

Implementing a Multimodal Pain Management Best Practice Alert for Pediatric Orthopedic Injury Patients in an Adolescent Medical-Surgical Unit

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BACKGROUND

- One in five children is at risk for orthopedic injury; fractures are the greatest incidence
- 80% of all orthopedic emergency department visits present with patients experiencing pain
- Challenging to achieve adequate pain management
 - Multimodal (pharmacologic and non-pharmacologic) interventions have been effective for pain management
- Complications of inadequate pain management:
 - Elevated blood pressure, tachypnea, tachycardia, blood clots, pneumonia, and delayed healing

LOCAL PROBLEM

Project site: Adolescent medical-surgical unit at a magnet-designated pediatric level one trauma and teaching hospital in St. Louis, MO.

Problem:

- Inadequate pain management following an orthopedic injury
- Informal survey of unit nursing staff revealed 100% of nurses felt pain management was insufficient

Purpose/Goal: Multimodal pain management strategies would increase by 25% to increase patient, family, and staff pain management satisfaction by 25% and decrease the average length of stay during inpatient hospitalization.

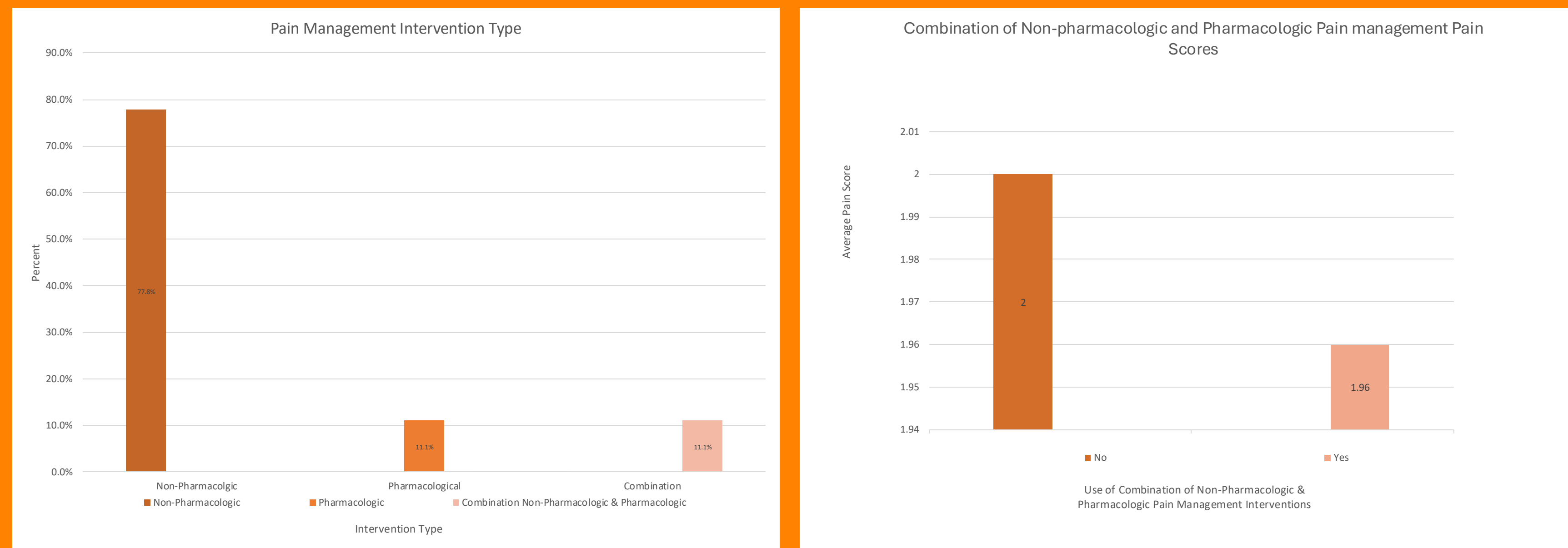
Aim: Provide consistent multimodal pain management to pediatric orthopedic injury patients.

METHODS

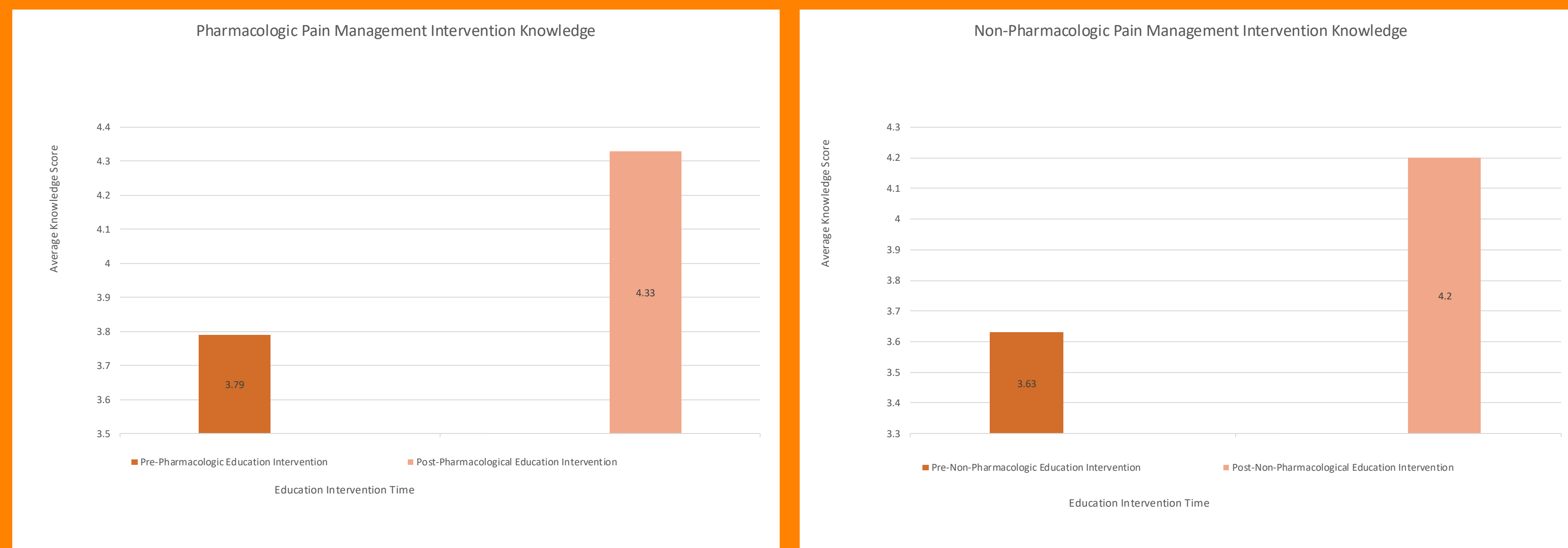
- Evidence-Based Practice Improvement (EBPI) Model served as the framework to provide adequate pain management to the pediatric orthopedic injury population
- Current evidence strongly and consistently supports that a multidisciplinary team approach, routine child life consults, and multimodal pain management strategies improve patient satisfaction, promote consistent care delivery, and reduce length of stay (LOS).
- Project Participants:**
 - Unit registered nurses, family members, specialists, & therapy personnel
 - Pediatric orthopedic patients aged 3-18 years admitted to the unit with an acute orthopedic injury - fractures, orthopedic trauma, or sports injuries

- Measures:**
 - Project timeframe: Nine weeks
 - Change was evaluated through chart reviews, surveys, and pre-/post-implementation data on knowledge, pain scores, and satisfaction.
 - Pain reassessment percentages were tracked for 3 months before, during the 9-week implementation period, and 1 month after.
 - Throughout the 9-week project, the following were measured:
 - Percentage of patients requiring as-needed (PRN) opioid medication, consults with pain management, and certified child life specialists
 - Average patient age, length of stay (LOS), pain scores
 - Type of pain management interventions provided
 - Pain management satisfaction was assessed through rounding feedback and unit nursing staff surveys.
 - Staff satisfaction and knowledge of pharmacologic and non-pharmacologic interventions were measured before and after implementing the BPA and educational tip sheets.

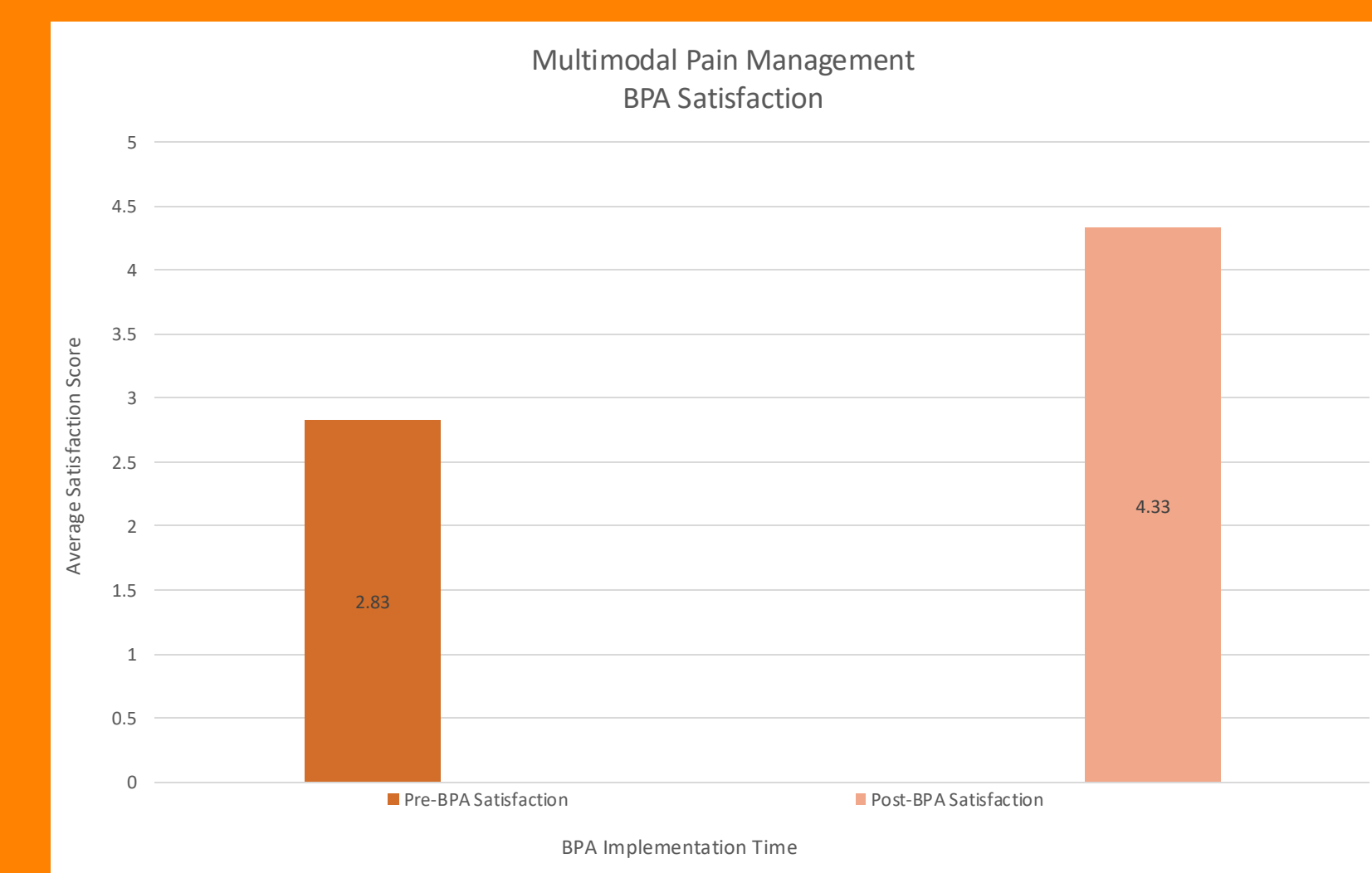
Pediatric orthopedic injury patients were **significantly more likely to receive non-pharmacological pain management interventions** rather than sole pharmacological pain management interventions throughout the project implementation. Patients who received a combination of non-pharmacologic and pharmacologic (multimodal) pain management interventions resulted in **lower pain scores**.



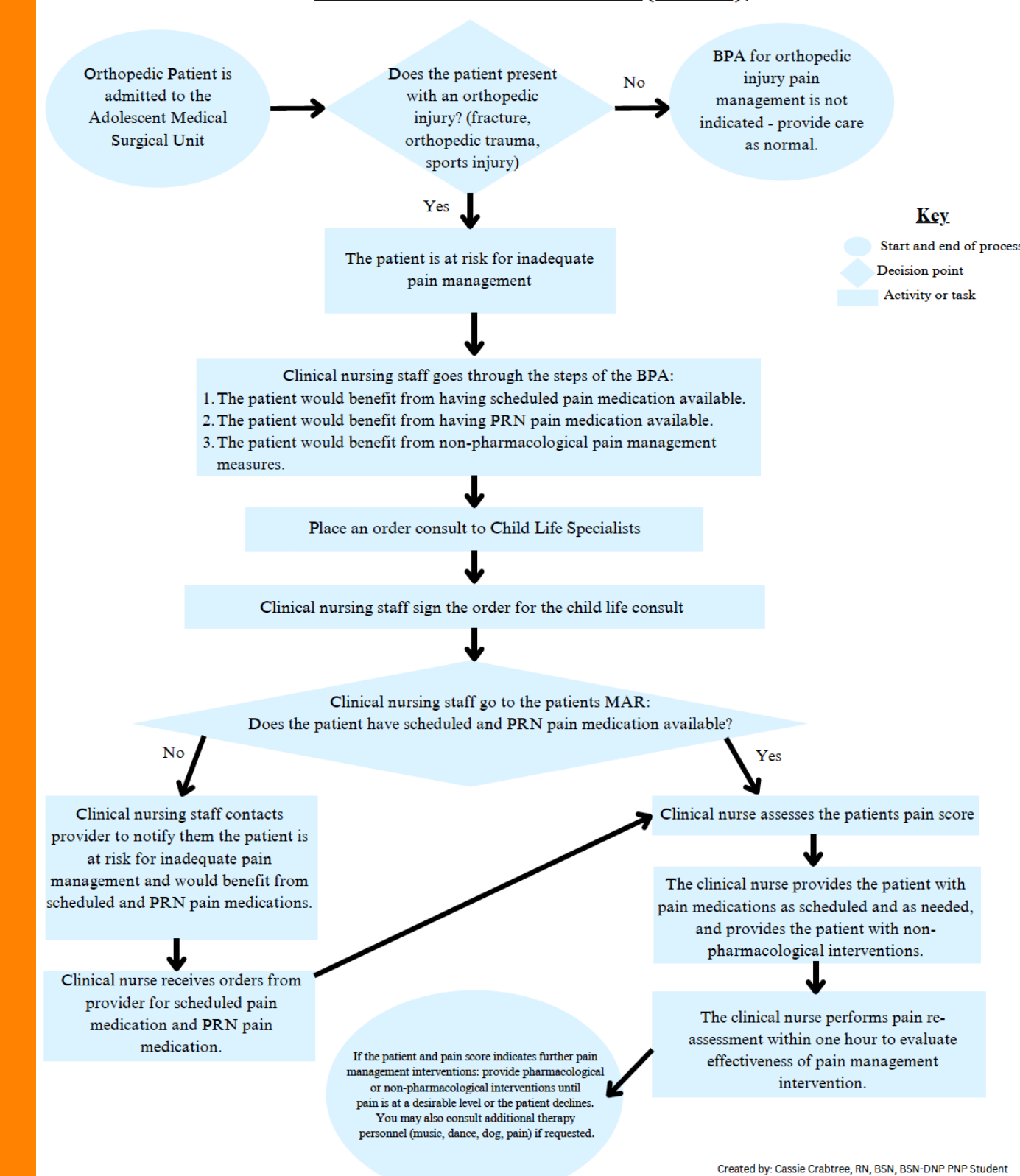
Unit nursing staff's **knowledge of pharmacologic pain management interventions significantly increased** after implementing the pharmacological tip sheet. Unit nursing staff's knowledge of non-pharmacologic pain management modalities increased after implementing the non-pharmacological tip sheet.



Pain management satisfaction scores increased after BPA implementation

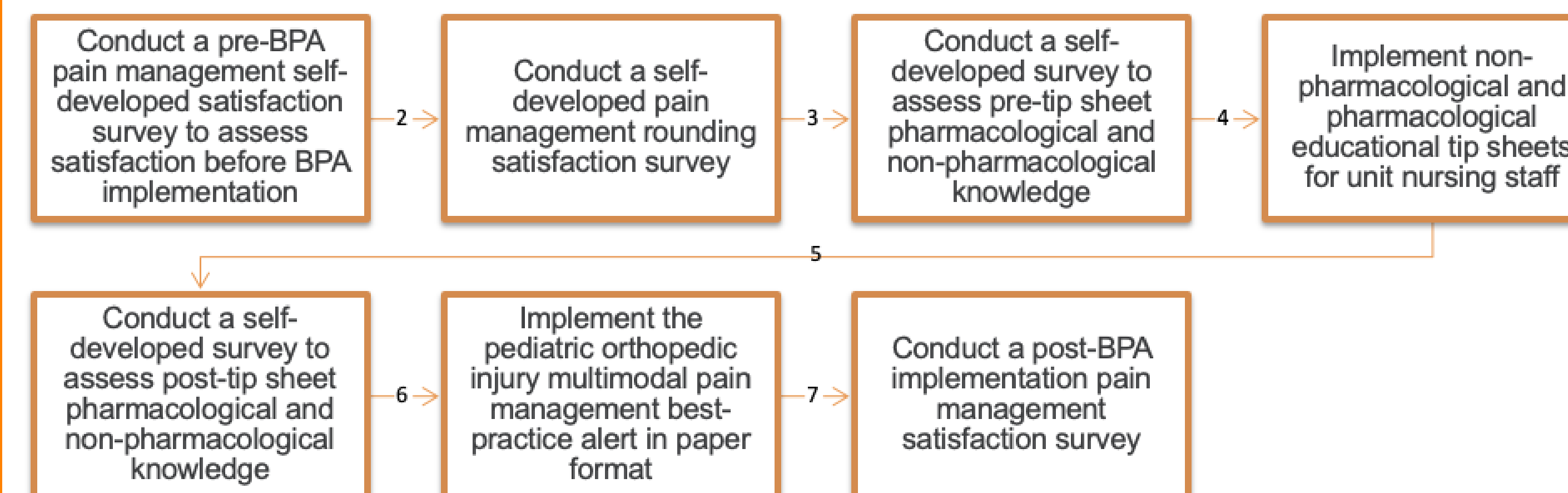


Pediatric Orthopedic Injury Multimodal Pain Management Best-Practice Alert (BPA)



INTERVENTIONS

The intervention introduced a new care delivery model implemented in a stepwise approach:



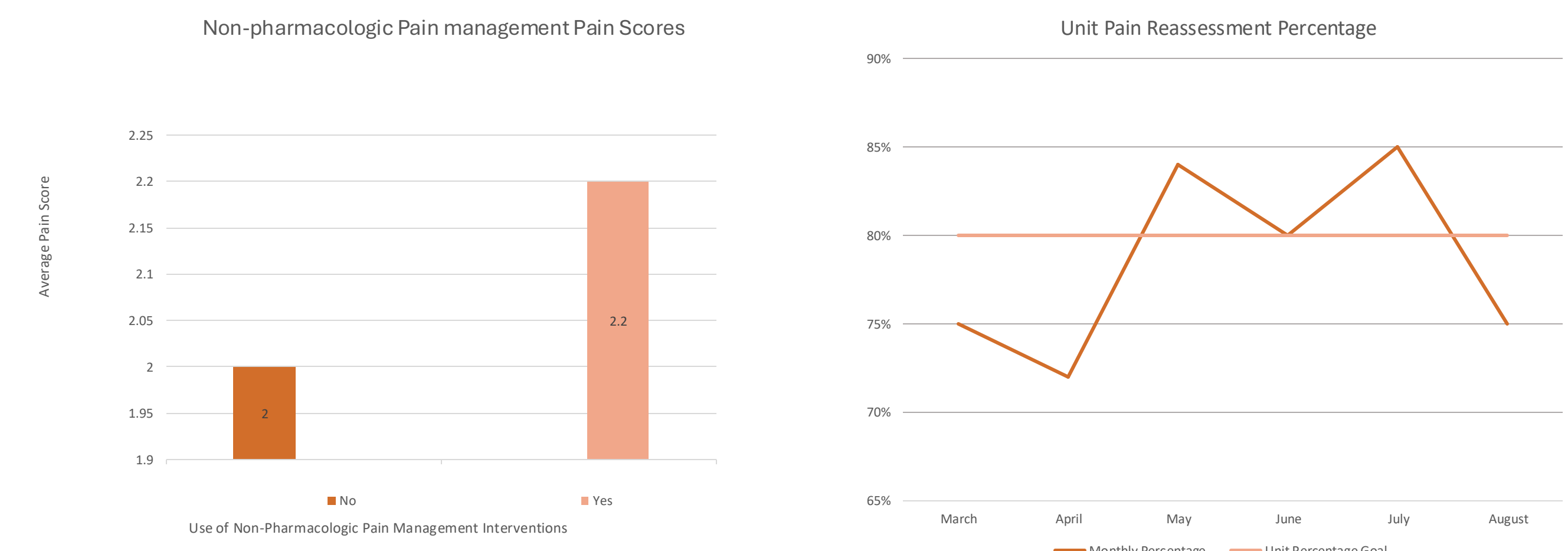
Graphic representations of the following interventions can be found by scanning these quick response (QR) codes:

- Step 4: Pharmacologic Tip Sheet
- Step 4: Non-Pharmacologic Tip Sheet
- Step 6: Pediatric Orthopedic Injury Multimodal BPA



RESULTS

- Nine patients met the inclusion criteria—nine charts reviewed, 21 responses to the pre-BPA survey, 16 to the post-BPA survey, 22 to the pre-tip sheet, 18 to the post-tip sheet survey, and two to the rounding satisfaction survey.
- Most patients were white males in the hospital with a one-day length of stay, with fractures
- Averages:
 - Age: 13 years
 - LOS: three days (not significantly impacted)
 - Pain score: moderate intensity
- 77% of patients required PRN opioid medication
- 11% required a pain team consultation
- No patients received additional therapies
- Unit pain reassessment percentage exceeded unit goal
- Rounding satisfaction survey: somewhat and very satisfied
- Inpatient pain management satisfaction survey:
 - Completion and response percentage 100%
 - One response for both March and April
 - No responses were recorded from May, June, July, or August.



CONCLUSIONS

- Implementing a standardized multimodal pain management BPA tool and tip sheets improved patient satisfaction, pain control, and staff knowledge.
- This approach supports patient- and family-centered care, enhances the healthcare experience, and is recommended for broader use.
- An educational binder on each inpatient unit is advised to promote sustainability.

