

Effects of Body Mass Index on Early Childhood Caries in a Community Health Center

Marytza Rios DDS^{1,2}, Jacy Stauffer DMD^{1,2}

NYU Langone Dental Medicine, Advanced Education in Pediatric Dentistry Residency, San Diego, CA



INTRODUCTION

- The most common chronic disease in children is dental caries.³ According to the Centers for Disease Control and Prevention, “it is about five times as common as asthma and seven times as common as hay fever.”³
- It has been shown that an increase of carbohydrates increases the risk of obesity.⁴ According to the Center of Disease Control and Prevention, “obesity prevalence for children and adolescents aged 2-19 years was 18.5% and affected about 13.7 million children and adolescents and 13.9% among 2- to 5-year-olds, 18.4% among 6- to 11-year-olds, and 20.6% among 12- to 19-year-olds”.⁴
- The link between body mass index (BMI) values and early childhood caries is a widely studied topic, especially in recent times where the rise of obesity has become an issue of concern within the healthcare community and the society at large.⁵
- In a cross-sectional study by Bagherian et al., the authors found an association between higher definition scores (“defs”) and severe ECC with the children being overweight.⁶ That was based on their observation that overweight children typically had a higher sugar diet, which increases the risk for dental caries.
- Most of the literature provides information about BMI and ECC in different countries around the world, and only a few studies were completed in the United States.

PURPOSE

- The purpose of this retrospective chart review is to determine if there is an association between Early Childhood Caries and BMI status. This study will help determine if children who are underweight, overweight, or obese are at a greater risk of developing ECC.

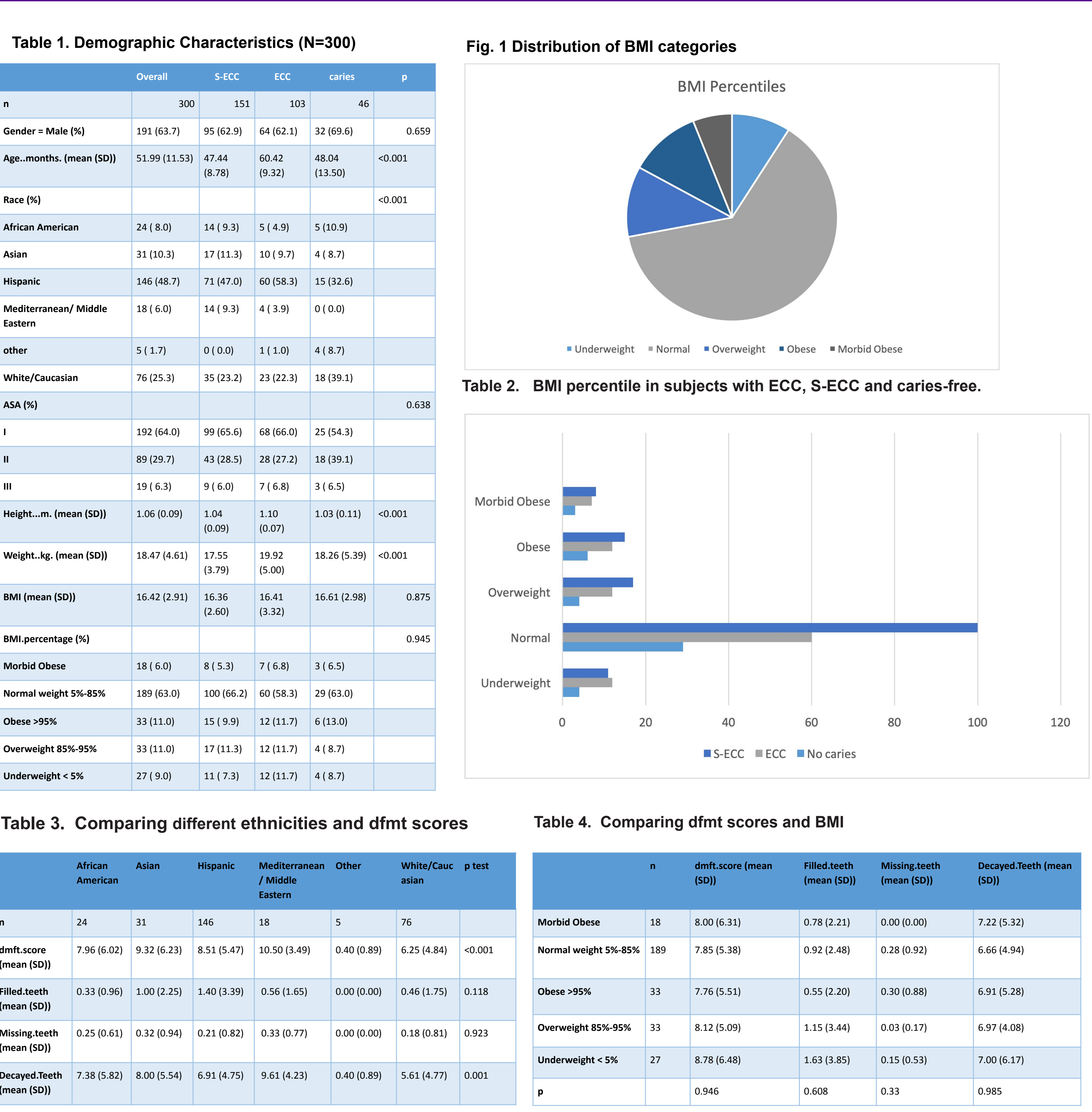
METHOD

Procedure

- Data was collected from 300 charts of children under 6 years of age at a hospital-based dental clinic and at an FQHC clinic in San Diego.
- Data was collected from patients for comprehensive oral exams including ASA status, age, gender, height, weight, BMI, dmft score and race.
- The “dmft” scores determined ECC and severe ECC according to the Policy on Early Childhood Caries (ECC): Classifications, Consequences, and Preventive Strategies.⁷
- BMI percentiles will be organized into one of the four categories according to the CDCP: underweight <5th percentile, normal weight 5th to < 85th percentile, overweight 85th to< 95th percentile, and obese ≥ 95th percentile.⁸

Statistical Analysis

- Data was collected in RedCap and provided to statisticians at NYU Langone Hospital in New York. Statistical analysis was completed by statisticians at NYU Langone.



RESULTS

- Table 1 shows a breakdown of the demographics of our sample in the study. Out of the 300 charts reviewed, there were no statistically significant differences between BMI percentile and dmft scores (p=0.946). There was no correlation observed between ASA status or gender. There was a statistically significant difference on the dmft score between race groups (p=<0.001). Figure 1 shows the distribution of BMI percentiles for patients examined and included in this study were: (1) 9% underweights; (2) 63% normal weight; (3) 11% overweight; and (4) 11% obese; and (5) 6% morbid obese.

DISCUSSION

- Our study showed that BMI does not have an association with ECC and S-ECC. Data from our study disagrees with the current literature. Bagherian et al. found an association between higher definition scores (“defs”) and severe ECC with the children being overweight.⁶ That was based on their observation that overweight children typically had a higher sugar diet, which increases the risk for dental caries.
- In contrast, Vania et al. showed that the ECC population does not have a standard weight distribution, as the authors found an association with ECC children being underweight vs. overweight; most likely due to a lack of adequate daily food intake from experiencing dental pain.⁹
- Furthermore, our research was limited by the nature of the retrospective study. Our study was limited to patients receiving a comprehensive exam and under the age of 6 years old; therefore, only 300 patients met the study’s inclusion criteria. We were also dependent on radiographs and accurate patient record reporting by the other pediatric dental residents and faculty.
- Further prospective clinical studies with larger patient populations are encouraged. These studies can be compared to determine if there are any local environmental factors and socioeconomic statuses that could influence caries experience and study the effect of BMI on children.

CONCLUSIONS

- We can conclude that there was no statistical correlation between BMI and ECC or S-ECC.
- There was a statistically significant difference on the dmft score between race groups.
- Further research should explore socioeconomic status and caries experience.

REFERENCES

- San Ysidro Health, Children’s Dental Center at Rady Children’s Hospital, San Diego, California;
- 2 NYU Langone Dental Medicine – California South, Department of Pediatric Dentistry, San Diego, California
- Centers for Disease Control and Prevention, Division of Oral Health (US) Oral health: preventing cavities, gum disease, and tooth loss. [cited 2009 Jun 3]. Available from: URL: <http://www.cdc.gov/nccodphp/publications/aag/doh.htm>.
- Ferretti F, Mariani M. Simple vs. complex carbohydrate dietary patterns and the global overweight and obesity pandemic. Int J Environ Res Public Health 2017;14(10): 1174-85.
- Hales CM, Carroll MD, Fryar CD, Ogden CL. Prevalence of obesity among adults and youth: United States, 2015- 2016. NCHS Data Brief 2017;(288):1-8.
- Bagherian A, Sadeghi M. Association between dental caries and age-specific body mass index in preschool children of an Iranian population. Indian J Dent Res 2013; 24(1):66-70
- American Academy of Pediatric Dentistry. Policy on early childhood caries (ECC): Classifications, consequences, and preventive strategies. The Reference Manual of Pediatric Dentistry. Chicago, Ill.: American Academy of Pediatric Dentistry; 2020:79-81.
- Centers for Disease Control and Prevention (CDC). About BMI for children and teens. 2014.
- Vania A, Parisella V, Capasso F, et al. Early childhood caries underweight or overweight, that is the question. Eur J Paediatr Dent 2011;12(4):231-5