

Association Between Perceived Food Desert Status and Perceived Oral Health Status



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INTRODUCTION

Healthcare trends have seen an increased importance on a patient's social determinants of health. One's food environment can influence the diet one has access to. One such specific food environment public health officials identify is a food desert. The USDA delineates a food desert as a census tract with a poverty rate of at least 20% and where 33% of the population lives greater than 1 mile from a supermarket or grocery store¹. The food environment (availability, accessibility, and affordability of healthy grocery store options) affects one's dietary health².

A nutrient-poor, carbohydrate-rich, sugar-influenced diet in the pediatric population is associated with a higher incidence of caries³. It can be theorized that poor access to healthy foods can be correlated with oral health status. Since the child often has little influence on where a family purchases groceries, a caregiver's perception of food, and the built environment that influences those dietary choices, are important areas of study.

PURPOSE

The objective of this study is to determine whether there is a relationship between perceived food desert status and perceived oral health status. We hypothesized that those who perceived living in a food desert also viewed their child of having poor oral health.

METHODS

- Paper surveys were distributed to the parent, guardian, or caregiver for each family during the pediatric patient's recall dental examination appointment at a community health clinic in San Diego, California. The survey was 3 pages and could be completed in less than 10 minutes.
- Survey questions were intended to measure three domains: the respondent's demographic information, the family's perceived food desert status (**FDS**), and the family's perceived oral health status (**OHS**).
- FDS and OHS was measured using Likert-scale questions. Each response had a correlating numerical value (1= Strongly Agree, 2= Agree, 3= Neutral, 4= Disagree, 5= Strongly Disagree).
- Each survey was given a perceived food desert score and a perceived oral health score. The minimum score was 1 and the maximum score was 5. These were calculated via an average score of the questions within the corresponding domain.
- A score of 1 corresponded to a perception of not living in a food desert and a self-reported good oral health status. A score of 5 corresponded to a perception of living in a food desert and self-reported poor oral health.
- A Paired T-test was conducted to measure the relationship of the mean FDS and OHS scores. One-way ANOVA tests were completed to measure relationships of the grocery store type and OHS score as well as the relationship of Question #13 of the survey and FDS scores ("My child has good oral health").

Table 1: Respondent Demographics

Subject	N(%)	Perceived food desert score: (Scale 1-5)*	Perceived oral health score: (Scale 1-5)**
Relationship			
Mother	84 (77.78%)	1.75	2.44
Father	22 (20.37%)	1.78	2.09
Other (=3, 4, 5)	2 (1.85%)	1.5	1.7
Child's Age Mean (years)			
	9.22	N/A	N/A
Gender of Child			
Male			
Female	62 (57.41%) 46 (42.59%)	1.74 1.77	2.34 2.38
Race			
American Indian or Alaskan Native	2 (1.85%)	1.7	2.6
Asian	5 (4.63%)	1.52	1.8
Black or African-Am. Native	2 (1.85%)	1.3	2
Hawaiian or Pacific Islander	1 (0.93%)	1.4	2.6
White	35 (32.41%)	1.77	2.35
Other	34 (31.48%)	1.81	2.51
Two or More Races	13 (12.04%)	1.68	2.25
Prefer Not to Say	16 (14.81%)	1.81	2.29
Hispanic or Latino/a	80 (74.07%)	1.78	2.37
Household Size			
3	12 (11.11%)	1.7	2.38
4	35 (32.41%)	1.74	2.2
5	38 (35.19%)	1.71	2.42
6+	23 (21.30%)	1.86	2.47
Grocery Shopping Location			
Grocery Chain	62 (57.41%)	1.82	2.39
Superstore	45 (41.67%)	1.64	2.29
Other	1 (0.93%)	2.8	3.2

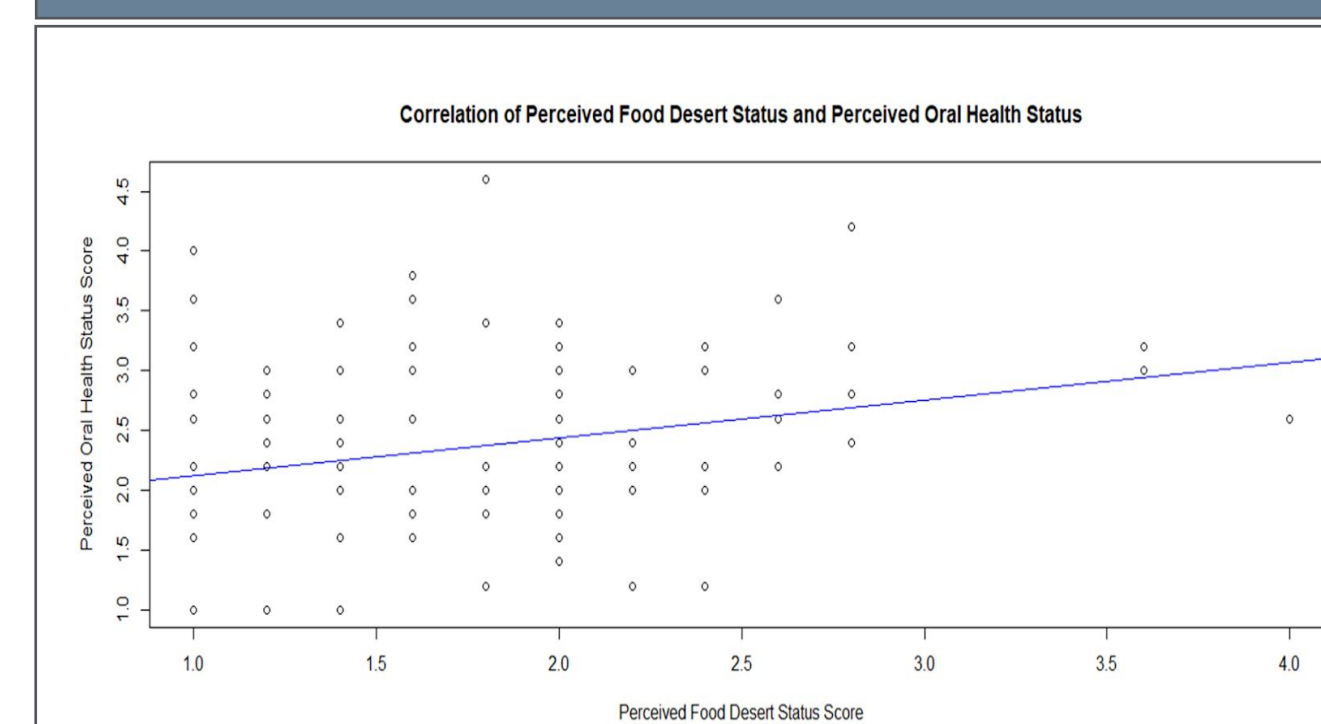
*A score of 1 corresponds to perception of not living in a food desert and a view of good oral health.
 **A score of 5 corresponds to living in a food desert and a negative view of their child's oral health.

TABLE 2: Relationship Between Perceived Food Desert Score and Perceived Oral Health Status

# of Surveys	Mean FDS*	Mean OHS*	r ² - value**	p -value**
108	1.74	2.35	.05925	0.006398

*Abbreviations: **FDS**= Perceived Food Desert Score, **OHS**= Perceived Oral Health Status
 **r²-value and P-value determined by a Paired T-test

FIGURE 1: Correlation* between Perceived Food Desert Score and Perceived Oral Health Status



*Correlation determined using a Paired T-test
 **r² = 0.05925

TABLE 3 : Response to "My child has good oral health" and Food Desert Status*

	Food Desert Mean	F-Value	P-Value**
"My Child Has Good Oral Health"	1.74	2.773	0.031

*One-way ANOVA test conducted to determine the relationship between responses to question #13 of the survey and food desert mean
 **P-Value derived from One-way ANOVA test

RESULTS

- A total of 121 surveys were dispensed. 13 surveys did not qualify for analysis. A total of n=108 surveys were collected and interpreted for the data analysis.
- Respondents were mostly mothers, White or Other as a race, Hispanic/Latino(a), lived in 4-5 member households, and predominantly shopped at grocery store chains or superstores (**Table 1**)
- Perceived food desert status and perceived oral health status for all respondents had a statistically significant relationship (**Table 2, Figure 1**, P<0.01).
- There was no statistical significance of where a family purchased groceries and their perceived OHS (data not shown).
- There was a statistically significant relationship between how a family member viewed their child's oral health and the respondent's food desert status (**Table 3**, P=0.03)

CONCLUSIONS

Despite our results showing a statistically significant relationship between a respondent's perceived food desert status, and the self-reported oral health status of their child, the relationship is a weak one.

Strengths of this study:

- Provided data that specifically integrated food deserts (versus general food access) and oral health

Limitations of this study:

- The study results are influenced by perception bias for both food desert status and oral health status.
- The results of the study could have been stronger if compared to objective measurements of food desert status and oral health status.^{4, 5}
- San Diego has a diverse urban and rural density, which makes the county's food desert relationship difficult to analyze using a one-size fits all distance parameter when compared to previous studies that focused exclusively on urban or rural populations.^{6, 7, 8}

As studies begin to assess the influence of social determinants of health on oral health status, food desert status should continue to be an area of study. Diet and nutrition counseling to improve oral health may be more impactful when contextualized in the family's capacity to access healthy foods.

REFERENCES AND ACKNOWLEDGEMENTS

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