

# Analysis of Nutritional Counseling Received by Mutual Patients of Pediatric Medicine and Pediatric Dentistry: A Quality Improvement Study



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## INTRODUCTION

Dental caries is a multifactorial disease strongly influenced by diet, particularly the frequency and type of carbohydrate intake, making nutritional assessment an essential part of pediatric dental care. Pediatric dentists are uniquely positioned to evaluate dietary habits and provide counseling, especially since dental visits may occur more consistently than medical well-child visits. By addressing modifiable behaviors like diet and physical activity through targeted patient counseling, pediatric dentists play a key role in reducing caries risk and promoting overall child health.

## PURPOSE

The purpose of this study was to analyze the integration of nutritional and exercise counseling given by dental residents. By evaluating the number of times this counseling is provided for patients of both medical and dental clinics, this study seeks to better understand the importance of pediatric dentists in addressing modifiable risk factors associated with dental caries and overall health. This study also opens the space for additional research opportunities that relate nutritional counseling with caries prevalence.

## METHOD

This quality improvement study at Holyoke Health Center evaluated whether standardized nutritional and physical activity counseling using the “5-2-1-0” Healthy Choices framework improved delivery and documentation of preventive services in pediatric patients aged 3–17 years. Through a Plan-Do-Study-Act model, pediatric dental residents were trained to provide structured dietary and lifestyle counseling integrated into routine care, with outcomes measured by documented counseling rates using ICD-10 code Z71.3 before and after the intervention. Results were analyzed using electronic health record data, with strict adherence to HIPAA guidelines, to assess changes in clinical practice patterns.

## FIGURE 1

**Table 2.** Percentage of patients who received nutritional and physical activity counseling in the year of 2024 compared to the year of 2025\*

Age Range (Years)	2024	2025
Total (3-17)	68.7%	86.3%
3-6	67.8%	85.7%
7-11	67.2%	86.6%
12-14	71.7%	88.8%
15-17	68.8%	84.3%

## FIGURE 2

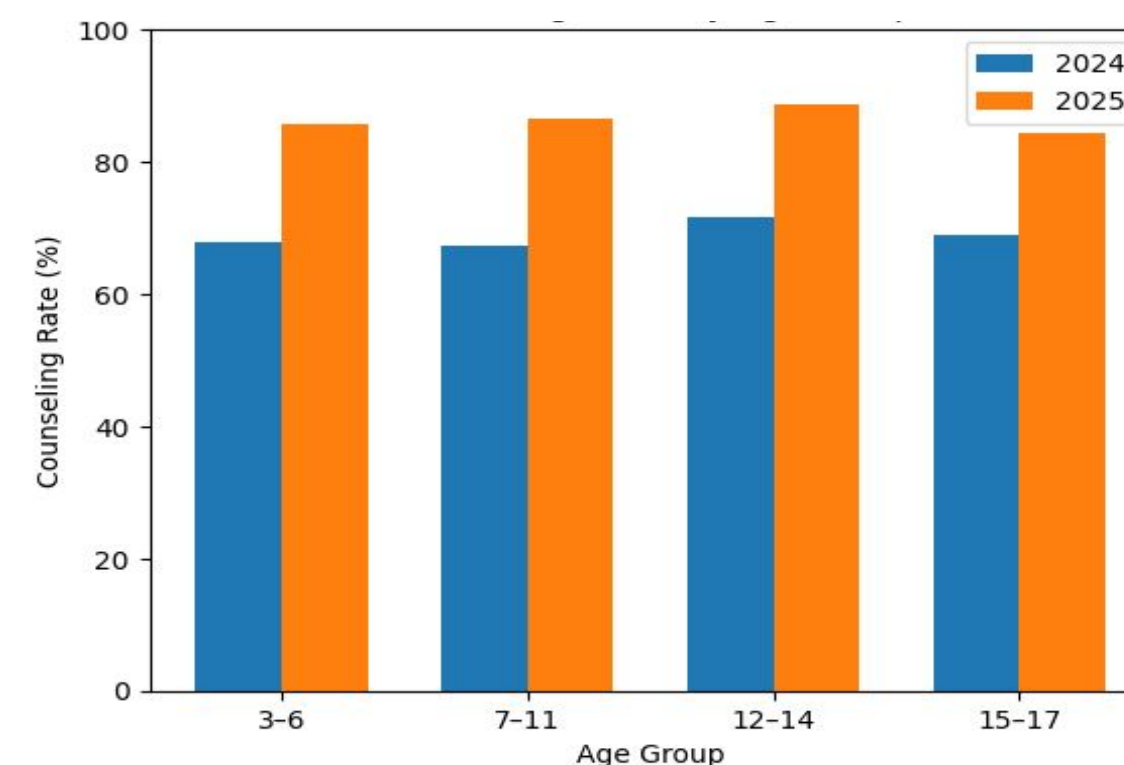


Figure 2. Nutrition and physical activity counseling rates by age group in 2024 and 2025 with 95% confidence intervals. All comparisons demonstrated statistically significant improvement ( $p < 0.001$ )

## RESULTS

At Holyoke Health Center, counseling rates increased significantly from 68.7% (2,373/3,456) in 2024 to 86.3% (2,979/3,451) in 2025, representing a 17.6 percentage point increase (95% CI: 15.7%–19.6%;  $z = 17.57$ ,  $p < .001$ ). Improvements were consistent across all pediatric age groups, including ages 3–6 (67.8%→85.7%), 7–11 (67.2%→86.6%), 12–14 (71.7%→88.8%), and 15–17 (68.8%→84.3%), with minimal overlap in confidence intervals supporting statistical significance. Additionally, the number of patients receiving counseling increased within age groups, such as ages 7–11 (763/1,135 to 1,000/1,155) and 12–14 (529/738 to 640/721), demonstrating a substantial overall improvement following the intervention.

## CONCLUSIONS

At Holyoke Health Center, implementation of the 5-2-1-0 counseling framework significantly increased documented counseling across all pediatric age groups (3–17 years), demonstrating the effectiveness of dental providers in addressing modifiable risk factors like diet and physical activity. However, limitations of the quasi-experimental design—including lack of randomization, potential documentation gaps, missed counseling opportunities, and differences between patient cohorts—may affect comparability of results. Future research should evaluate clinical outcomes such as caries incidence and BMI, utilize retrospective chart reviews, and explore caregiver perspectives to assess long-term effectiveness and sustainability.

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