Abstract 

Introduction

Prevalence of childhood obesity is higher (22.4%) in Latino children ages 2-19 years than in non-Latino white children (14%). Though obesity rates have decreased in 2-5 year olds nationwide, racial and ethnic health disparities persist and indicate the urgency of early prevention efforts in high-risk communities. In 2012, University of California (UC) Davis faculty and students and UC Cooperative Extension specialists and advisors collaborated in conducting a five-year study (with three years of active intervention) to prevent childhood obesity in a Mexican-origin, rural farmworker community in California’s Central Valley. The Niños Sanos, Familia Sana (NSFS, Healthy Children, Healthy Family) was a community-based intervention that provided a monthly voucher to buy fruits and vegetables, an enhanced physical activity and nutrition school-based program, and nutrition education to parents and their children ages 3-8 in 2012. A comparison community received non-nutrition related educational programs and art projects. The three main goals of this integrated project were to: 1) Slow the rate of weight gain among intervention children, as compared to non-intervention children (research); 2) adapt UC Cooperative Extension science-based nutrition curricula for cultural property (extension); and 3) strengthen and increase the number of culturally competent UC Davis students (education).

Methods

Research: During the five-year study, we followed 563 families with 700 eligible children (313 comparison and 387 intervention children). 1) Research staff recorded weight, height, and waist circumference of the children at baseline and every six months in the follow-up years from 2012-2015. Bilingual staff and college students interviewed the parents or primary caregivers yearly to collect data on household income, expenditures, child’s frequency of consuming 26 foods or beverages (2), food insecurity, food assistance participation, and other household information. Twice a year (winter and summer), we collected a month of food receipt data to complement scanner data on fruit and vegetable purchases from the local store that accepted the vouchers. Using an intent-to-treat analyses and repeated measures (Statistical software R, version 3.2.2), we examined log-transformed changes in body mass index (BMI) in a linear mixed effect model with random intercept and slope. We adjusted for the clustering effect of more than one child per household; child’s age and obesity status at baseline; and duration of exposure to the intervention. Sex-specific models were estimated. Similarly, a mixed model repeated measures analysis was used to examine the differences in children’s vegetable and fast food dietary patterns, adjusting for child gender, child age, child weight status, maternal acculturation, maternal years of education, household monthly income.

Extension: The extension-led nutrition team developed culturally-adapted nutrition and physical activity lessons in collaboration with the community and provided oversight of the nutrition education delivery to parents over the three years (3). Each one-hour lesson included discussion, hands-on activities, and a cooking demonstration. UC CalFresh (SNAP-Ed) and the Expanded Food and Nutrition Education Program (EFNEP) provided school-based nutrition education to intervention children.

Education: We developed a new graduate-level course on Community-based Participatory Research at UC Davis every year since 2012. The project also provided opportunities for graduate students completing their masters or doctorate research.

Results

Table 1: Description of participants (n=700)

<table>
<thead>
<tr>
<th>Child's Characteristics</th>
<th>Full Sample n=700</th>
<th>Intervention n=387</th>
<th>Comparison n=313</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (years, SD)</td>
<td>5.06 (1.31)</td>
<td>5.02 (1.34)</td>
<td>5.09 (1.28)</td>
</tr>
<tr>
<td>Male Child (n, %)</td>
<td>344 (49.1%)</td>
<td>205 (53.0%)</td>
<td>139 (44.4%)</td>
</tr>
<tr>
<td>Baseline BMI (kg/m²)</td>
<td>17.42 (2.46)</td>
<td>17.39 (2.21)</td>
<td>17.45 (2.65)</td>
</tr>
<tr>
<td>Baseline BMI (z-score)</td>
<td>0.06 (0.19)</td>
<td>0.05 (0.19)</td>
<td>0.03 (0.19)</td>
</tr>
<tr>
<td>Mother’s characteristics</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Parent Educ (n, %)</td>
<td>35.59 (5.50)</td>
<td>35.00 (5.42)</td>
<td>36.10 (5.53)</td>
</tr>
<tr>
<td>Years of Education (mean, SD)</td>
<td>9.49 (1.78)</td>
<td>9.46 (1.94)</td>
<td>9.51 (1.93)</td>
</tr>
<tr>
<td>Born in Mexico (n, %)</td>
<td>515 (73.7%)</td>
<td>264 (67.0%)</td>
<td>251 (80.1%)</td>
</tr>
<tr>
<td>Household Monthly Income (in 2013 $)</td>
<td>$2057.71</td>
<td>$2099.96</td>
<td>$1782.83</td>
</tr>
<tr>
<td>Traditional (n, %) **</td>
<td>399 (57.5%)</td>
<td>199 (51.9%)</td>
<td>200 (64.0%)</td>
</tr>
</tbody>
</table>

** significant difference between intervention and comparison group

Figure 1: Mean BMI over time in intervention (n=387) and comparison (n=313) children

Figure 2: Children’s food patterns over time (intervention n=100; comparison n=75)

Awarded Degrees: Nutrition and Public Health
Alberto Aguilar, PhD
Michelle Byrnes, MPH
Mayra Muñoz Gomez, MS
Lizette Rodriguez, MS
Rosa Camacho-Gomez, PhD

Awarded Degrees: Agriculture and Resource Economics
Meagan Hanbury, PhD

Awarded Degrees: Education
Lisa Martinez, PhD
Christy Solorio, MS

Degrees In Progress
Araceli Gonzalez (Graduate, PhD)
Iraklis Tsereounis (Graduate, PhD)

References


Funding

This project was supported by Agriculture and Food Research Initiative Competitive Grant no. 2011-68001-30167 from the USDA National Institute of Food and Agriculture. UC ANR provided support for the extension specialists and advisors who designed the nutrition education components.