TITLE: The Influence of Community Retail Food Environment on Household Food Access, Food Choice, and Dietary Intake of Mexican American Children in Colonias along the South Texas Border with Mexico

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BACKGROUND AND METHODOLOGY:

Among children age 6-11 years, the prevalence for overweight and obesity is high among Mexican American children (42.8%). Nutritional disparities faced by Mexican American children in low-income households that rely on food assistance programs in limited resource areas of colonias make understanding the role of community and household food availability on children’s at-home food consumption especially critical. Personal, structural, and neighborhood characteristics are known to serve as barriers or enhancements to healthy eating. Geographic access to food resources is especially critical for limited resource families, especially in areas without public transportation. The local food environment may affect nutritional health by influencing household food supplies, and dietary intake as a function of food cost and availability. Not only is the South Texas-Mexico border area an ideal region to examine the interplay of place-based factors across settings, but it is particularly opportune given the availability of longitudinal data from an ongoing research project among mother-child dyads in two large areas of colonias and food store data from the Comidas Saludables & Gente Sana en el Sur de Tejas Program and Colonia Food Environment Project. While recent research examined environmental influences on obesity, limited progress has been made in areas of persistent poverty, such as the growing areas of colonias along the Texas-Mexico border. Clearly, new approaches must be developed for examinations of food choice in the colonias, which take into consideration the cultural context in which people access food resources.

The goals of this study were to (1) evaluate the food environment (neighborhood and household), current food and beverage purchase strategies for after-school and weekend consumption, as well as seasonal patterns, and current family food behaviors, in a sample of Mexican American dyads (mother-child) in the study area colonias; and (2) examine the influence of household food supplies and neighborhood food stores on children’s at-home food consumption.

The research used retail food store data, including comprehensive assessments of availability of food products in traditional, convenience, and nontraditional food stores from the 2009-2010 Colonia Food Environment Project and data from a current cohort study of 50 family dyads (mother-child 6-11 years) recruited from 40 colonias in 20 census block groups in Hidalgo County (TX). Data (survey, household food supplies, and dietary intake of children) were collected in Spanish by promotora-researchers (indigenous community health workers). Survey questions included nativity, household demographics, food security status, and shopping behavior. The primary outcome measures were household food supplies (two observational measures) and children’s dietary intake (three 24-hour dietary recalls). NDS-R was used to conduct nutrient analyses of household food inventories and dietary intakes. Statistical methods were developed to adjust household food supplies for household composition.
FINDINGS:
Among the 50 participant children, 32% were born in Mexico; 78% rode the school bus; and 100% participated in the School Breakfast Program and National School Lunch Program. Based on body mass index for gender and age, 42% of the children were overweight or obese. Children reported their own experiences of food security, with 36% \((n=18)\) identified as having low food security and 28% \((n=14)\) having very low food security. The mean distance from each household to the nearest supermarket was 4.96 miles \((SD=2.5)\), dollar store 3.1 miles \((SD=1.8)\), and convenience store 0.75 miles \((SD=0.6)\). The mean number of convenience stores within one network mile of the household was 3.3 \((SD=2.4)\). The availability of total energy, protein, dietary fiber, calcium, potassium, vitamin C, sodium, vitamin D, total sugar, added sugar, total fat, and total saturated fat was calculated from two household food inventories; adjustments were made for all nutrients based on household composition.

Distance to the nearest supermarket, dollar store, or fast food outlet was not associated with household availability of any nutrient. Closer distance to the nearest convenience store was associated with less household availability of total energy \((p=0.02)\), vitamin D \((p=0.02)\), total sugar \((p=0.003)\), added sugar \((p=0.003)\), total fat \((p=0.04)\), and total saturated fat \((p=0.017)\). Store density (number of stores within one network mile) was associated with individual nutrients: greater number of supermarkets was associated with increased availability of vitamin D, total fat, total saturated fat, and potassium; and greater number of convenience stores was associated with greater availability of total sugar and added sugar. Children’s self-reported food security status was associated with household food supplies: children having low food security lived in households with greater total energy, sodium, total fat, and saturated fat; and children having very low food security lived in households having greater availability of sodium and total fat.

Children’s dietary intake of calcium, vitamin C, and potassium was lower on weekend days compared with weekdays; intake of total fat and added sugar as a percentage of calories was greater on weekend days than weekdays. Household food availability was not associated with any of the nutrients from dietary intake.

This study is the first step in understanding the influence of the food environment on food choice in Mexican-origin families who live in high or persistent poverty areas, such as the growing number of colonias where there is limited or non-existent public transportation and where many residents do not have access to a vehicle. Knowing more about the food environment is essential for combining environmental approaches with traditional health interventions and food assistance programs to make it easier for individuals to make healthier food choices.

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