Caries Risk Among Los Angeles County Service Planning Areas

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BACKGROUND

The cause of dental caries is multifactorial, exacerbated by known risk factors such low salivary flow, plaque on teeth, high frequency of sugar consumption, access to nutritious food, and socioeconomic status.[1,2,3] Children from food insecure families, or those who reside in food deserts, often have limited to no access to nutritious foods which leads to increased consumption of carbohydrate-rich and sugary foods and thus dental caries.[4,5] Los Angeles, due to its vastness, is divided into different service planning areas, each responsible for their communities' specific needs (**Figure 1**).[6,7] Addressing food insecurity and promoting access to healthy, balanced diets is crucial in preventing the development of dental caries and improving oral health outcomes in children.[5,8]

PURPOSE

The purpose of this study is to compare risk factors present among different Service Planning Areas (SPAs) in Los Angeles County that may contribute to a higher caries risk. In this study, we hypothesize that living in a Los Angeles County Service Planning Area (SPA) with limited access to high quality nutrition puts children at an increased risk for dental caries.

METHODS

In this retrospective case-control study, data was collected from axiUm, the electronic patient record from the Herman Ostrow School of Dentistry of USC Graduate Pediatric Dental Clinic. The following data were collected for patients seen for dental code D0150 or D0145 from 1/1/2013 to 12/31/2023: patient's age at first dental visit, DMFT score, zip code, gender, and ethnicity. Then, published characteristics of all Los Angeles County SPAs pertaining to food deserts, food insecurity, and nutrition were indexed and given set values. Each of the eight service planning areas (SPA) were then compared to each other to deduce the SPA with the greatest caries experience (comparing average DMFT scores).

RESULTS

Three hundred and nineteen patients were included in the study (**Table 1**). The risk of having dental caries did not vary across SPAs (p=0.67) and no SPA was significantly different than comparator of SPA 6 (**Table 2**). Factors such as food deserts, food insecurity, and nutrition were not strongly associated with dental caries. Additionally, sex and ethnicity were not significantly different between children with and without dental caries.

However, age played a significant role in caries risk (p<0.0001). The mean age for children with caries was 3.5-year-old and children with no caries was 2.2-year-old. For every additional year of age, there is 2.31 times more risk of caries (**Table 3**).

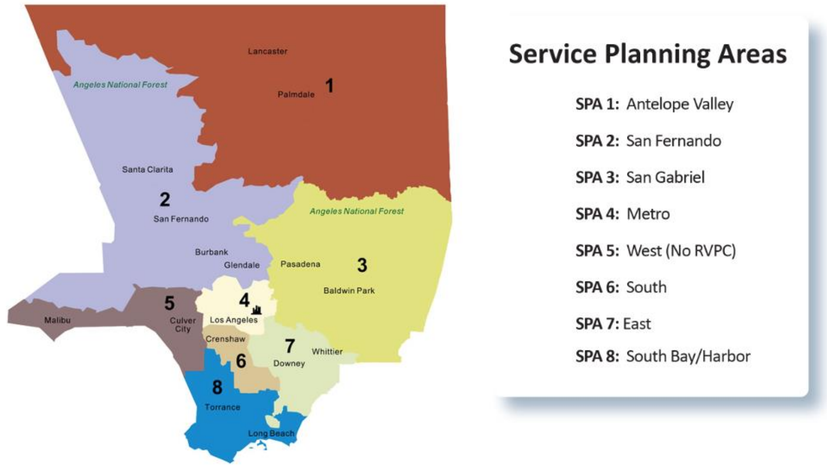

Figure 1 Map of Los Angeles Service Planning Areas (SPAs)[6]

Patient Demographics (N=319)				
Demographic		N	No Dental Caries	Dental Caries
Sex	Male	161	84	77
	Female	158	82	75
Ethnicity	Non-Hispanic	205	107	98
	Hispanic	113	59	54

Table 1 Patient Demographics

Service Planning Areas (SPA) (N=319)				
Service Planning Area (SPA)	N	No Dental Caries	Dental Caries	P-value
6*	161	90	71	0.67*
1	2	1	1	0.87
2	12	7	5	0.87
3	13	5	8	0.23
4	71	38	33	0.74
5	12	5	7	0.34
7	29	11	18	0.08
8	19	10	9	0.79

Table 2 Service Planing Areas and Dental Caries
*SPA 6 was used as reference

Age and Caries Risk			
	Mean Age (years)		
N	No Dental Caries	Dental Caries	P-Value
319	2.2 yrs.	3.5 yrs.	<0.0001

Table 3 Age and Caries Risk

CONCLUSIONS

This study does not support the hypothesis that living in a Los Angeles County SPA with limited access to high quality nutrition puts children at an increased risk for dental caries. Its possible there was not enough patients from all the SPA to draw a definitive conclusion. The study did demonstrate the importance of establishing a dental home early as age did play a role in caries risk.

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