So Grows the Tree: Longitudinal Outcomes of Osteopathic Manipulative Treatment (OMT) in Addressing Plagiocephaly

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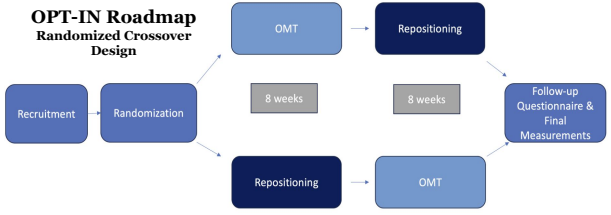
Background

- Positional plagiocephaly (PP) = asymmetrical cranium flattening from sustained pressure on the vulnerable neonatal skull
- Since the initiation of the AAP's "Back to Sleep" campaign, the incidence of PP has increased approximately 600%[3]
- Current management includes repositioning, physical therapy, and helmet therapy for persistent asymmetry. Treatment limitations highlight the value of exploring additional noninvasive approaches, including Osteopathic Manipulative Treatment (OMT).
- OMT has been studied as an intervention for infants with PP, but longer-term health and developmental outcomes following treatment remain poorly characterized.[1,2]
- **Objective:** To understand the potential long-term impacts of early osteopathic intervention on infant health and development in children with PP

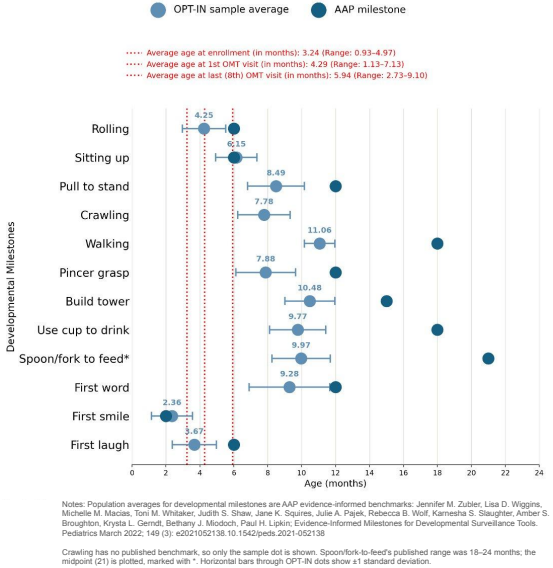
Methods

- 132 infants were recruited; 75 met eligibility criteria and were randomized to initial OMT or standard-of-care repositioning, crossing over to the alternate arm at 8 weeks.
- At 12 months, families of infants who completed the intervention were surveyed on developmental milestones, diagnoses/health outcomes, and head-shape/helmet status.
  - 60 of 63 eligible families (95%) completed the follow-up survey administered when the baby turned 12 months old.
- Milestone attainment was compared with the American Academy of Pediatrics 2021 Evidence-Informed Developmental Milestones[4]; other health outcomes were compared with published normative data.



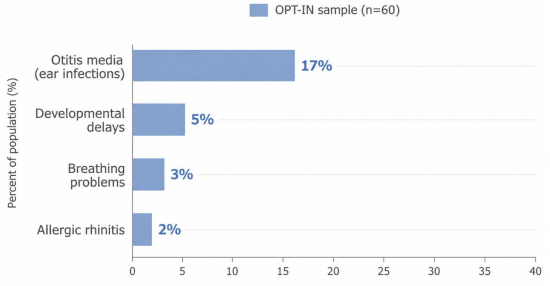
Results

- On average, participants achieved developmental milestones at or before AAP milestones across gross motor, fine motor, language, and social domains.[4] Developmental delay was reported in 5% of participants, comparable to population rates.[4])
- Otitis media was reported in 17% of participants, compared with 23% nationally[6]. However, recall bias is possible, as parents reported outcomes occurring throughout the infant's first year of life.
- Breathing problems were reported in 3% of participants.
  - For context, published rates include 4.7% for RSV-related ED visits, and 9.4% for bronchiolitis-related ED visits.[5] Differences in outcome definitions limit direct comparison.
- Of the 60 participants reported on, there are no known cases of recurrent otitis media.
- Following the intervention, 4 of 60 (6.7%) participants were referred for helmet therapy; at the time of the survey, 2 had completed treatment and 2 were still undergoing treatment.



Notes: Population averages for developmental milestones are AAP evidence-informed benchmarks: Jennifer M. Zubler, Lisa D. Wiggins, Michelle M. Macias, Toni M. Whitaker, Judith S. Shaw, Jane K. Squires, Julie A. Pajek, Rebecca B. Wolf, Karnesha S. Slaughter, Amber S. Broughton, Krysta L. Gerndt, Bethany J. Miodoch, Paul H. Lipkin; Evidence-Informed Milestones for Developmental Surveillance Tools. Pediatrics March 2022; 149 (3): e2021052138.10.1542/peds.2021-052138

Crawling has no published benchmark, so only the sample dot is shown. Spoon/fork-to-feed's published range was 18–24 months; the midpoint (21) is plotted, marked with *. Horizontal bars through OPT-IN dots show ±1 standard deviation.



Conclusion

- OMT for positional plagiocephaly may positively influence infant health and development during the first year of life.
- These findings do not establish causality for OMT, but show this population can be followed successfully
- Findings may carry individual and population-level implications, including potential cost savings for U.S. pediatric healthcare.
- Next steps: Prospective studies with standardized outcomes, no-OMT comparison groups, and longer-term follow-up are needed to assess clinical outcomes, healthcare utilization, and cost.

References