Relationship between Obesity, Sweetened Beverages, and Dental Caries among Children

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Introduction

The field of health continues to develop and expand into new horizons. However, alongside these advancements, we also face new routines, social contexts, and cultural factors that raise questions.

While early childhood caries and its risk factors have been extensively studied, we are currently confronted with another systemic condition in children that is increasing in prevalence: childhood obesity.

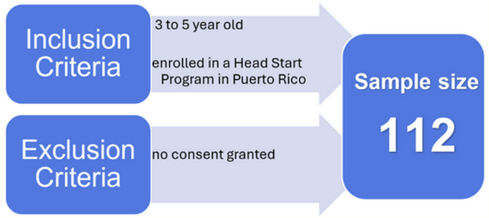
Given that these diseases are multifactorial, yet potentially interconnected, various studies have aimed to identify and control the risk factors that trigger or exacerbate these preventable conditions. Some of these risk factors lie in dietary and oral hygiene habits, but unique socioeconomic, cultural, and family contexts often influence these to a greater degree. One of the main objectives of Head Start programs is to offer families guidance and tools within their context, to enable children from early childhood to develop holistically and with habits that can positively affect their lives.

This study seeks to obtain an overview of the selected population in terms of these dietary and oral health habits, to discover which factors are having a significant impact on these health conditions that present as obstacles in the child population of Puerto Rico. This study aims to evaluate the relationship between obesity, the frequency and consumption of sugar-sweetened beverages, and the prevalence of dental caries in children aged 3 to 5 enrolled in Head Start Programs in Puerto Rico.

Objectives

The specific aim of this study is to evaluate the relationship between obesity, the frequency and consumption of sugar-sweetened beverages, and the prevalence of dental caries in children aged 3 to 5 years old who are enrolled in Head Start Programs in Puerto Rico.

Materials & Methods



- Data collection:
  - Parent-administered questionnaires
    - Demographic information
    - Sugar-sweetened beverage consumption
    - Oral healthcare habits
  - Oral evaluations
    - ICDAS classification
  - Height and weight→Body Mass Index (BMI)
    - CDC's "Child and Teen BMI Calculator Widget"
- Inferential and descriptive statistics

Results

- Among 112 participants (54 males, 58 females), 68.75% presented with carious lesions, and 16.07% had previously undergone dental restorations. No significant sex-based differences were observed.
- Brushing frequency, fluoride toothpaste use, and dental visits showed no significant association with caries.
- Regarding sugar-sweetened beverages, 45.54% of children consumed over 14 oz of juice daily, and 47.32% drank juice 2–3 times daily. Juice intake was not significantly associated with caries or BMI.
- Soda consumption was polarized: 40 children did not consume sodas, while 36 did so daily. Soda intake significantly correlated with caries prevalence by quantity (p-value=0.02) and frequency (p-value=0.035).
- Fruit smoothies were not significantly associated with caries.
- Nutritional assessment revealed 10.71% underweight and 27.68% overweight/obese. BMI was significantly associated with caries (p-value=0.01), with the highest prevalence in underweight children, followed by those with obesity.

Additional graphs & results

Key Variables and statistical significance in caries prevalence

Variable	p-value (p<0.05)	Significant
Sex	0.308	No
Brushing Frequency	0.092	No
Fluoride Toothpaste	0.347	No
Dental Visit Frequency	0.425	No
Juice Quantity	0.603	No
Juice Frequency	0.228	No
Soda Quantity	0.025	Yes
Soda Frequency	0.035	Yes
BMI	0.011	Yes

Conclusions

Through this study, we confirm chronic conditions in our target population: overweight/obesity and early childhood caries.

Having based our questionnaires on three significant types of sugar-sweetened beverages, soda consumption most significantly affected carious lesion prevalence. This finding compels us to emphasize to parents the high sugar and non-nutritive calories in these drinks and their detriment to children's health.

Regarding children's BMI and caries prevalence, underweight children had significantly more carious lesions. The varied results in existing literature remind us of the complexity and risk factors of these conditions. The lack of significance in oral healthcare habits raises questions, such as parent response reliability or social desirability bias. Is child assistance during these routines a factor? These variables warrant future research, which this essential topic merits.

References

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