

Damon Morris, DO; Benjamin Schrant, DO; Shalini Bhatia, MS

## Introduction

Current literature shows preemptive analgesics after dental extractions are more beneficial in postoperative pain control than placebo.<sup>1-3</sup> In a pediatric population undergoing dental extractions, preemptive analgesia resulted in lower pain scores than placebo regardless of age, gender, weight, and number of extractions.<sup>3</sup>

**Purpose:** To determine whether acetaminophen or ibuprofen can be administered preoperatively as preemptive analgesia in pediatric patients undergoing outpatient surgery while maintaining a low side effect profile.

**Hypothesis:** Ibuprofen will be a better preemptive analgesic than acetaminophen when analyzing postanesthesia care unit (PACU) fentanyl dosage and postoperative Face, Legs, Activity, Crying, Consolability (FLACC) scale scores.

## Methods

**Inclusion criteria:** Pediatric patients aged 2-11 years scheduled for outpatient dental rehabilitation procedures.

**Exclusion criteria:** Patients with known allergy to acetaminophen or ibuprofen or with a known bleeding disorder.

**Study design:** Random placement into acetaminophen or ibuprofen group.

- Standardized, weight-based dose of analgesic
- Standardized care in the operating room with general anesthesia
- PACU monitoring by blinded nursing staff

**Endpoints:** PACU fentanyl dosage and FLACC scale<sup>4</sup> scores.

## Results

50 healthy pediatric patients participated in the study.

- 24 (48%) received ibuprofen
- 26 (52%) received acetaminophen

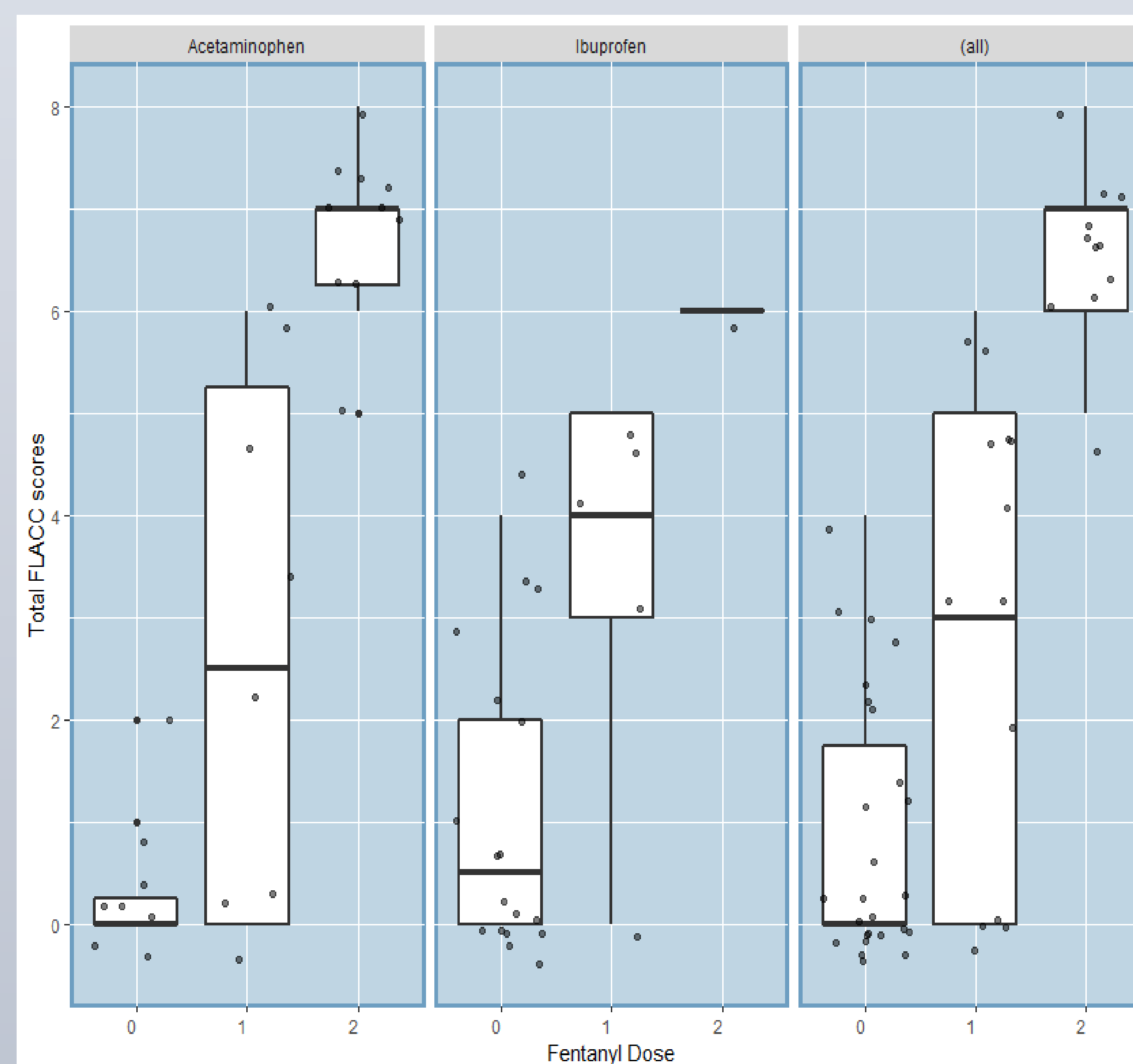
## Results

**Table 1.** Demographic Characteristics of Study Participants

Variable	Acetaminophen (N=26)	Ibuprofen (N=24)
Age, years Mean (SD)	5 (1.7)	4.63 (2.1)
Gender, n (%)		
Male	14 (28)	14 (28)
Female	12 (24)	10 (20)

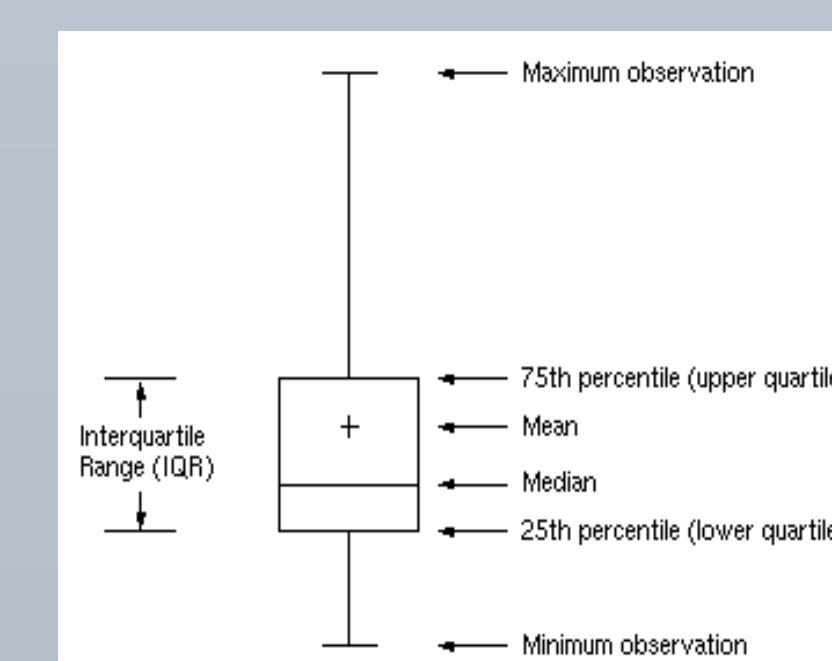
No difference ( $P=.06$ ) was found in median FLACC scores for acetaminophen (median=4) or ibuprofen (median=1) groups.

Differences ( $P=.002$ ) were found in median fentanyl dosage in the acetaminophen (median=1.1) and ibuprofen (median=0.3) groups.



**Figure.** Comparison of Groups by Fentanyl Dosage and FLACC score

Note: Legend to the right can be used to interpret the figure.



## Results

FLACC score ( $P<.001$ ) and preemptive analgesic ( $P=.009$ ) significantly predicted fentanyl dosage. The probability of getting no fentanyl was 0.67 in the acetaminophen group and 0.18 in the ibuprofen group.

**Table 2.** Predicted Probabilities of Various Fentanyl Dosages by Group

Fentanyl Dosage	Group	Probability
0	Acetaminophen	0.18
0	Ibuprofen	0.67
1	Acetaminophen	0.74
1	Ibuprofen	0.32
2	Acetaminophen	0.08
2	Ibuprofen	0.009

Note: Mean FLACC score was 2.7.

## Conclusion

The ibuprofen group had lower FLACC scores and a lower fentanyl dosage, which suggested that ibuprofen may be better than acetaminophen as a preemptive analgesic for pediatric patients undergoing outpatient surgery.

Although findings from this study may be beneficial for this patient population and may improve clinical practice, additional research is needed to confirm results.

## References

1. Moore PA, Acs G, Hargreaves JA. Postextraction pain relief in children: a clinical trial of liquid analgesics. *Int J Clin Pharmacol Ther Toxicol* 1985; 23: 573-577.
2. Gazal G, Mackie IC. A comparison of paracetamol, ibuprofen or their combination for pain relief following extractions in children under general anaesthesia: a randomized controlled trial. *Int J Paediatr Dent* 2007; 17: 169-177.
3. Baygin O, Tuzuner T, Isik B, Kusgoz A, Tanriver M. Comparison of pre-emptive ibuprofen, paracetamol, and placebo administration in reducing post-operative pain in primary tooth extraction. *Int J Paediatr Dent* 2011; 21: 306-313.
4. Merkel S, et al. The FLACC: A behavioral scale for scoring postoperative pain in young children. *Pediatr Nurse* 1997; 23: 293-297.