

Community Academic Partnerships to Address Obesity Disparities in Hawaii and the Pacific: Pacific Kids DASH for Health (PacDASH)

USDA AFRI/NIFA Grant #2007-04557

Rachel Novotny, PhD, RD
Professor, University of Hawai'i,
Principal Investigator



United States Department of Agriculture
National Institute of Food and Agriculture



OBJECTIVES

1. To develop & evaluate the impact of the PacDASH intervention (based on DASH eating pattern) for preventing weight gain (& improving blood pressure) in overweight or obese children of the Pacific Region



OBJECTIVES

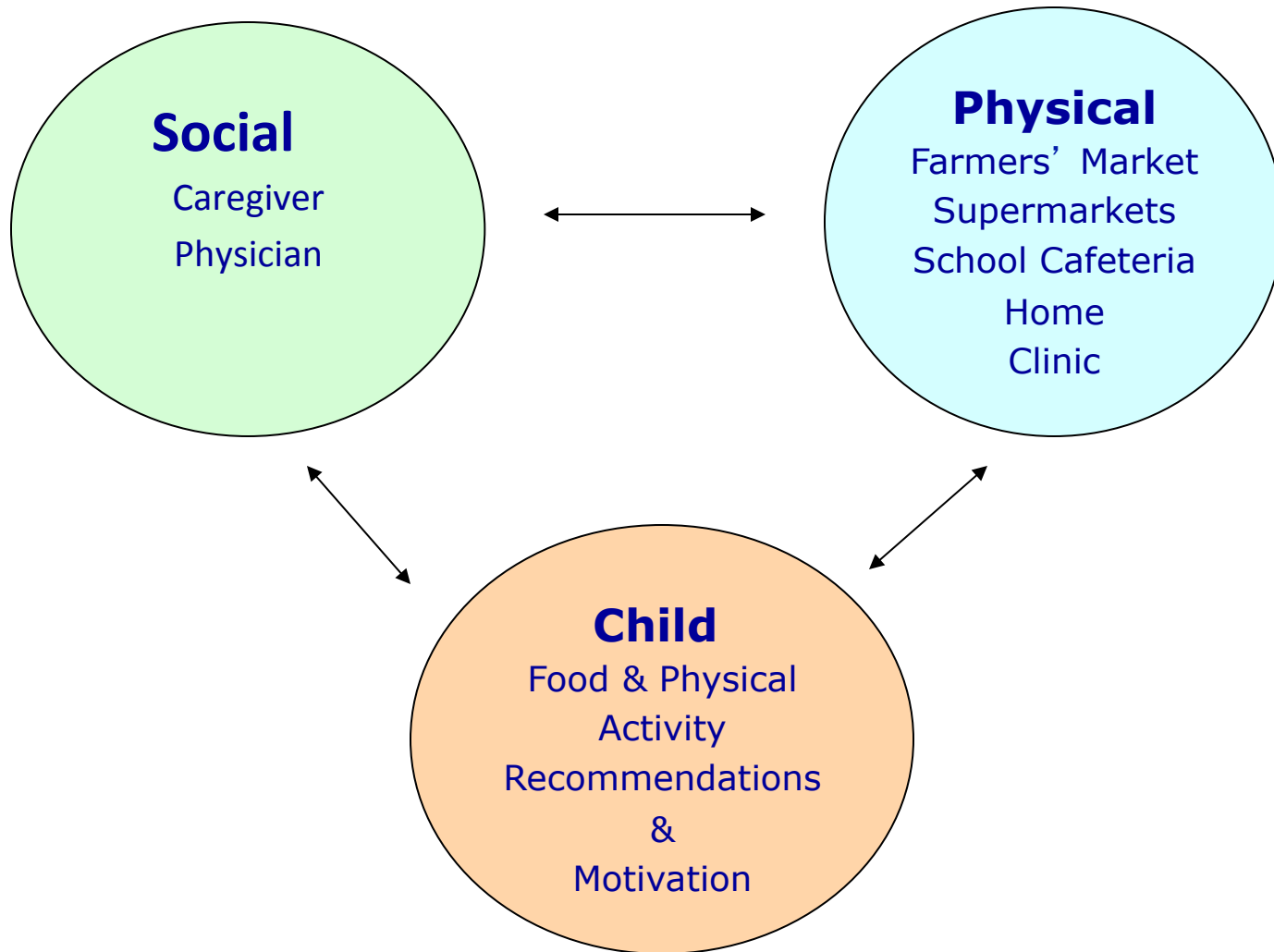
2. To describe environmental, social, economic, & cultural factors associated with body size & composition of children of the Pacific Region, for whom there are few national data (uses electronic medical record data).





Objective 1

INTERVENTION CONCEPTUAL MODEL



PacDASH Tool Development

Pacific Tracker 2 (PacTrac2) Food & Activity Assessment Tool with Local Food & Activity

- *Led by:* Rachel Novotny, Suzanne Murphy & Claudio Nigg
- *Capabilities include:* Analyzing diets, assessing dietary adequacy & excess, providing nutrition education
- *Features:*
 - UH Cancer center food composition database
 - 2400 foods & recipes
 - includes local foods & ethnic dishes
 - My Pyramid Physical Activity assessment
 - children's activities and MET values added
- *Testing:* qualitative interviews of mothers & children & in surveys
- *PacTrac2 available at:* <http://hawaiifoods.hawaii.edu>



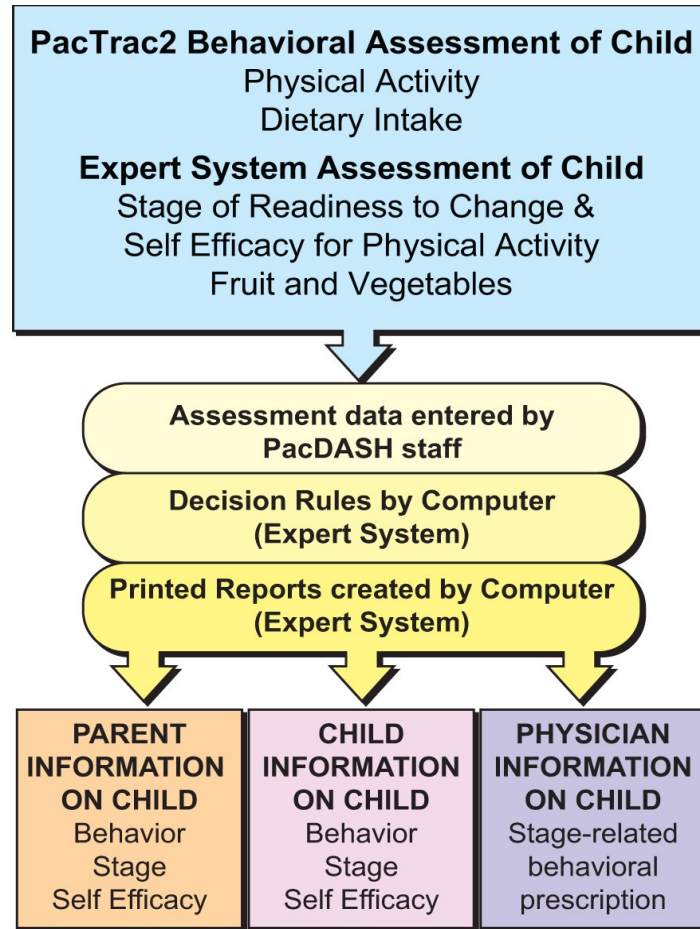
PacDASH Tool Development: Computerized Expert System to Assess Stage of Readiness to Change & Self Efficacy

- *Led by:* Claudio Nigg
- *Capabilities include:* assessment of self efficacy and stage of readiness to change for fruit & vegetable intake and for physical activity





PacTrac2 ES



INTERVENTION DESIGN

- Randomized, controlled intervention trial, with participatory input
 - 1) Intervention group (n = 44)
 - 2) Usual care group (n = 41)
- 5 visits over 15 months
- Completing data collection this month



INTERVENTION STUDY OVERVIEW

- **Assessments in research clinic**
- **Intervention**
 - **delivered in well-child visits by physician:**
 - Fruit, vegetable & “DASH” eating plan & physical activity targeted behaviors for child, based on assessment, self-efficacy & stage of change
 - **Intervention Stage based activities (mailing) for target behaviors:**
 - Fruit & vegetable & physical activity in child’s physical environment
- **Usual Care group mailings supporting “usual” Health guidelines (e.g. Safety)**



PacDASH Intervention

Sample & Measures



- **Selection criteria**
 - 5-8 years old
 - BMI: $\geq 50^{\text{th}}$ to 99^{th} percentile
- **Key Measures**
 - Pacific Tracker (PacTrac2): Average of two-days of diet records
 - Expert System Output: Stage of change (FV & PA), Self efficacy
 - Outcome Measures: Anthropometry, Blood pressure, DXA

Intervention

Initial Findings - Baseline

Sample:

- 85 multiethnic (Native Hawaiian, Pacific Islander, Asian and White) children
- 53 girls, 32 boys
- 44 control, 41 intervention

Age:

- 7.06 ± 0.95 y (5.33 - 8.92y)

Presented at Society for Nutrition Education and Behavior 2012





Food Intake, 5-8y

- Intake of most vitamins & minerals meet the recommended level
- Low intake of vegetables
- High intake of sodium, solid fats & added sugars (SoFAS)
- Low intake of fiber & potassium
- High intake of all macronutrients (especially protein)
- High energy intake

Stage of Readiness to Change, 5-8y

	<u>Fruit & Vegetable</u>	<u>Physical Activity</u>
• PreContemplation	24	11
• Contemplation	4	4
• PreAction	39	11
• Action	0	13
• Maintenance	18	46

Presented at Society for Nutrition Education and Behavior 2012



Objective 2. KPH EMR Data

Ethnic disparity in body mass index
among 5 to 8 year old children in
Hawai'i

Rachel Novotny, Caryn Oshiro, Lynne Wilkens

University of Hawaii at Manoa & Kaiser Permanente Hawaii

presented at FASEB 2012





Methods



- Design: Cross - sectional analysis
- Sample:
 - Electronic medical records
 - Kaiser Permanente Hawaii (KPH)
 - N = 8732
 - 5 - 8 year olds, with parent member
 - Children born Jan. 1, 2002 – Dec. 31, 2005

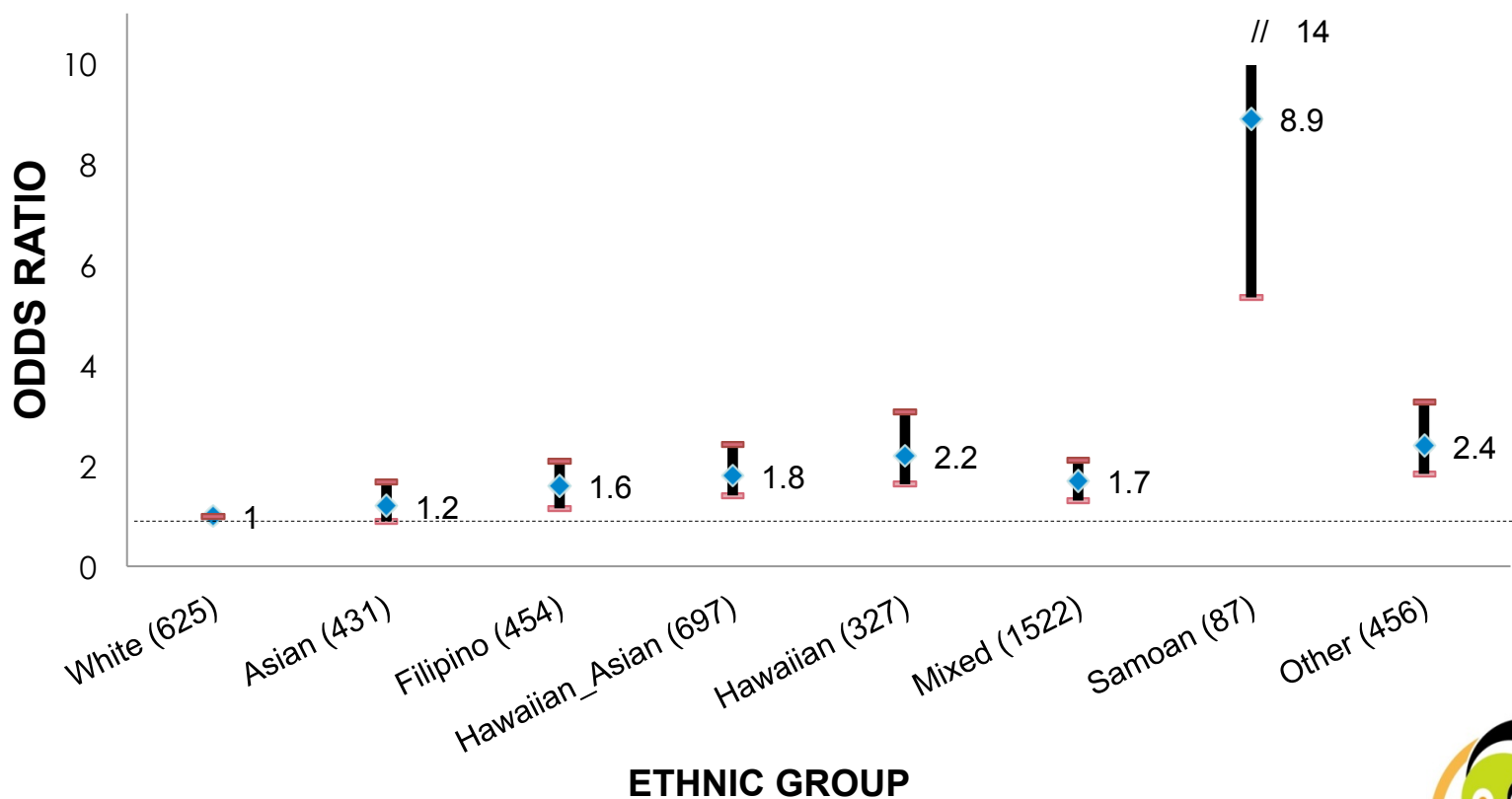
Ethnic disparity in prevalence of overweight & obesity 5 – 8 year olds (n = 4608)*

• Total	32%
• White	20%
• Asian	22%
• Filipino	33%
• Native Hawaiian	41%
• Samoan	69%
• Native Hawaiian - Asian	35%
• Mixed	33%
• Other	40%

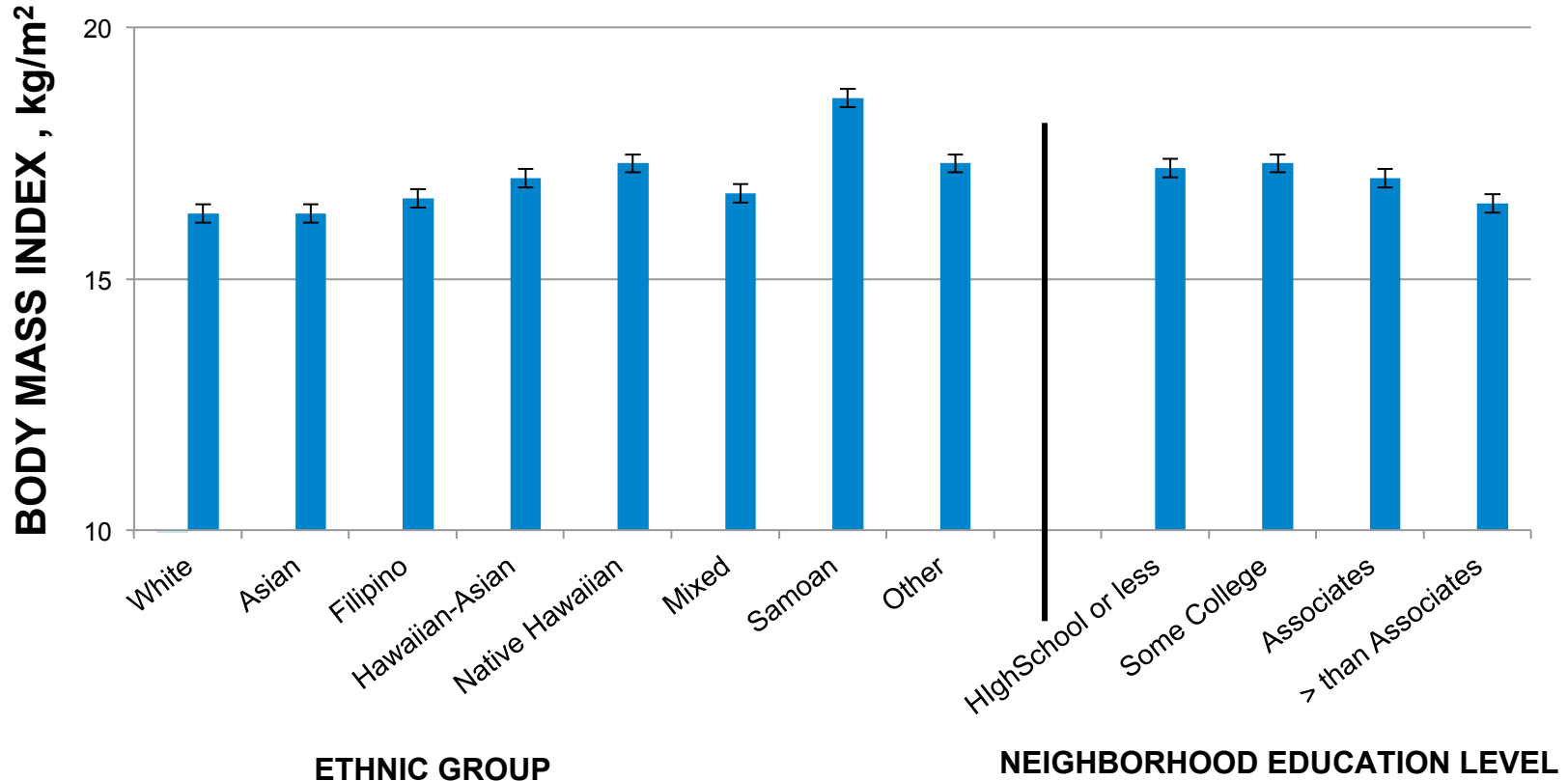


* Those with ethnic information, adjusted for age distribution of census

(Age & Sex) Adjusted Odds Ratios for Risk of Overweight & Obesity by Ethnic Group, 5 – 8y (n = 4599)



(Age & Sex) Adjusted Mean Child BMI by Ethnic Group & Neighborhood Education Level (n = 4599)



Global F test, $p < 0.0001$ across categories - ethnic group & neighborhood education level



Risk for Child Overweight & Obesity (n=2165)

Subsample with data on maternal age (y) & maternal education (y) from vital records

- Maternal age (y) protective ($p = 0.04$)
 - $\leq 20y$ OR = 1.0
 - 21y - 30y OR = 1.29
 - 31y - 40y OR = 1.06
 - $> 40y$ OR = 0.60
- Maternal education (y) protective ($p = 0.004$)
 - $< 12y$ OR = 1
 - 12y OR = 1.19
 - 13y OR = 0.92
 - $\geq 14y$ OR = 0.69
- Maternal education (y) & neighborhood education level, $r = 26\%$



Discussion

Mixed ethnicity



UNIVERSITY
of HAWAII®
MĀNOA

- Mixed ethnicity common in Hawaii (48% of children)
 - ‘Mixed’ ethnic children higher risk for overweight & obesity than expected mean of single ethnicities
 - Hawaiian - Asian mixed children more similar to Native Hawaiian than to Asian children in BMI
 - Mixed ethnicity associated with retaining favored cultural attributes from both ethnic backgrounds
 - such as ceremonial foods, which tend to be energy - dense & which may increase risk for overweight & obesity
- Understanding role of mixed ethnicity in overweight & obesity an area for further study





Discussion

Ethnic disparity in overweight & obesity

- Samoan children very high prevalence & risk of overweight & obesity
 - relatively newly acculturated to Hawaii, which may increase risk
- Hawaiian, Hawaiian - Asian, Mixed, Filipino & Other ethnic groups higher risk of overweight & obesity compared to White & Asian
 - Environment & lifestyle in Hawaii has modernized, which may increase risk
- WHO / IOTF BMI cut points for overweight & obesity could be compared to CDC cut points
 - uniform cut point, considering the frequency of mixed Asian plus Pacific Islander ethnic groups (which have divergent IOTF cut points) aids in interpretation of data
- Further study examine relationship of child BMI with blood pressure & with acanthosis nigricans among these diverse ethnic groups



Discussion

Parental education & child overweight & obesity

- Interaction of ethnicity & neighborhood education level on child overweight & obesity
 - May be related to:
 - living & working conditions of parents
 - age of parents
- Lower maternal education (<13y) & younger maternal age ($\leq 30y$) associated with greater child overweight & obesity
 - Young women still obtaining education
 - may result in a more sedentary environment with more energy dense fast food for children
 - Area for further study





UNIVERSITY
of HAWAII®
MĀNOA

Conclusion

- Samoan, Hawaiian, Hawaiian – Asian, Mixed, Filipino & children of Other ethnicity more overweight & obese than White or Asian children
 - Higher neighborhood education level protective & interactive with ethnicity
 - Older maternal age & more maternal education protective
 - Populations of mixed Pacific ethnicity deserve further study related to acculturation of environment & lifestyle, & healthy body size



Academic - Health System Partnership

Students pursuing degrees with the PacDASH study

- Caryn Oshiro, MS RD
 - Degree objective: PhD Epidemiology (ABD)
 - Topic: Birth size, infant & preschool rapid growth and young childhood overweight
 - PacDASH Objective addressed: Objective 2 (Electronic medical record data)
- Joanne Avila, BS
 - Degree objective: MS Nutrition (candidate)
 - Topic: Added sugar intake and young child overweight & obesity
 - PacDASH Objective addressed: Objective 1 (Intervention)

Lessons Learned:

Childhood Obesity Prevention

- Slow weight gain during childhood (grow into weight)
 - Modify food & physical activity environment of young children
 - Assist physician & parent to provide (staged) relevant information and action tips
 - Create an environment (home, school, health center, community) where children can play actively & eat healthy food





Public Health Policy Recommendations

- Child obesity prevention is primary prevention
- Partnership between health systems & academia can leverage strengths of the 2 systems
- Need a Pacific Data System to monitor core indicators of food, physical activity & obesity of children for program & policy planning

Mahalo!



Asian, Mixed & ‘Other’ Ethnic Group Descriptions

- ‘Asian’ ethnic group includes Chinese (68), Japanese (138), Korean (13), South Asian (Indian, Pakistani) (11), Vietnamese (11), Laotian (4), Other Asian (186)
- ‘Mixed’ ethnic group includes Asian - mixed (512), Filipino - mixed (140), Hawaiian – mixed (except Asian, 646), Other - mixed (202), Samoan - mixed (22)
- ‘Other’ ethnic group includes Black (35), American Indian / Aleutian / Eskimo (5), Pacific Islander (except Samoan, Hawaiian, 272), Other (144)

