

# Visual Module Impact on Pediatricians' Oral Health Knowledge

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## Purpose

- This study evaluated whether a brief visual learning module could improve pediatric clinicians' knowledge, confidence, and attitudes toward pediatric oral health. The findings of this study may serve as a foundation for developing targeted educational interventions to improve pediatric oral health care.

## Introduction

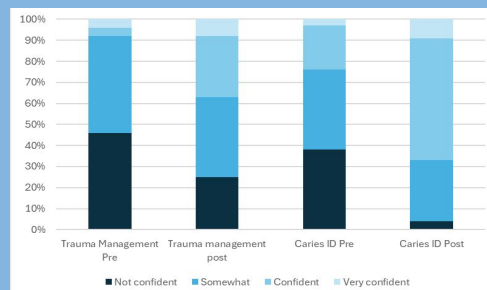
- Pediatric oral health is a critical component of overall child health, influencing both physical and psychosocial development. Dental caries and traumatic dental injuries (TDIs) remain highly prevalent among children. TDIs account for approximately 5% of all injuries, with up to 25% of school-aged children experiencing dental trauma, while dental caries remains the most common chronic disease of childhood.
- Pediatricians are uniquely positioned to influence early oral health due to frequent well-child visits, allowing for risk assessment, anticipatory guidance, fluoride application, and referral to dental providers. The AAP recommends incorporating oral health into routine pediatric care; however, implementation remains inconsistent.
- Despite recognizing its importance, many pediatricians report limited confidence in oral examinations, identifying dental pathology, and managing traumatic dental injuries. Gaps in training persist, with fewer than half of pediatric residents receiving comprehensive oral health education, and emergency providers reporting limited preparedness in managing dento-facial trauma.
- These gaps highlight the need for targeted educational interventions, with visual learning modules offering a practical and scalable approach to improving knowledge and clinical application.

## Methods

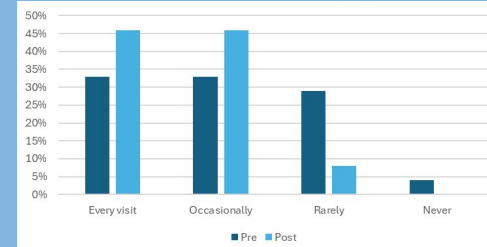
- A prospective pre–post educational study was conducted among pediatric medicine residents at BronxCare Health System (n = 48). Participants completed paired pre- and post-intervention questionnaires via QR code following a brief visual oral health learning module.
- Demographic data, including training level (PGY-1–3), were collected. Surveys assessed changes in knowledge, confidence, and clinical practices.
- Descriptive statistics were used, and paired analyses were performed using the Wilcoxon signed-rank test.

## Results

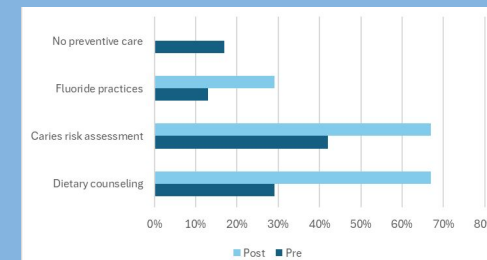
- A total of 25 responses were collected. Participants included PGY-1 (48%, n=12), PGY-2 (36%, n=9), and PGY-3 (20%, n=4) pediatric residents.
- Reported confidence significantly improved across multiple domains following the intervention. Confidence in managing dento-facial trauma increased (Wilcoxon signed-rank test,  $p < 0.01$ ), with a large effect size ( $r = 0.66$ ). Similarly, confidence in identifying early childhood caries improved significantly ( $p < 0.01$ ), with a very large effect size ( $r = 0.86$ ) (fig 1). In contrast, perceived importance of oral health did not change significantly ( $p > 0.05$ ), likely due to high baseline ratings.
- Participants also reported significant improvements in clinical practices. The frequency of inquiring about dental visits and referring patients for routine oral care increased ( $p < 0.05$ ), with a large effect size ( $r = 0.64$ ) (fig 2). Additionally, participants reported an increased likelihood of providing preventive oral health practices, including dietary counseling (29% to 67%), caries risk assessment (42% to 67%), and fluoride-related interventions (13% to 29%), with a reduction in those reporting no preventive care (17% to 0%) (fig 3).
- Participants identified ongoing educational needs, with managing dental trauma (63%) and caries detection (54%) emerging as the most commonly reported areas requiring further training. Although nearly all participants (96%) reported increased preparedness to collaborate with dental professionals, more than half (56%) still expressed a need for further improvement, highlighting a continued demand for additional oral health education. (fig 4).



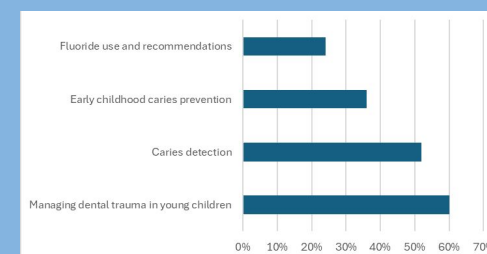
**Figure 1:** Confidence in management of trauma and caries identification pre and post module



**Figure 2.** Frequency of referrals and inquiring about dental home visits pre and post module



**Figure 3.** Likelihood of providing preventative oral health practices pre and post module



**Figure 4.** Areas of interest for continued education

## Discussion

- This study demonstrates that a brief visual learning module can improve pediatric medicine residents' knowledge, confidence, and self-reported clinical practices in pediatric oral health. Significant gains were observed in confidence for dento-facial trauma management and early childhood caries identification, along with increased reported likelihood of incorporating preventive practices into clinical care.
- Despite these improvements, gaps in training persisted, particularly in trauma management and caries detection. While participants reported increased preparedness to collaborate with dental professionals, many expressed a need for further education, indicating ongoing unmet training needs.
- This study is limited to a single institution and relies on self-reported measures. However, the findings support the effectiveness of targeted, low-resource educational interventions and their potential scalability across training programs to improve integration of oral health into pediatric care.

## Conclusion

- A brief visual learning module significantly improved pediatric residents' knowledge, confidence, and self-reported likelihood of incorporating oral health practices into clinical care.
- However, persistent gaps in training highlight the need for continued and more comprehensive oral health education to support sustained integration into pediatric practice.

## References

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