Obesity Risk, Parenting & Diet Quality Assessment for Spanish-speaking Families with Preschool Children: EFNEP, with Head Start, Medical Clinic—Year 4

M.S. Townsend, PhD, RD, M.K. Shilts, PhD, L. Ontai, PhD, C. Drake, PhD; L. Lanoue, PhD; D. Styne, MD; N. Keim, PhD, RD; K. Diaz Rios, PhD, RD, K. Panarella, MS, MPH

Abstract

Objectives: 1) Evaluate two pediatric obesity risk assessment tools for low-income Spanish speaking parents and one diet quality tool. 2) Determine the feasibility of EFNEP embedded in a medical clinic. 3) Coordinate an AFRI obesity grant program journal supplement.

Description: The focus of year 4 (Y4) was to complete participant data collection & entry to validate assessment tools. Enrollment for the EFNEP intervention concluded with post survey and in-person interviews administered after each of 21 intervention rounds.

Evaluation: Hispanic (96%) parents (n=204) from WIC or Head Start completed the 5 data collection points and a blood sample (n=190 children). Children were classified as being overweight (35%) or obese (56%). Children in the highest BMI percentile-for-age quartile had significantly higher lipid (228 ± 82.6) and metabolic (110 ± 33.2) indices, and larger waist circumference (93.9 ± 5.0) than children in the lowest BMI percentile-for-age quartile (137.2 ± 66.0; 70 ± 44.8; 47.9 ± 3.2; P < .05). A sample of 60 families were video taped at mealtime and all of the videotapes have been coded for parent behaviors and 20% for child behaviors. One hundred and six parents attended at least one EFNEP session who were referred by their child’s pediatrician. All parents engaged in setting nutrition and parenting goals and 72 parents were interviewed to assess the scientific and Technical Modeling & feasibility of attending EFNEP intervention. In addition, cultural adaptation and design were completed for Mis Vegetales, a vegetable variety tool to measure diet quality.

Objectives:

1. To determine the feasibility of EFNEP embedded in tools for low income families (n=204). The focus of year 4 (Y4) was to complete participant data collection & entry to validate assessment tools. Enrollment for the EFNEP intervention concluded with post survey and in-person interviews administered after each of 21 intervention rounds.

2. To evaluate the validation of two validated Healthy Kids (HK) obesity risk assessment tools for low-income Spanish speaking parents.

3. To develop and validate a diet quality tool for low-income English and Spanish-speaking parents; to determine the feasibility of embedding medical clinic EFNEP site with a Physician-Referenced Medicaid patients; and to assess feasibility and relevance of HK tools for pediatricians.

4. To conduct additional analyses of obesity biomarkers on pediatric blood specimens.

Validated Assessment of Obesity Risk Assessment Tools

Participants in study were mostly families of Hispanic ethnicity, born in Mexico (88%) and spoke Spanish predominantly (96%). A majority reported completing some grade schools (72%). Most parents were unemployed (71%) and lived in a household composed of 2 adults (86%) and 2 to 4 children (65%). The children participants were 54% females with an average age of 3.7 years. More than 80% of mothers were overweight (BMI > 25) and 52% of these were obese (BMI > 30). 30% of children were overweight (BMI percentile-for-age ≥ 85%) and 16% of these obese BMI percentile-for-age ≥ 95%. Table 1. The obesity rate measured in our cohort (11%) is higher than the national obesity prevalence in 2-5 year old children (13.9% NHANES 2015-2016).

| Parents BMI percentile-for-age | BMI | Parents BMI percentiles-for-age | BMI | Parents BMI percentiles-for-age (%)
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Without breastfeeding</td>
<td></td>
<td>With breastfeeding</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(n=190)</td>
<td></td>
<td>(n=199)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;50, normal</td>
<td>19.6</td>
<td>0.5, low</td>
<td>4.0</td>
<td></td>
</tr>
<tr>
<td>(25, 30, overweight)</td>
<td>36.3</td>
<td>(5, 65) normal</td>
<td>65.3</td>
<td></td>
</tr>
<tr>
<td>(30, 40, obese)</td>
<td>37.8</td>
<td>(85, 95), overweight</td>
<td>13.6</td>
<td></td>
</tr>
</tbody>
</table>

Blood collected from fasting children with normal body temperature by a certified pediatric phlebotomist was analyzed for lipids and glucose using standardized methods. A cholesterol index (sum of the ranks of HDL, CHOL, LDL, triglycerides, and leptins) was calculated and expressed as a function of the children BMI. High BMI percentile-for-age was associated with more compromised metabolism (n= 3.5 year old children). As shown in figure below, children in the highest BMI percentile-for-age tertiles (>85%) showed significantly higher (228 ± 82.6) and metabolic (110 ± 33.2) indices and a larger waist circumference (93.9 ± 5.0) than children in the lowest BMI percentile-for-age tertiles (137.2 ± 66.0, 70 ± 44.8, 47.9 ± 3.2, P < .05). Circulating triglyceride levels were also significantly higher in children with higher BMI percentile-for-age (74.5 ± 24.8) compared to those with low BMI (48.1 ± 16.9, P=0.005).

Additional Analyses of Biomarkers

During Y4 the following progress has been made regarding child obesity biomarkers:

1. Made an inventory of the children’s blood samples.
2. Identified relevant biomarkers to be measured in children, and the matrix in which to measure them.
3. Optimized an analysis plan with MetaboTech and surveyed and ordered 7 different assay kits.
4. Completed the analysis of the following biomarkers: resistin, IGFBP1, leptin, insulin, adiponectin, CRP, RBP4 and a panel of cytokines. Only cetosteolone, (tacrolimus), corticosteroid analyses remain to be completed.

Diet Quality Tool

A vegetable variety tool to measure diet quality, was developed in English (My Veggies) in Y3 and adapted to be used with Spanish speakers (Mis Vegetales) in Y3 applying a multistep, iterative process that included 4 rounds of cognitive interviews, involving a total of 16 Spanish-speaking parents, and subject-matter experts. In Y4, design, food photography, and layout were completed for Mis Vegetables.

Feasibility of Medical Clinic EFNEP Intervention

Parents (n=106) attended at least one EFNEP intervention session. The profile of the parent attending the classes is mostly female (94%), Hispanic (71%) and low income (82%) participated in an assistance program. The EFNEP group and the comparison groups were similar with respect to maternal age, education, and self-reported height and weight. More than 80% of mothers were overweight (BMI > 25) and 55% of these obese (BMI > 30). 30% of children were overweight (BMI percentile-for-age ≥ 85%) and 16% of these obese BMI percentile-for-age ≥ 95%

Physicians (n=28) completed a feasibility survey indicating that the EFNEP intervention was useful to parent/patients (89%) and physicians (86%). One physician reported, “I think it’s a great opportunity to get feedback directly from patients.”

Conclusion

The outcomes of this research may contribute to the identification of strategies to improve the nutrition knowledge and practice of children. Although there is some evidence that clinic-based interventions may improve short-term weight gain, in addition, we are producing many valid and reliable assessments tools to determine the readiness of Spanish-speaking parents to adopt additional strategies to improve child health. We envision further program evaluation for use by participants of UC Davis food assistance and schools programs to improve health outcomes. Mis Vegetales is available at http://njhealthykids.ucdavis.edu/ to help promote healthy nutrition behaviors in children and adults.

Juvenile Supplement

The juvenile supplement includes the following articles for children and included the comparison of three journal offers before Childhood Obesity was added. We are working with the USDA-NPA program leader and staff to gather data on each grant separately. For example, 82 grants were awarded from 2011 to 2017 with a funding rate of 9.8% (2). We created a journal supplement that was submitted and reviewed because each journal meets the goals outlined in the call for papers. We created an online proposal form and sent it out to all project directors. Thirty-seven abstract proposals were submitted and reviewed in collaboration with the journal editor. March 2020 is the target for publication of the journal supplement which will include eight original research articles and one editorial.

Healthy Kids Website

Photographs taken in Y1 to reproduce the image data base of Hispanic and American Indian families illustrating the HK behaviors using typical foods, meals and local settings of the community were reviewed, edited and assigned to relevant assessment tool questions in Y4. Photographs were added to the Healthy Kids Website http://healthykids.ucdavis.edu/ to customize the HK and MCMT obesity risk assessment tools. The HK website was also updated to include Spanish versions of Healthy Kids for My Child at Meal Time and the newly validated Healthy Kids 19-item tool.

Conclusion

The outcomes of this research may contribute to the identification of strategies to improve the nutrition knowledge and practice of children. Although there is some evidence that clinic-based interventions may improve short-term weight gain, in addition, we are producing many valid and reliable assessment tools to determine the readiness of Spanish-speaking parents to adopt additional strategies to improve child health. We envision further program evaluation for use by participants of UC Davis food assistance and school programs to improve health outcomes. Mis Vegetables is available at http://njhealthykids.ucdavis.edu/ to help promote healthy nutrition behaviors in children and adults.

Publications & Presentations

<table>
<thead>
<tr>
<th>Title</th>
<th>Conference &amp; Presentations</th>
</tr>
</thead>
</table>