

Cambio de Colores 2011

Nutrition & Physical Activity in a Summer Migrant Classroom

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Background

- This community-based pilot study utilized the existing built-in MEP infrastructure of the summer Migrant Education Program (MEP) that is free to participants, and provides complementary door-to-door student transportation.
- Currently, the MEP has no national standard general or health curricula
- Curriculum content is controlled by local domain, guided by individual state standards, and teacher preferences: program resources are often limited.



Funding

Nutrition and Physical Education in the Migrant Summer Classroom
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Significance

- Our previous studies on MFW children showed that children aged 6 to 11 years old were 47% to 59% overweight or obese.
- Compared to national statistics, 33% of same aged children, and 43% of Mexican-American children were obese or overweight.
- Mexican-American children have been found to have low intake of fruits and vegetables; excessive intake of soda pop and high-fat snacks.
- In addition, low income is commonly associated and families have low food security.



Purpose & Hypotheses

- The *purpose* of the intervention was to teach MFW children the benefits of healthy eating and physical activity using an ethnic-tailored health supplemental curriculum imbedded the 6 to 8 week summer program.
- We *hypothesized* that students assigned to sites with the intervention would show greater improvements in outcomes compared to the comparison site that had the current standard MEP curriculum that did not include nutrition or physical education classes.



Theoretical Framework

- The Theory of Culture Care Diversity and Universality (Leninger, 1978).
- Diffusion Theory (Rogers, 1962).
- Transformational approach of hands-on learning exercises with structured lesson plans. (Krajcik, Czernaik, & Berger, 1999).



Review of the Literature

- The school environment has been identified as a key setting for health promotion (Naylor & McKay, 2009; Salmon, Booth, Phongsavan, Murphy, & Timperio, 2007).
- It was shown that classroom school teachers successfully incorporated health lessons in the classroom (Kelder, Hoelscher, Barroso, & Walker, 2005).
- A recent report identified the importance of physical education in schools as part of the prevention plan (Pate, et al., 2006).
- A review of top practices in reducing obesity in children cited the school as the best setting for implementation of a multidimensional strategy, and that including a physical fitness and activity component saw positive outcomes in 64% to 68% of programs (Flynn, et al., 2006).

Review of the Literature

- While many surveyed programs had some merit, no one program emerged as a model of best practice.
- Few studies have examined the effectiveness of these health promotion interventions in underserved populations, such as low income Latinos, and those conducted are often characterized by small sample size and high attrition (Pate, et al.).

Methods



- For the 7-week MEP program students had 4 interventions a week (2 nutrition & 2 physical education classes) & structured recess time with guided activities with ample playground equipment. Comparison group received standard curriculum with CDC flyers
- Subject & ethnic themed children's trade books reinforced lessons & supplemented remedial reading.

Methods

- In year 2, individual students outcomes were also compared for carry over effects of 2-year participation. The comparison group did not materialize due to decreased enrollment. Outcomes included: body mass index (BMI), BMI percentiles (BMI-P), knowledge tests at baseline (T1) & post intervention/summer end (T2).

Measures



Tenets of education program

- Eat more fruits and vegetables
- Eat a healthy breakfast every day
- Eat more family meals, increase family time
- Decrease TV and electronic game time to 2 hours per day
- Be physically active every day
- Limit sugar-sweetened drinks
- Look at food portion sizes, read food labels

Physical Education Classes



Food “labs” tasted new low-fat recipes



Middle School program



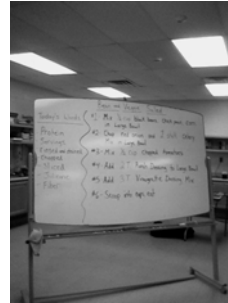
- In a 2010 summer MEP students in middle school grades 6 to 8 ($n=21$) participating in a pilot intervention project, 29% were overweight ($\geq 85\%$ BMI for age and gender), and 62% were obese ($\geq 95\%$ BMI for age and gender)

Middle school students created health commercials to learn about nutrition & activity





Children went home with new reading books & playground equipment to continue lessons learned



In pilot year 1 a Field Day with ribbons, tee shirts & beverages culminated the 7-week program.



New chef embraced program



Results Pilot year 1

- Comparison $n = 33$, intervention $n = 138$, 48% of students were overweight or obese ($n = 171$)
- Greater number of days of MEP attendance was related to $> \downarrow$ in weight ($r = -0.24$, $p = .03$, $n = 78$), and $>$ achievement of desirable BMI ($r = -0.27$, $p = .01$, $n = 78$)
- Mean values of change in BMI and BMI-p \downarrow at T2 ($n = 110$)
- Attendance was $+$ correlated to drinking milk or eating cheese at least 2x daily ($r = 0.33$, $p = .02$, $n = 45$) & that students needed to worked hard to become strong ($r = 0.43$, $p = .006$, $n = 45$)

Results Pilot year 1



- Intervention students:
 - \downarrow in BMI, marginally significant ($r = -0.16$, $p = .07$, $n = 110$)
 - Significant \downarrow in weight, compared to the comparison group ($p = .05$)
 - \downarrow in BMI (-.14 vs. -.03) with marginal significance ($p = .06$, $n = 110$)
 - \uparrow in age-appropriate knowledge test scores from T1 to T2 were seen in 2 assessments by 70% ($n = 47$) and 63% ($n = 46$) of the students

Results Pilot year 2

- 58% were overweight or obese ($n=215$)
- Recruitment ↑ 47% to 67% after meeting with the community
- Non-significant T1 and T2 comparisons:
 - ↑ in means in curriculum knowledge & food attitudes to reduce fat and drink skim milk ($n=44-46$)
 - 44% of students ↓ their BMI and 37% ↓ BMI-p
- Significant paired t -tests:
 - ↓ in BMI-p from T1 to T2 ($p=.016$)
 - ↑ in bilateral muscle flexibility ($p=.000$)

Results Pilot year 2

- For returning students:
 - Pre-year 2010 compared to post year 2009, showed a significant ↑ in food attitudes to reduce dietary fat & drink skim milk ($p<.001, <.0001$)
 - marginal significance with changing attitudes to ↑ physical activity ($p=.057$)



Significance of Impact & Clinical Relevance

These pilots support an NIH R01 grant submission. Migrant Education: Activity and Nutrition in the Summer (MEANS) a 4-year cluster randomized study designed to test effectiveness of supplemental curriculum interventions where summer MEP will be assigned to one of four study arms: nutrition education only, physical education only, both nutrition & physical education, and current MEP curriculum in 2 Midwest states.

Summary

This research will have strong potential to inform curricula policy, and support the adoption of nutrition & physical activity curriculum by the federal MEP, ensuring its sustainability.

Questions

