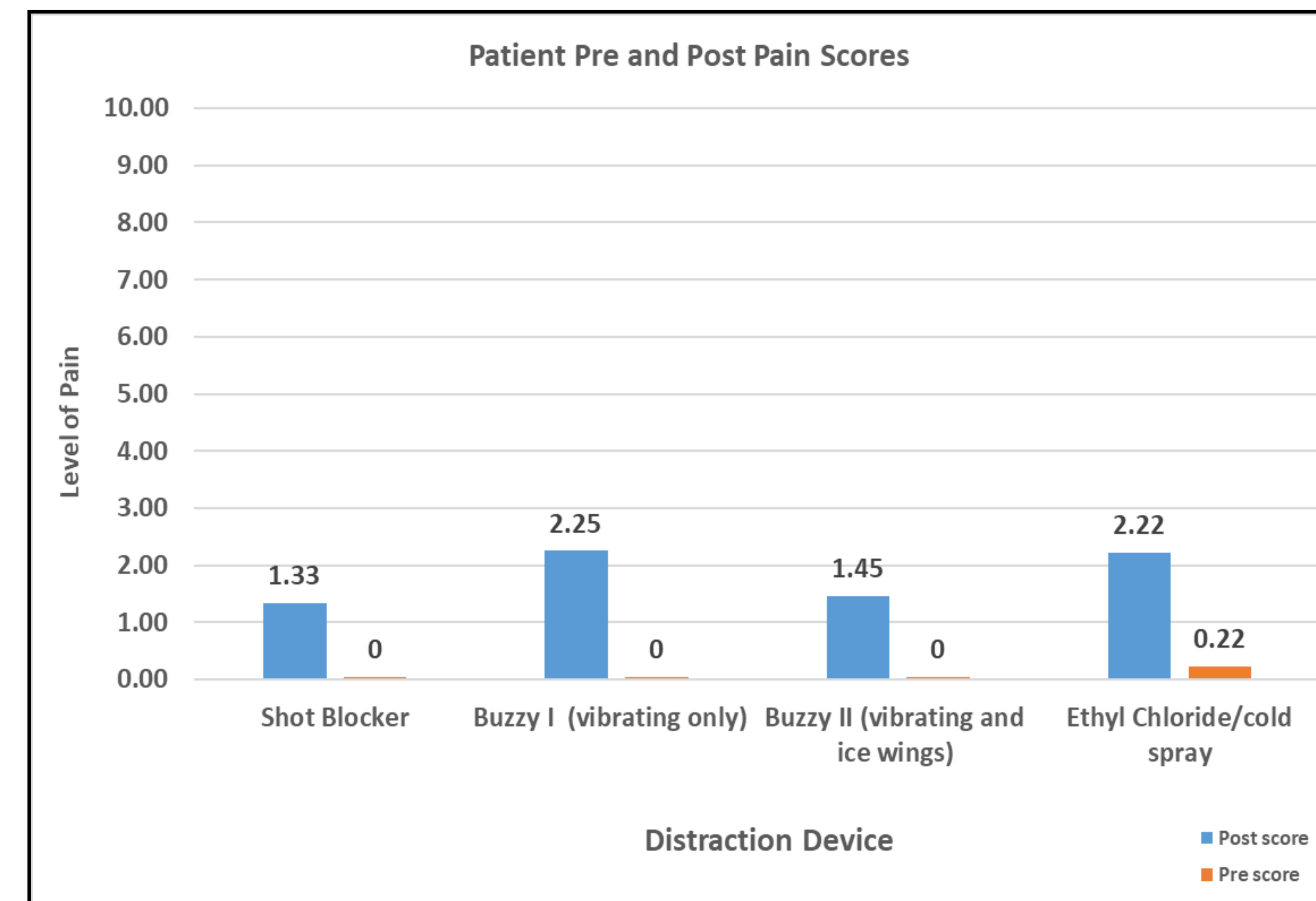
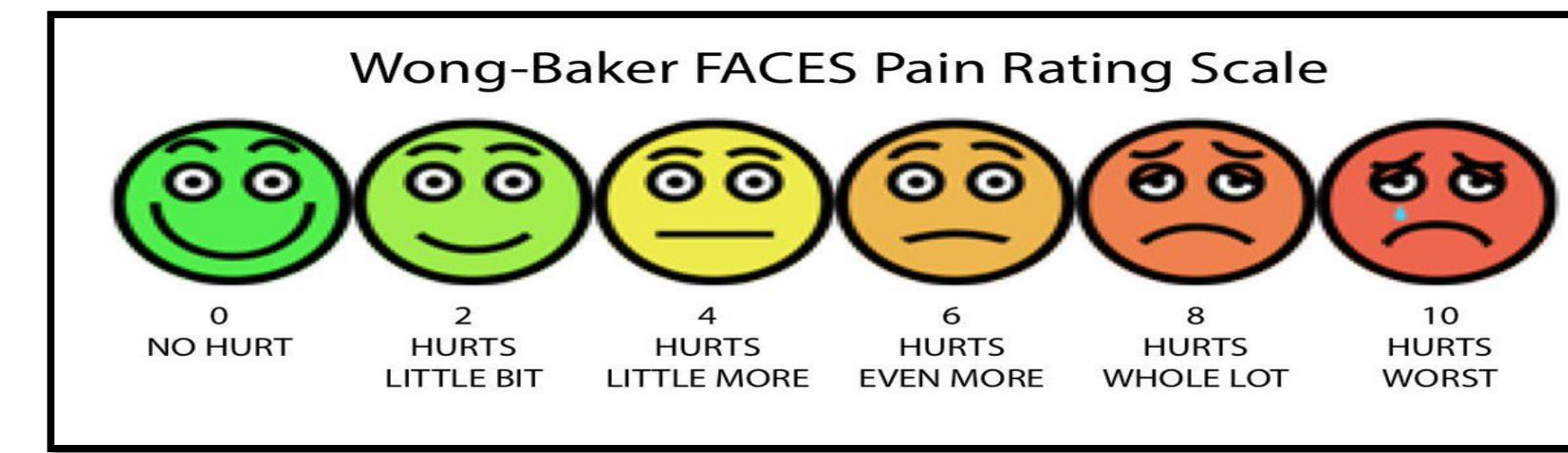
1. Shot Blocker® # 1-25 (RED)
2. Buzzy I (vibrating only) # 26-50 (GREEN)
3. Buzzy II (vibrating and ice wings) # 51-75 (BLUE)
4. Ethyl Chloride/Pain Ease Spray # 76-100 (YELLOW)

Control Group (standard of care)

- Prior to the application of the distraction method, the investigator interviewed the parent to collect data related to demographic information and their child's current allergy health and treatment regime.
- The child's pain perception was assessed before and after the allergy injection. The parent's perception of their child's pain was assessed after the allergy injection. After completion of the second visit, the child's study participation was complete.



Results



Results/Conclusion

Conclusion

- Several techniques and devices may be used to minimize the pain of allergy shots in children including Shot Blocker, Buzzy I, Buzzy II with ice wings, and ethyl chloride/Pain Ease "cold spray" (used as a control in our study).
- Data were collected prospectively on 40 patients. Retrospectively, we reviewed the charts of 150 shot patients and found that 141 of them use at least one distraction technique (95%). This implies most patients want to use something for pain relief during allergy shots.
- We learned in this small exploratory study that the Shot Blocker resulted in the lowest mean child-reported pain score of 1.33, followed closely by Buzzy Bee II (with ice wings) with a mean of 1.45 as compared with 2.22 in the control group and 2.25 in the Buzzy I (vibrating only) group. The same pattern was seen in the parental perception of pain scores.
- The hypothesis raised by the study regarding potential superiority of the Shot Blocker and/or Buzzy II over Buzzy I and the standard of care treatment will require more thorough examination in a study with larger sample size.
- Of these 40 children, 12 received the Shot Blocker, 8 received the Buzzy I, 11 received the Buzzy II, and 9 received ethyl chloride spray (control group).
- There were no significant differences found between each of the distraction devices and the control group. Type II error/false negative finding cannot be ruled out because of a small sample. Therefore, we cannot conclude that no true difference exists between each distraction device and the control group simply because of occurrence of a non-significant P-value in our study.

Suggested Reading

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