



Comparison of untreated caries and caries risk improvement in an elementary school-based comprehensive dental care program

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Introduction/ Background

NYU Dentistry “Bringing Smiles” is a school-based dental program which seeks to improve accessibility of comprehensive oral health care to NYC public elementary schools utilizing portable dental units and a coordinated system for needed referral. While Bringing Smiles seeks to provide high level services, we hypothesize there may be significant differences within the program by race/ethnicity and dietary and oral home care habits. The purpose of this retrospective chart review was to explore differences in initial exam caries risk assessment, and mean change in untreated carious teeth at 18 month recall.

Methods

Five years of clinical records (2018-2023) from two Bringing Smiles school site locations were reviewed in January 2023. Study inclusion criteria included an initial exam Caries Risk Assessment adapted from the AAPD and 18M RC. A numerical caries risk score (0-8) was calculated using a rubric adapted from the AAPD CAT, including home tooth brushing, F- exposure, dietary habits, presence of a dental home, and the presence of caries. The change in untreated carious teeth from initial exam to 18M RC was also recorded. Location of treatment (at school site or referral to NYU Dental Clinic) was also recorded. Bivariate analysis (t-test) was conducted comparing change in caries risk score and change in number of untreated carious teeth by race/ethnicity and school location.

Results

A total of 530 charts were reviewed with 150 satisfying the inclusion criteria. Average caries risk score at initial exam was significantly higher in Asians (2.24) compared to non Asians (1.47). Average change in untreated caries teeth at 18M recall was significantly lower in those reporting infrequent sugar exposure (-0.31) compared to those reporting frequent sugar exposure (-1.15). No significant differences in mean change in untreated caries at 18M RC was observed by race/ethnicity or reported brushing habits. Location of treatment was not found to be significant for either mean change in untreated carious teeth or average risk score at initial exam.

Table 1.0: Subject Demographics (n=150)

| Race/Ethnicity | N | % |
|--|-------|-------|
| Asian | 74 | 49.33 |
| Non-Asian | 76 | 50.67 |
| Treatment Site | | |
| School-based site | 110 | 73.33 |
| Referral to NYU Dentistry clinic | 40 | 26.67 |
| Average Initial Exam Caries Risk Assessment Score (0-8) | 1.85 | |
| Mean change in untreated carious teeth at 18M RC | -0.77 | |

Table 2.0: Mean change in untreated carious teeth at 18M recall by race/ethnicity, brushing and dietary habits (n=150)

| Race/Ethnicity | Mean change in untreated carious teeth at 18M recall | p-value |
|---|--|---------|
| Asian (N=74) | -1.02 | |
| Non-Asian (N=76) | -0.53 | 0.18 |
| Reported Brushing Habits | | |
| Brushes teeth daily with F- toothpaste (N=135) | -0.73 | . |
| Does not brush daily with F- toothpaste (N=15) | -1.20 | .44 |
| Dietary Habits | | |
| 3 or more sugar containing snacks or beverages a day (N=67) | -1.15 | |
| Less than 3 sugar containing snacks or beverages a day (N=83) | -0.31 | .025 |

Table 3.0: Average caries risk score at initial exam by ethnicity, brushing and dietary habits (n=150)

| Race/Ethnicity | Mean Initial Exam Caries Risk Assessment Score | p-value |
|---|--|---------|
| Asian (N=74) | 2.24 | |
| Non-Asian (N=76) | 1.47 | 0.03 |
| Reported Brushing Habits | | |
| Brushes teeth daily with F- toothpaste (N=135) | 1.64 | |
| Does not brush daily with F- toothpaste (N=15) | 3.73 | .001 |
| Dietary Habits | | |
| 3 or more sugar containing snacks or beverages a day (N=67) | 3.00 | |
| Less than 3 sugar containing snacks or beverages a day (N=83) | 0.43 | 0.01 |

Conclusions

This study was limited by use of convenient sampling and a relatively high level of missing chart data due to the impact of Covid-19. Findings align with existing literature and community consensus on caries risk factors with tooth-brushing and sugar exposure associated with caries risk score and need for dental services. Asian subjects demonstrate a higher initial risk assessment score. Subjects reporting a lack of tooth brushing at home was associated with an increased average of untreated carious teeth at initial exam. There was no significant difference in untreated caries by treatment location, which may demonstrate the efficacy of school based programs.